

# 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: 68847

	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Java, ByteCode, Parameter]	11184	16.244717
1	[Java, ByteCode, Method, Member]	10645	15.461821
2	[File, Git, Log]	7804	11.335280
3	[Git, Commit, Log]	7618	11.065115
4	[Java, ByteCode, Bound, ParameterizedType]	6537	9.494967
5	[Java, ByteCode, Bound]	6308	9.162345
6	[Java, ByteCode, Member, Field]	2849	4.138161
7	[Java, ByteCode, Bound, WildcardType]	2722	3.953694
8	[Java, Value, ByteCode, Annotation]	2225	3.231804
9	[Java, ByteCode, Constructor, Method, Member]	1649	2.395166
10	[Xml, Element]	1534	2.228129
11	[Xml, Text]	1016	1.475736
12	[Java, ByteCode, Bound, TypeVariable]	988	1.435066
13	[Java, ByteCode, Method, Member, Lambda]	767	1.114065
14	[Type, File, Java, ByteCode, Class]	699	1.015295
15	[Type, File, Java, ByteCode, JavaType]	596	0.865688
16	[Type, File, Java, ByteCode, ResolvedDuplicate...	542	0.787253
17	[Java, ByteCode, Method, Member, GenericDeclar...	525	0.762560
18	[Java, Value, ByteCode, Primitive]	467	0.678316
19	[Git, Author, Log]	260	0.377649
20	[Type, File, Java, ByteCode, Class, GenericDec...	215	0.312287
21	[Type, File, Java, ByteCode, ExternalType]	194	0.281784
22	[Type, File, Java, ByteCode, Interface]	166	0.241114
23	[Java, ByteCode, Bound, GenericArrayType]	144	0.209159
24	[Java, Value, ByteCode, Enum]	142	0.206254
25	[Maven, Dependency]	116	0.168490
26	[Value, Property]	109	0.158322
27	[Package, File, Directory, Java]	107	0.155417
28	[Value, Array]	104	0.151060
29	[Value, ManifestEntry]	91	0.132177

## 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)

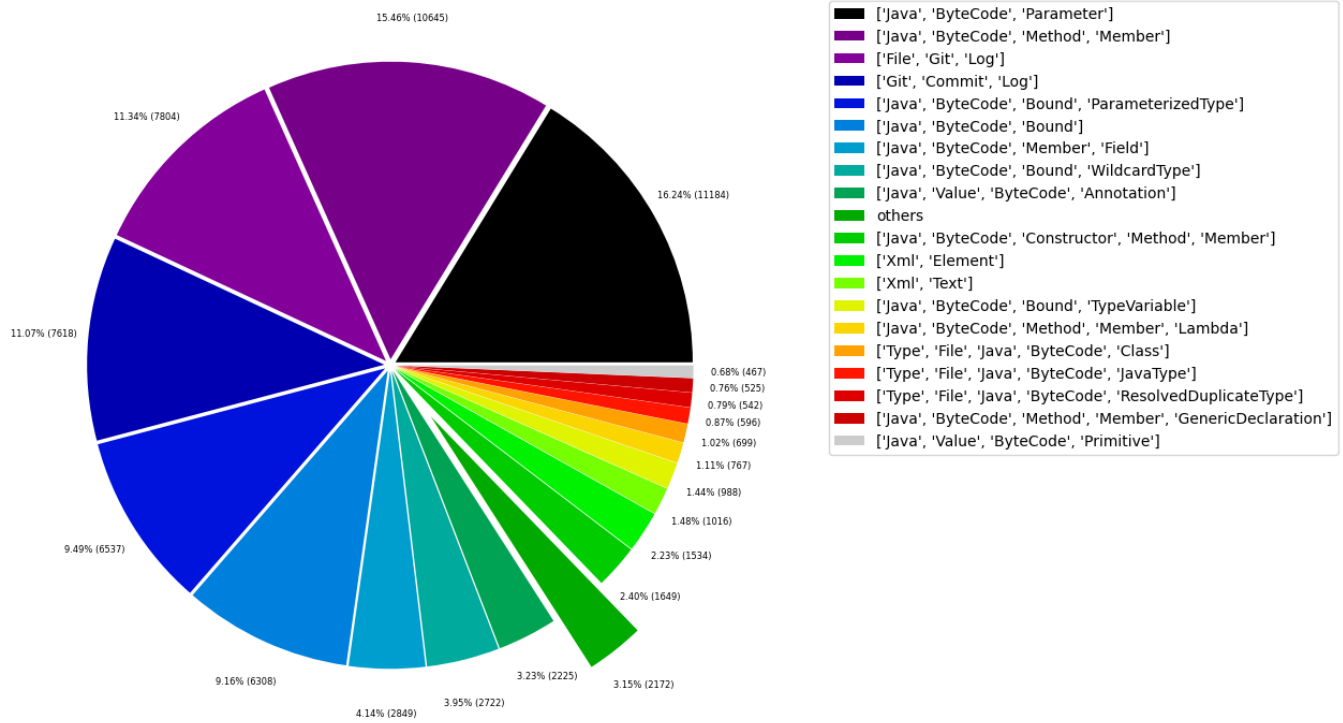


Table 1b - Lowest node count by label combination

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	[Repository, Git]	1	0.001452
1	[Analyze, Task, jQAssistant]	1	0.001452
2	[Maven, Exclusion]	1	0.001452
3	[Java, ByteCode, Constructor, Method, Member, ...]	3	0.004357
4	[File, Maven, Xml, Pom, Document]	6	0.008715
5	[Type, File, Java, ByteCode, Void]	6	0.008715
6	[Java, ManifestSection]	6	0.008715
7	[File, Java, Manifest]	6	0.008715
8	[Artifact, File, Jar, Archive, Zip, Java]	6	0.008715
9	[File, Java, Properties]	8	0.011620
10	[File, Java, ServiceLoader]	9	0.013072
11	[Xml, Attribute]	12	0.017430
12	[Maven, ExecutionGoal]	14	0.020335
13	[Maven, PluginExecution]	14	0.020335
14	[Maven, Plugin]	16	0.023240
15	[Maven, Configuration]	16	0.023240
16	[jQAssistant, Rule, Concept]	19	0.027597
17	[Type, File, Java, ByteCode, PrimitiveType]	21	0.030502
18	[Xml, Namespace]	24	0.034860
19	[Type, File, Java, ByteCode, Enum]	25	0.036312
20	[Java, Value, ByteCode, Class]	28	0.040670
21	[File, Directory]	29	0.042122
22	[Type, File, Java, ByteCode, Annotation]	40	0.058100
23	[Type, File, Java, ByteCode, ExternalType, Ext...	65	0.094412
24	[Artifact, Maven]	69	0.100222
25	[Type, File, Java, ByteCode, GenericDeclaratio...	79	0.114747
26	[Value, ManifestEntry]	91	0.132177
27	[Value, Array]	104	0.151060
28	[Package, File, Directory, Java]	107	0.155417
29	[Value, Property]	109	0.158322

## 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)

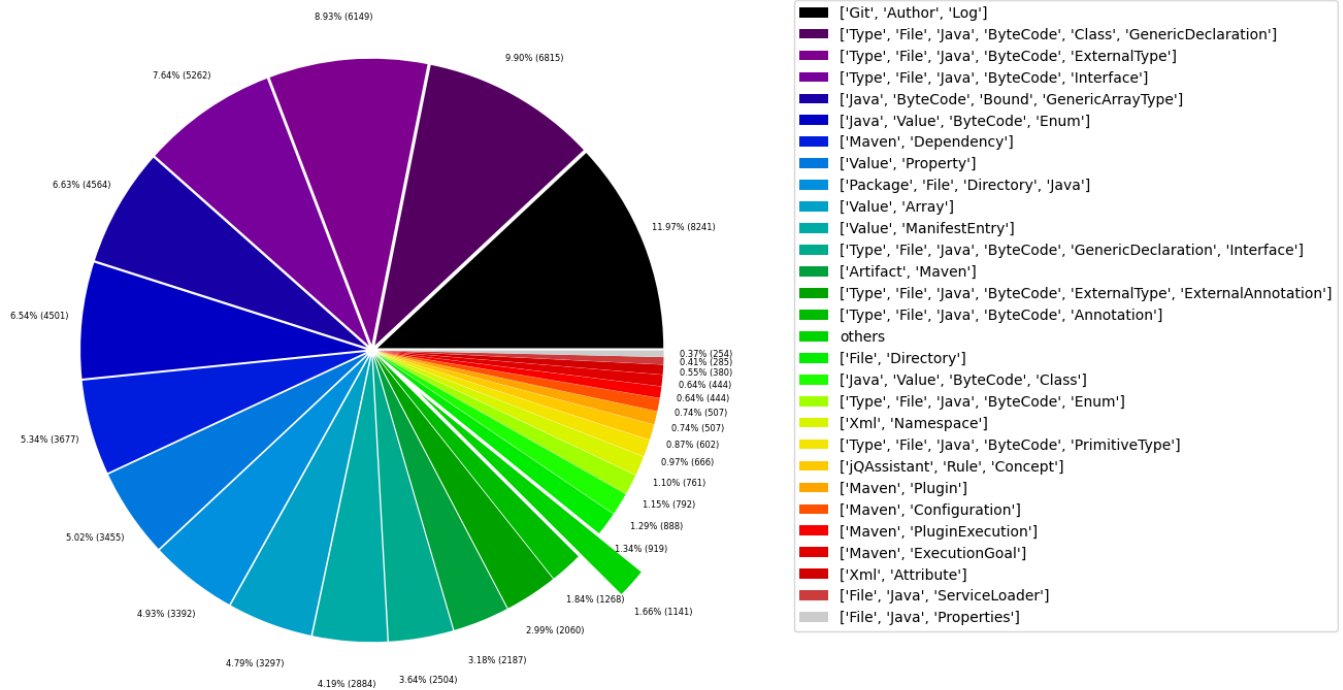


Table 1c - Highest node count by single label

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.

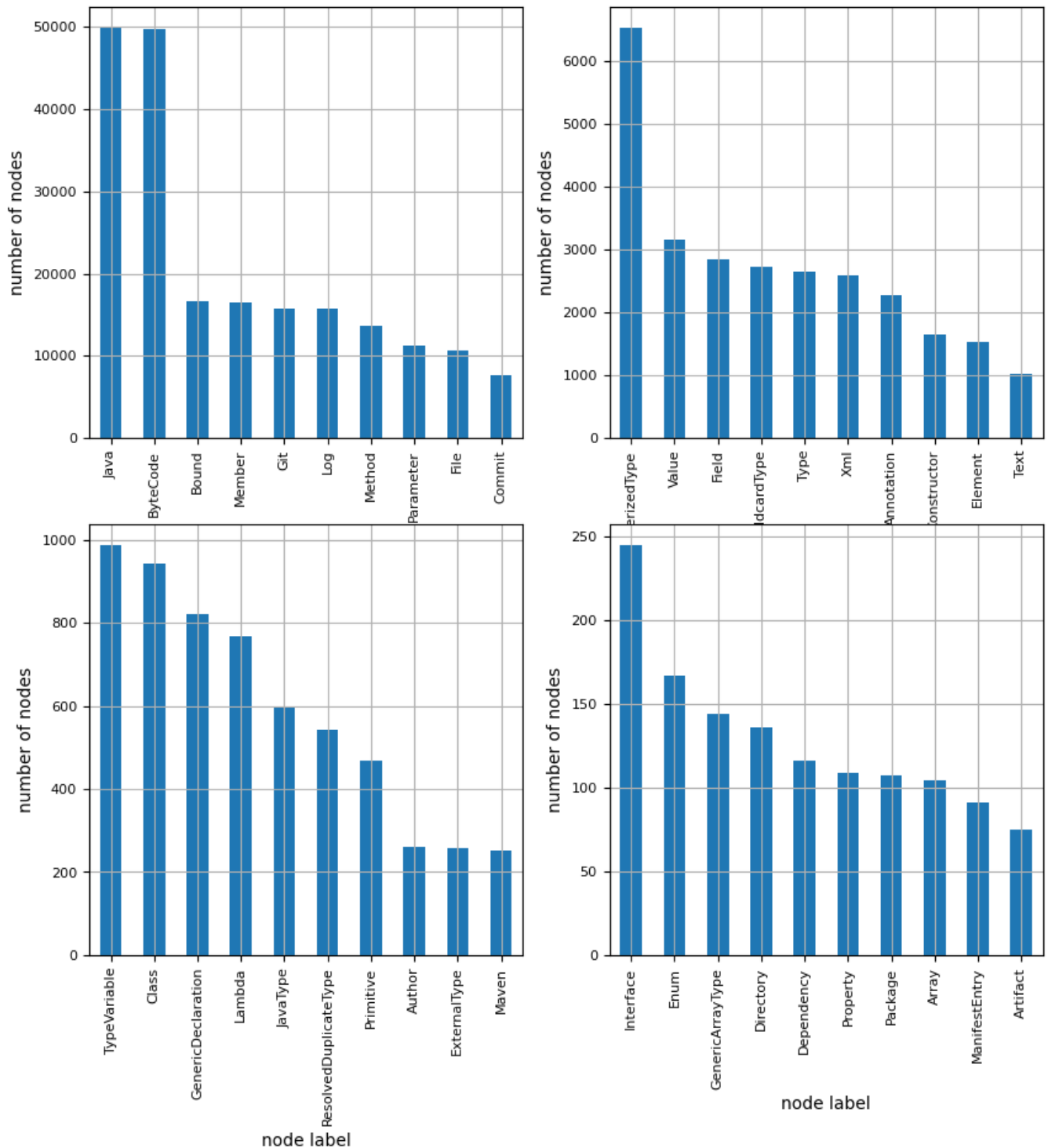
	nodeLabel	nodesWithThatLabel	nodesWithThatLabelPercent
0	Java	49973	72.585588
1	ByteCode	49831	72.379334
2	Bound	16699	24.255233
3	Member	16438	23.876131
4	Git	15683	22.779497
5	Log	15682	22.778044
6	Method	13589	19.737970
7	Parameter	11184	16.244717
8	File	10623	15.429866
9	Commit	7618	11.065115
10	ParameterizedType	6537	9.494967
11	Value	3166	4.598603
12	Field	2849	4.138161
13	WildcardType	2722	3.953694
14	Type	2648	3.846210
15	Xml	2592	3.764870
16	Annotation	2265	3.289904
17	Constructor	1652	2.399524
18	Element	1534	2.228129
19	Text	1016	1.475736
20	TypeVariable	988	1.435066
21	Class	942	1.368251
22	GenericDeclaration	822	1.193952
23	Lambda	767	1.114065
24	JavaType	596	0.865688
25	ResolvedDuplicateType	542	0.787253
26	Primitive	467	0.678316
27	Author	260	0.377649
28	ExternalType	259	0.376196
29	Maven	252	0.366029
30	Interface	245	0.355862
31	Enum	167	0.242567
32	GenericArrayType	144	0.209159
33	Directory	136	0.197539
34	Dependency	116	0.168490
35	Property	109	0.158322
36	Package	107	0.155417
37	Array	104	0.151060
38	ManifestEntry	91	0.132177
39	Artifact	75	0.108937

## Chart 1c - Highest node count by label

Shows the 40 labels with the highest number of nodes.

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## 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: 247812

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	CONTAINS_CHANGED	45786	18.476103
1	INVOKES	29646	11.963101
2	OF_TYPE	17618	7.109422
3	DEPENDS_ON	17426	7.031944
4	DECLARES	16800	6.779333
5	OF_RAW_TYPE	15183	6.126822
6	HAS	11884	4.795571
7	RETURNS	10623	4.286717
8	HAS_FILE	7804	3.149161
9	READS	7683	3.100334
10	AUTHORED	7618	3.074105
11	HAS_COMMIT	7618	3.074105
12	HAS_ACTUAL_TYPE_ARGUMENT	7495	3.024470
13	HAS_PARENT	6162	2.486562
14	OF_GENERIC_TYPE	5346	2.157281
15	SIMILAR	3416	1.378464
16	RETURNS_GENERIC	3250	1.311478
17	WRITES	3065	1.236825
18	CONTAINS	3027	1.221490
19	RESOLVES_TO	2909	1.173874
20	ANNOTATED_BY	2213	0.893016
21	HAS_FIRST_CHILD	1534	0.619018
22	HAS_LAST_CHILD	1534	0.619018
23	HAS_ELEMENT	1522	0.614175
24	REQUIRES	1424	0.574629
25	HAS_UPPER_BOUND	1405	0.566962
26	EXTENDS	1267	0.511275
27	HAS_TEXT	1016	0.409988
28	HAS_SIBLING	1004	0.405146
29	DECLARES_TYPE_PARAMETER	971	0.391829

## 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>



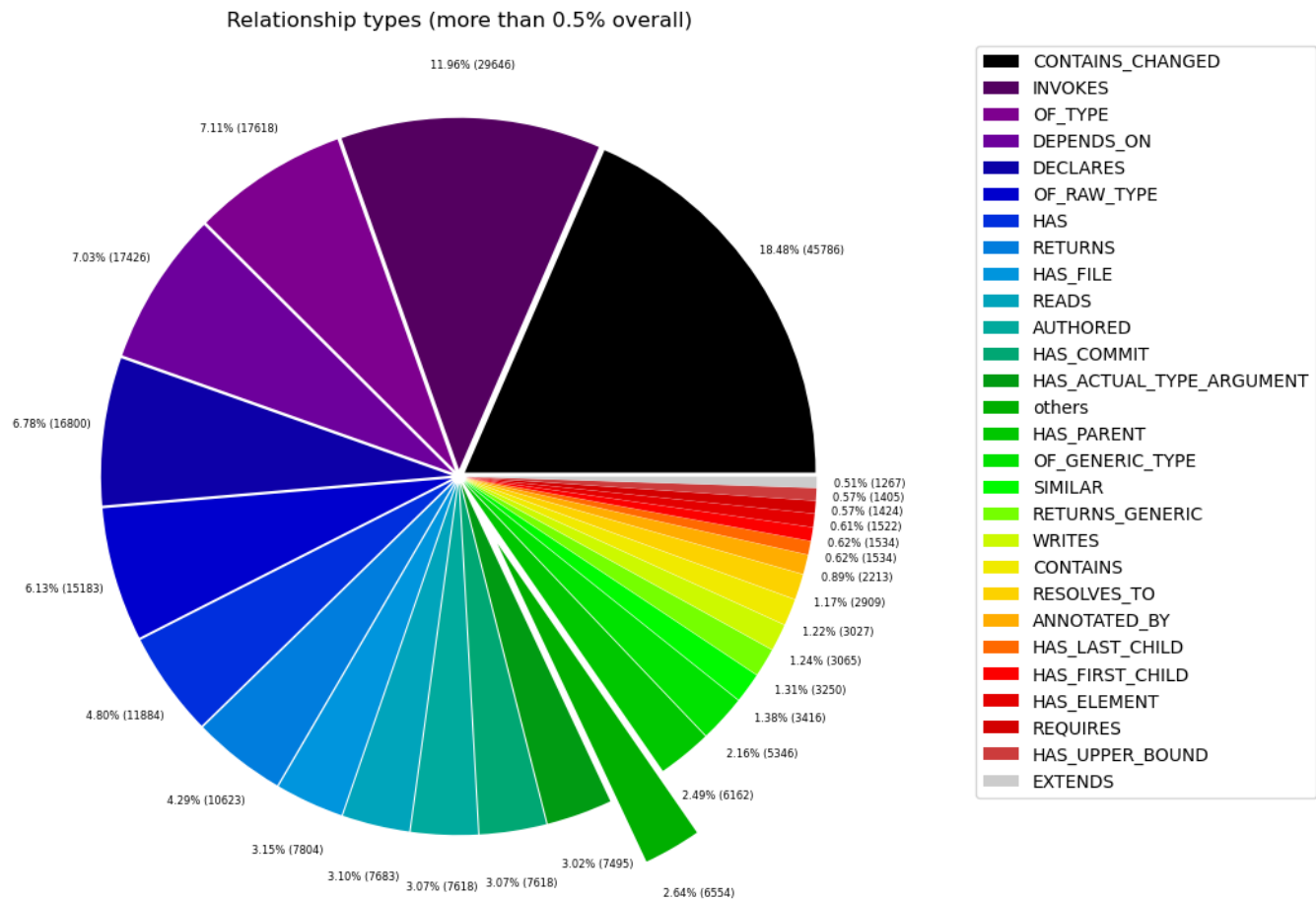


Table 2b - Lowest relationship count by type

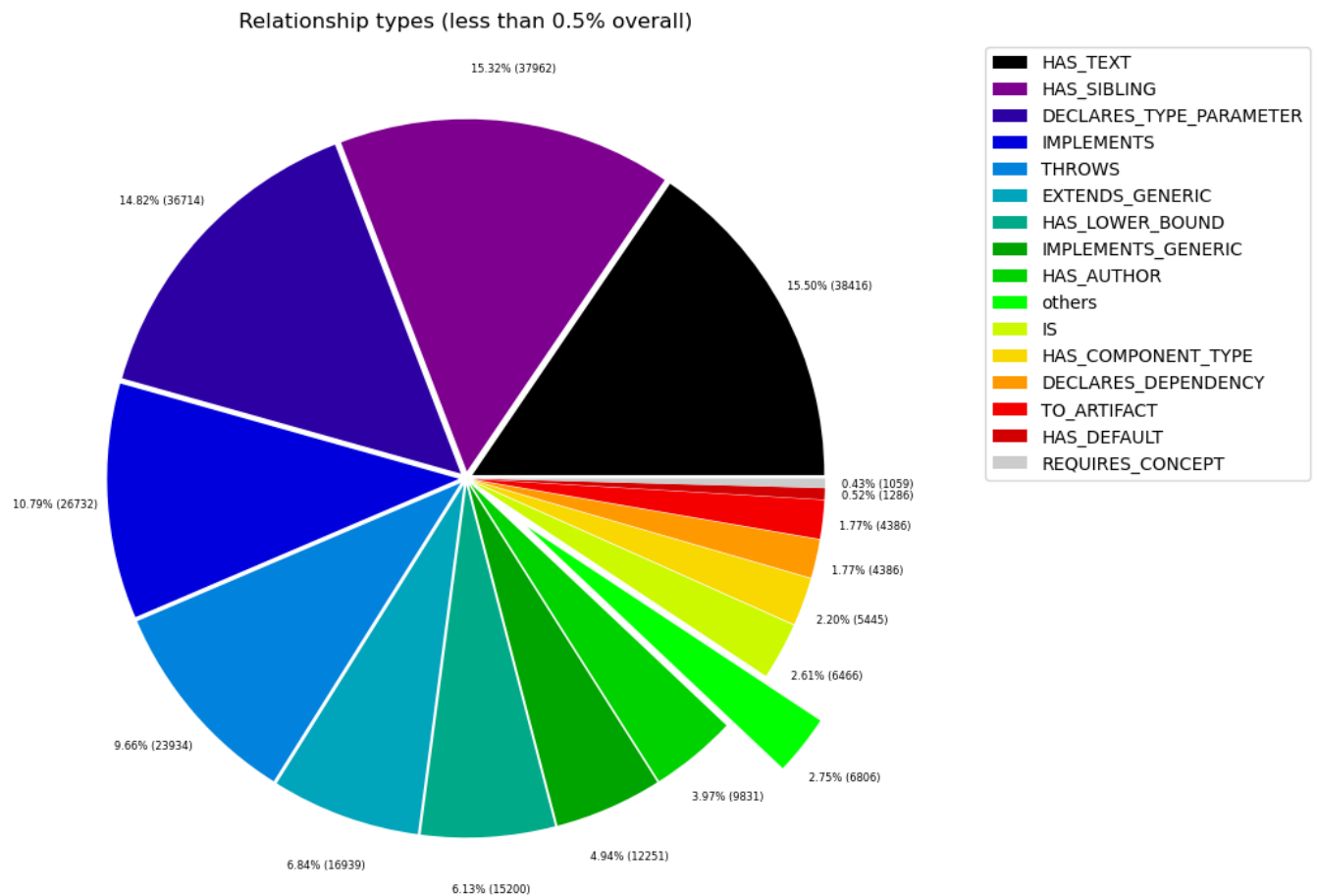
Lists the 30 relationships type with the lowest number of occurrences up to 0.5% of the total node count. This is essentially breaking down the "others" slice from the chart above.

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	EXCLUDES	1	0.000404
1	THROWS_GENERIC	5	0.002018
2	DESCRIBES	6	0.002421
3	HAS_ROOT_ELEMENT	8	0.003228
4	OF_NAMESPACE	12	0.004842
5	HAS_ATTRIBUTE	12	0.004842
6	HAS_GOAL	14	0.005649
7	HAS_EXECUTION	14	0.005649
8	USES_PLUGIN	16	0.006457
9	IS_ARTIFACT	16	0.006457
10	HAS_CONFIGURATION	16	0.006457
11	REQUIRES_TYPE_PARAMETER	17	0.006860
12	INCLUDES_CONCEPT	19	0.007667
13	DECLARES_NAMESPACE	24	0.009685
14	REQUIRES_CONCEPT	28	0.011299
15	HAS_DEFAULT	34	0.013720
16	TO_ARTIFACT	116	0.046810
17	DECLARES_DEPENDENCY	116	0.046810
18	HAS_COMPONENT_TYPE	144	0.058109
19	IS	171	0.069004
20	HAS_AUTHOR	260	0.104918
21	IMPLEMENTS_GENERIC	324	0.130744
22	HAS_LOWER_BOUND	402	0.162220
23	EXTENDS_GENERIC	448	0.180782
24	THROWS	633	0.255436
25	IMPLEMENTS	707	0.285297
26	DECLARES_TYPE_PARAMETER	971	0.391829
27	HAS_SIBLING	1004	0.405146
28	HAS_TEXT	1016	0.409988

## 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, Log]	CONTAINS_CHANGED	[File, Git, Log]	45786	7618	
1	[Java, ByteCode, Method, Member]	INVOKES	[Java, ByteCode, Method, Member]	18134	10557	
2	[Repository, Git]	HAS_FILE	[File, Git, Log]	7804	1	
3	[Repository, Git]	HAS_COMMIT	[Git, Commit, Log]	7618	1	
4	[Git, Author, Log]	AUTHORED	[Git, Commit, Log]	7618	260	
5	[Java, ByteCode, Method, Member]	HAS	[Java, ByteCode, Parameter]	7290	10557	
6	[Java, ByteCode, Method, Member]	READS	[Java, ByteCode, Member, Field]	6906	10557	
7	[Git, Commit, Log]	HAS_PARENT	[Git, Commit, Log]	6156	7618	
8	[Java, ByteCode, Parameter]	OF_TYPE	[Type, File, Java, ByteCode, JavaType]	5720	11184	
9	[Java, ByteCode, Bound]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3213	6308	
10	[Java, ByteCode, Bound, ParameterizedType]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	2777	6537	
11	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, WildcardType]	2722	6537	
12	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound, ParameterizedType]	2434	11184	
13	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, TypeVariable]	2228	6537	
14	[Java, ByteCode, Constructor, Method, Member]	WRITES	[Java, ByteCode, Member, Field]	1971	1649	
15	[Java, ByteCode, Method, Member]	RETURNS	[Type, File, Java, ByteCode, JavaType]	1890	10557	
16	[Java, Value, ByteCode, Annotation]	OF_TYPE	[Type, File, Java, ByteCode, ExternalType, Ext...	1842	2225	
17	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound]	1818	11184	
18	[Java, ByteCode, Constructor, Method, Member]	INVOKES	[Java, ByteCode, Constructor, Method, Member]	1740	1649	
19	[Java, ByteCode, Constructor, Method, Member]	HAS	[Java, ByteCode, Parameter]	1710	1649	
20	[Java, ByteCode, Method, Member]	INVOKES	[Java, ByteCode, Constructor, Method, Member]	1707	10557	
21	[Java, ByteCode, Parameter]	ANNOTATED_BY	[Java, Value, ByteCode, Annotation]	1594	11184	
22	[Java, ByteCode, Constructor, Method, Member]	INVOKES	[Java, ByteCode, Method, Member]	1535	1649	
23	[Java, ByteCode, Method, Member, Lambda]	INVOKES	[Java, ByteCode, Method, Member]	1532	767	
24	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound]	1527	6537	
25	[Xml, Element]	HAS_ELEMENT	[Xml, Element]	1522	1534	
26	[Java, ByteCode, Method, Member]	RETURNS	[Type, File, Java, ByteCode, Void]	1465	10557	
27	[Java, ByteCode, Method, Member, GenericDeclar...	INVOKES	[Java, ByteCode, Method, Member]	1282	511	
28	[Type, File, Java, ByteCode, JavaType]	DECLARES	[Java, ByteCode, Method, Member]	1277	596	
29	[Java, ByteCode, Constructor, Method, Member]	RETURNS	[Type, File, Java, ByteCode, Void]	1221	1649	

# Graph Density

total\_number\_of\_nodes (vertices): 68847

total\_number\_of\_relationships (edges): 247812

-> total directed graph density: 5.228277127858378e-05

-> total directed graph density in percent: 0.0052282771278583775