

# 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: 319323

	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Git, Change]	231349	72.449839
1	[Java, ByteCode, Method, Member]	13172	4.124977
2	[Java, ByteCode, Parameter]	12968	4.061092
3	[Git, Commit]	11671	3.654920
4	[File, Git]	10577	3.312320
5	[Java, ByteCode, Bound, ParameterizedType]	7154	2.240365
6	[Java, ByteCode, Bound]	7094	2.221575
7	[Java, ByteCode, Member, Field]	3483	1.090745
8	[Java, ByteCode, Bound, WildcardType]	2902	0.908798
9	[Java, Value, ByteCode, Annotation]	2813	0.880926
10	[Xml, Element]	2144	0.671420
11	[Java, ByteCode, Constructor, Method, Member]	2035	0.637286
12	[Xml, Text]	1436	0.449701
13	[Java, ByteCode, Bound, TypeVariable]	1094	0.342600
14	[Java, ByteCode, Method, Member, Lambda]	931	0.291554
15	[Type, File, Java, ByteCode, ResolvedDuplicate...	899	0.281533
16	[Type, File, Java, ByteCode, Class]	858	0.268693
17	[Type, File, Java, ByteCode, JavaType]	746	0.233619
18	[Java, Value, ByteCode, Primitive]	647	0.202616
19	[Java, ByteCode, Method, Member, GenericDeclar...	567	0.177563
20	[Json, Key]	555	0.173805
21	[Value, Json, Scalar]	539	0.168795
22	[Type, File, Java, ByteCode, ExternalType]	396	0.124012
23	[Author, Git, Person]	288	0.090191
24	[Value, Array]	267	0.083614
25	[Committer, Git, Person]	242	0.075785
26	[Type, File, Java, ByteCode, Class, GenericDec...	236	0.073906
27	[Value, Property]	202	0.063259
28	[Type, File, Java, ByteCode, Interface]	186	0.058248
29	[Java, Value, ByteCode, Class]	170	0.053238

## 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)

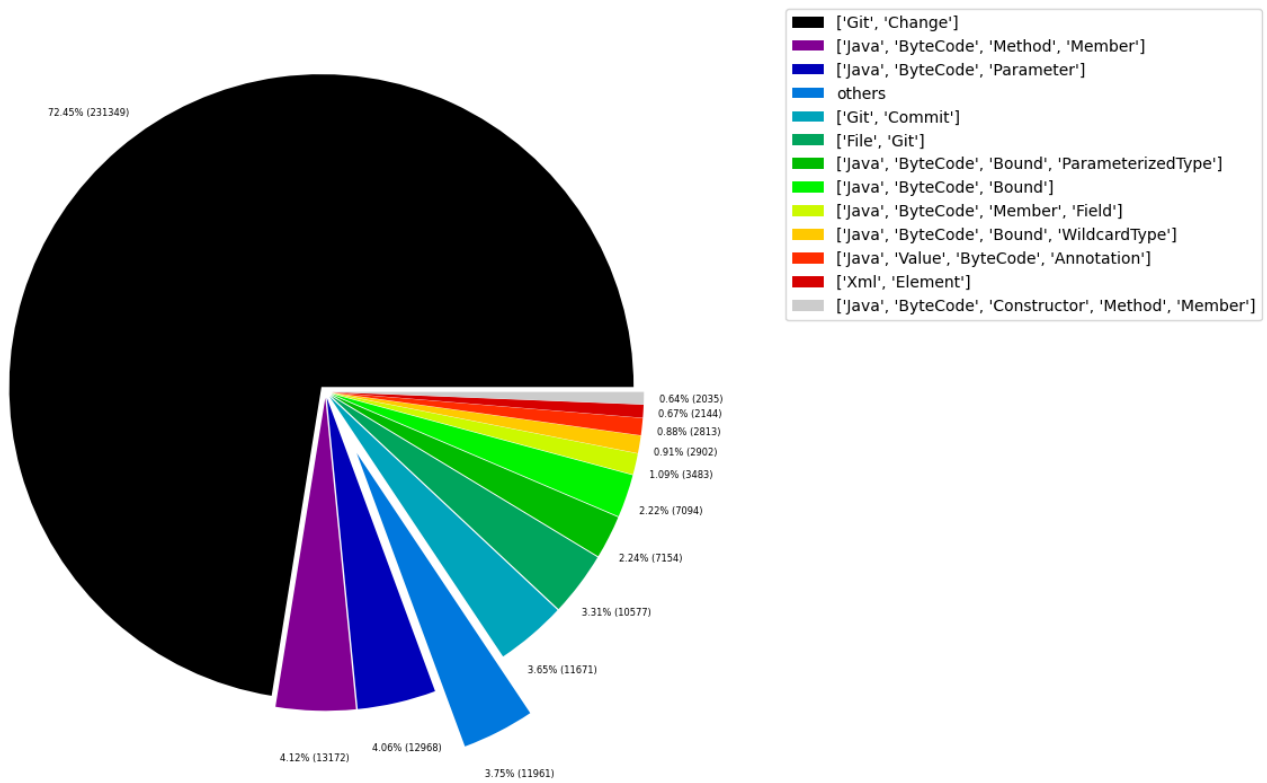


Table 1b - Lowest node count by label combination

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	0.000313
1	[File, TS, Scan]	1	0.000313
2	[File, Json]	2	0.000626
3	[File]	3	0.000939
4	[Java, ByteCode, Constructor, Method, Member, ...]	4	0.001253
5	[Maven, Exclusion]	5	0.001566
6	[Value, Array, Json]	6	0.001879
7	[File, Xml, Maven, Pom, Document]	9	0.002818
8	[Type, File, Java, ByteCode, Void]	9	0.002818
9	[Java, ManifestSection]	9	0.002818
10	[File, Java, Manifest]	9	0.002818
11	[Artifact, File, Jar, Archive, Zip, Java]	9	0.002818
12	[File, Java, ServiceLoader]	10	0.003132
13	[File, Java, Properties]	12	0.003758
14	[Maven, ExecutionGoal]	16	0.005011
15	[Maven, PluginExecution]	16	0.005011
16	[Xml, Attribute]	18	0.005637
17	[jQAssistant, Rule, Concept]	19	0.005950
18	[Maven, Plugin]	21	0.006576
19	[Maven, Configuration]	21	0.006576
20	[Git, Branch]	25	0.007829
21	[Type, File, Java, ByteCode, Enum]	28	0.008769
22	[Type, File, Java, ByteCode, PrimitiveType]	29	0.009082
23	[Xml, Namespace]	36	0.011274
24	[Type, File, Java, ByteCode, Annotation]	43	0.013466
25	[File, Directory]	44	0.013779
26	[Type, File, Java, ByteCode, GenericDeclaratio...	85	0.026619
27	[Artifact, Maven]	92	0.028811
28	[Type, File, Java, ByteCode, ExternalType, Ext...	93	0.029124
29	[Value, ManifestEntry]	120	0.037580

## 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)

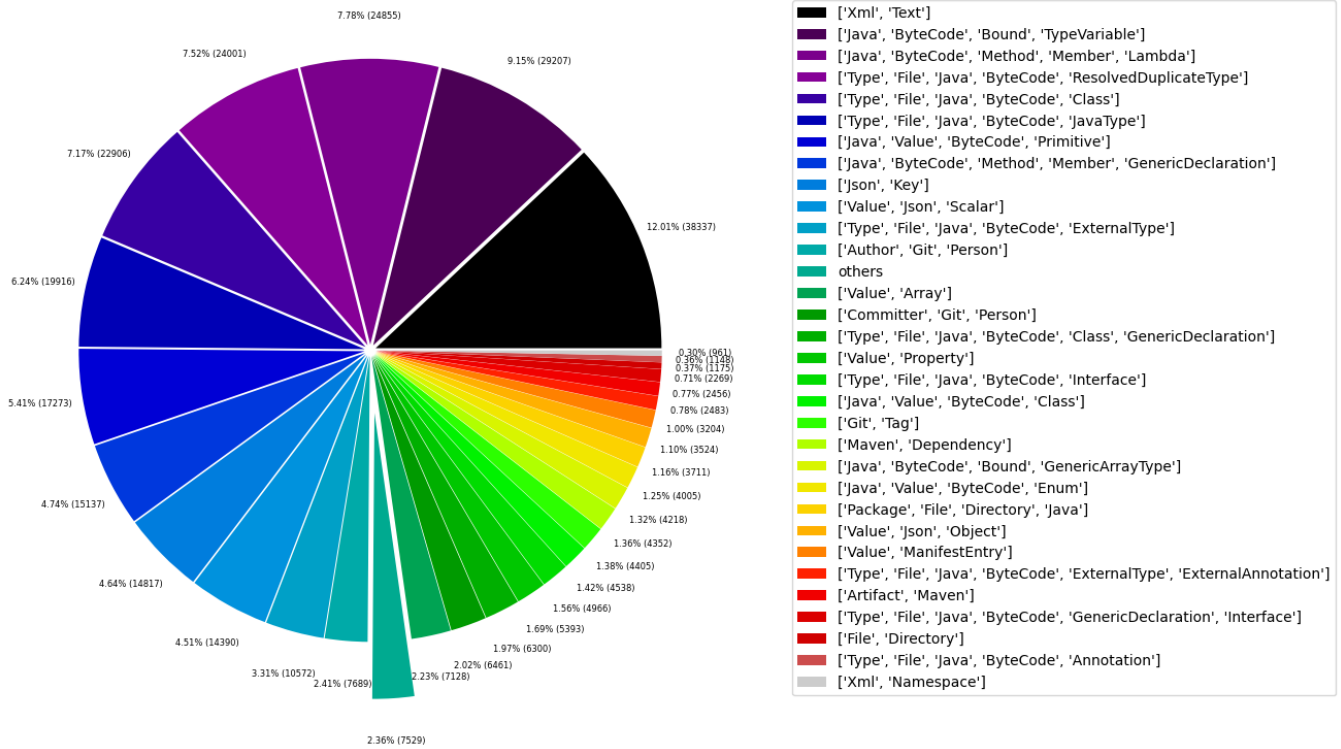


Table 1c - Highest node count by single label

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.

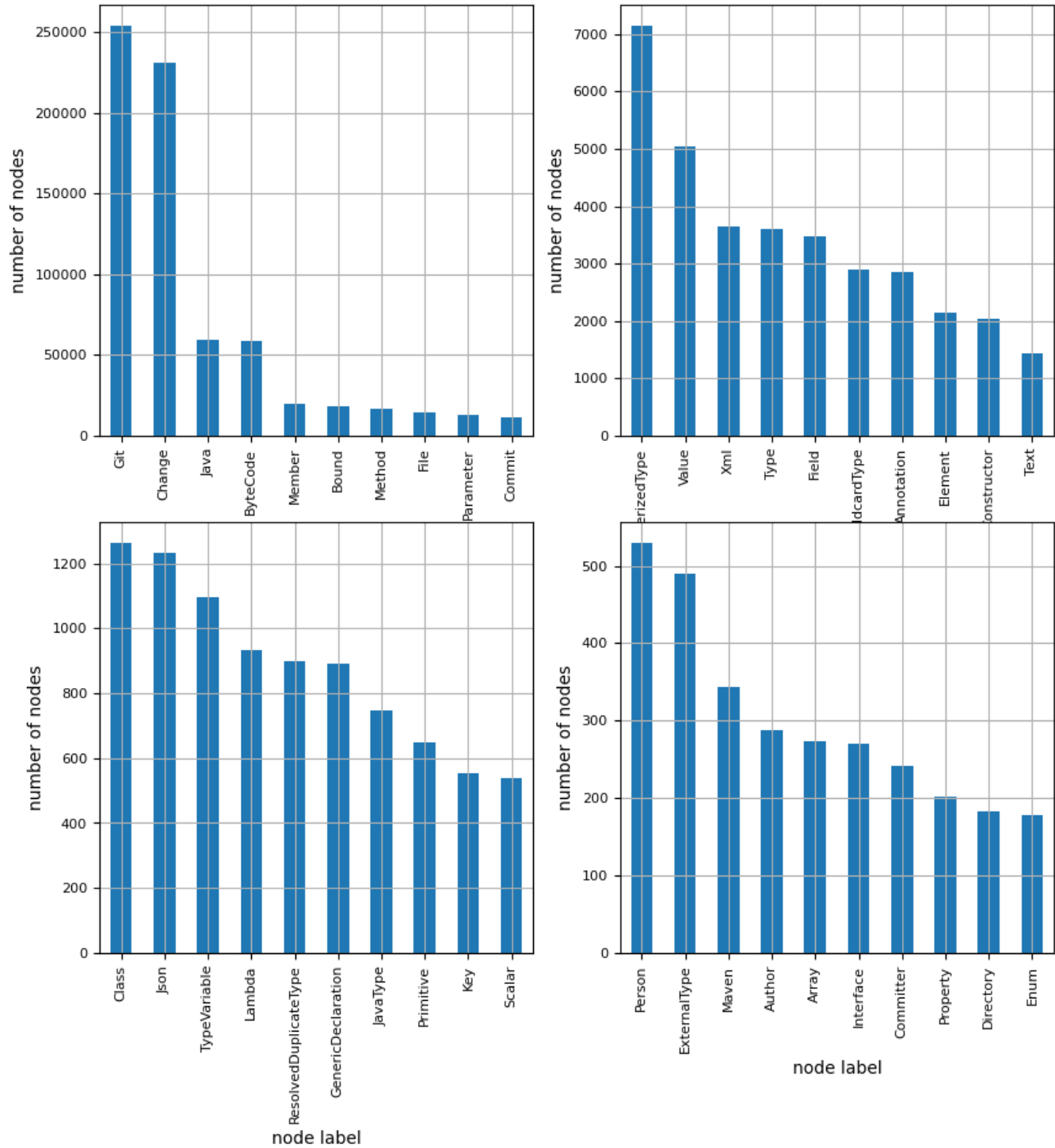
	nodeLabel	nodesWithThatLabel	nodesWithThatLabelPercent
0	Git	254317	79.642556
1	Change	231349	72.449839
2	Java	59138	18.519806
3	ByteCode	58950	18.460931
4	Member	20192	6.323378
5	Bound	18402	5.762817
6	Method	16709	5.232633
7	File	14423	4.516743
8	Parameter	12968	4.061092
9	Commit	11671	3.654920
10	ParameterizedType	7154	2.240365
11	Value	5046	1.580218
12	Xml	3643	1.140851
13	Type	3608	1.129890
14	Field	3483	1.090745
15	WildcardType	2902	0.908798
16	Annotation	2856	0.894392
17	Element	2144	0.671420
18	Constructor	2039	0.638538
19	Text	1436	0.449701
20	Class	1264	0.395837
21	Json	1234	0.386443
22	TypeVariable	1094	0.342600
23	Lambda	931	0.291554
24	ResolvedDuplicateType	899	0.281533
25	GenericDeclaration	892	0.279341
26	JavaType	746	0.233619
27	Primitive	647	0.202616
28	Key	555	0.173805
29	Scalar	539	0.168795
30	Person	530	0.165976
31	ExternalType	489	0.153136
32	Maven	343	0.107415
33	Author	288	0.090191
34	Array	273	0.085493
35	Interface	271	0.084867
36	Committer	242	0.075785
37	Property	202	0.063259
38	Directory	183	0.057309
39	Enum	178	0.055743

## 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: 967837

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	CONTAINS_CHANGE	231349	23.903715
1	MODIFIES	231349	23.903715
2	UPDATES	148224	15.314976
3	CREATES	57636	5.955135
4	INVOKES	35716	3.690291
5	DELETES	35351	3.652578
6	COMMITTED	23342	2.411770
7	DEPENDS_ON	21459	2.217212
8	OF_TYPE	21292	2.199957
9	DECLARES	20631	2.131661
10	OF_RAW_TYPE	17041	1.760730
11	HAS_PARENT	14187	1.465846
12	HAS	14057	1.452414
13	RETURNS	12524	1.294020
14	RENAMES	9862	1.018973
15	READS	9068	0.936935
16	HAS_ACTUAL_TYPE_ARGUMENT	8261	0.853553
17	HAS_NEW_NAME	6163	0.636781
18	OF_GENERIC_TYPE	5892	0.608780
19	RESOLVES_TO	5223	0.539657
20	SIMILAR	3915	0.404510
21	CONTAINS	3797	0.392318
22	WRITES	3796	0.392215
23	RETURNS_GENERIC	3538	0.365557
24	ANNOTATED_BY	2801	0.289408
25	REQUIRES	2172	0.224418
26	HAS_FIRST_CHILD	2144	0.221525
27	HAS_LAST_CHILD	2144	0.221525
28	HAS_ELEMENT	2126	0.219665
29	HAS_UPPER_BOUND	1519	0.156948

### 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)

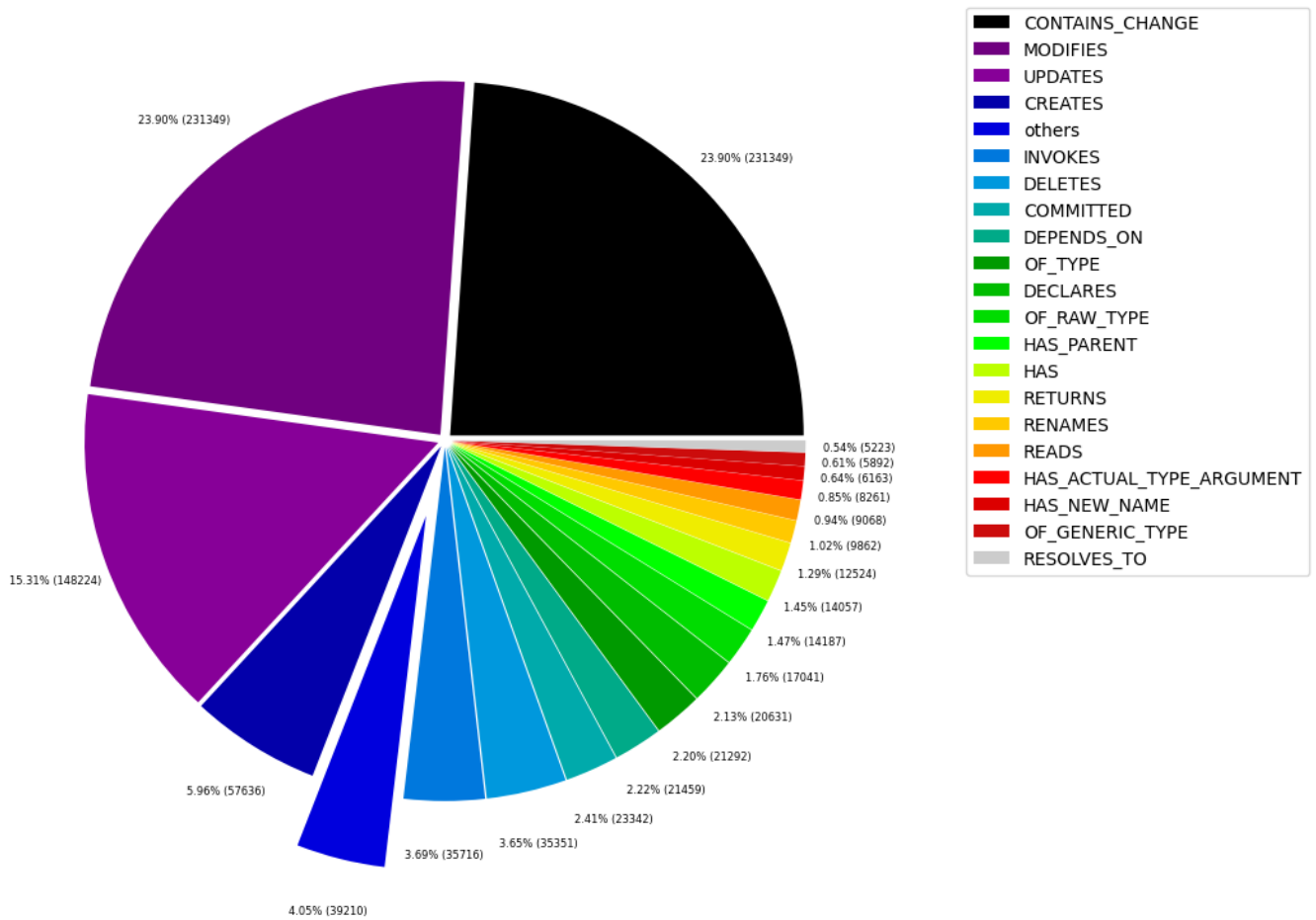


Table 2b - Lowest relationship count by type

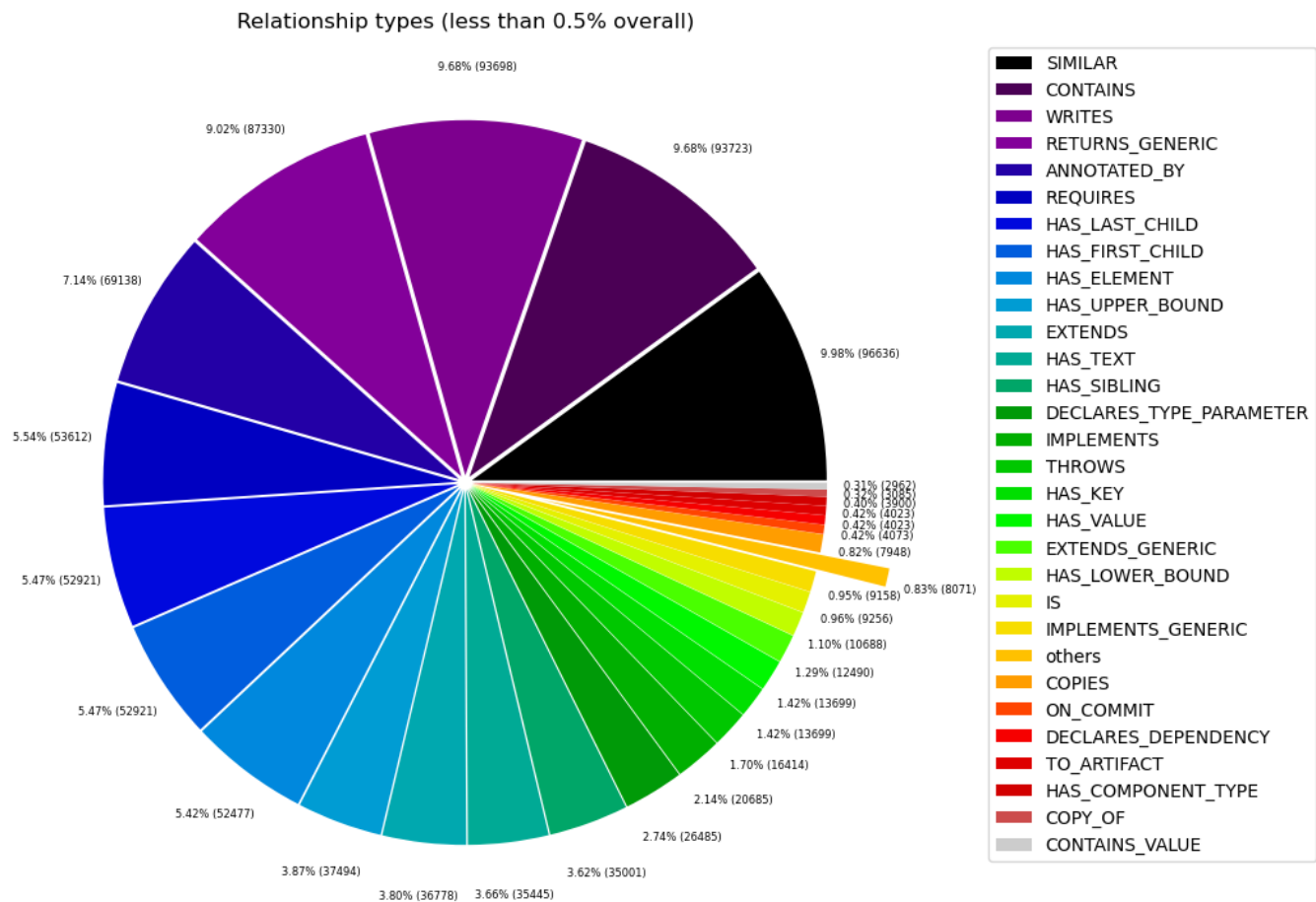
Lists the 30 relationships type with the lowest number of occurrences up to 0.5% of the total node count. This is essentially breaking down the "others" slice from the chart above.

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	HAS_PROPERTY	1	0.000103
1	THROWS_GENERIC	5	0.000517
2	EXCLUDES	5	0.000517
3	DESCRIBES	9	0.000930
4	HAS_ROOT_ELEMENT	11	0.001137
5	HAS_GOAL	16	0.001653
6	HAS_EXECUTION	16	0.001653
7	OF_NAMESPACE	18	0.001860
8	HAS_ATTRIBUTE	18	0.001860
9	INCLUDES_CONCEPT	19	0.001963
10	USES_PLUGIN	21	0.002170
11	REQUIRES_TYPE_PARAMETER	21	0.002170
12	IS_ARTIFACT	21	0.002170
13	HAS_CONFIGURATION	21	0.002170
14	HAS_HEAD	25	0.002583
15	REQUIRES_CONCEPT	28	0.002893
16	DECLARES_NAMESPACE	36	0.003720
17	HAS_DEFAULT	36	0.003720
18	CONTAINS_VALUE	120	0.012399
19	COPY_OF	125	0.012915
20	HAS_COMPONENT_TYPE	158	0.016325
21	TO_ARTIFACT	163	0.016842
22	DECLARES_DEPENDENCY	163	0.016842
23	ON_COMMIT	165	0.017048
24	COPIES	322	0.033270
25	IMPLEMENTS_GENERIC	371	0.038333
26	IS	375	0.038746
27	HAS_LOWER_BOUND	433	0.044739
28	EXTENDS_GENERIC	506	0.052282
29	HAS_VALUE	555	0.057344

## 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]	231349		11671
1	[Git, Change]	MODIFIES	[File, Git]	231349		231349
2	[Git, Change]	UPDATES	[File, Git]	148224		231349
3	[Git, Change]	CREATES	[File, Git]	57636		231349
4	[Git, Change]	DELETES	[File, Git]	35351		231349
5	[Java, ByteCode, Method, Member]	INVOKES	[Java, ByteCode, Method, Member]	21818		13056
6	[Git, Commit]	HAS_PARENT	[Git, Commit]	14178		11671
7	[Author, Git, Person]	COMMITTED	[Git, Commit]	11671		288
8	[Committer, Git, Person]	COMMITTED	[Git, Commit]	11671		242
9	[Git, Change]	RENAMES	[File, Git]	9862		231349
10	[Java, ByteCode, Method, Member]	HAS	[Java, ByteCode, Parameter]	8289		13056
11	[Java, ByteCode, Method, Member]	READS	[Java, ByteCode, Member, Field]	8128		13056
12	[Java, ByteCode, Parameter]	OF_TYPE	[Type, File, Java, ByteCode, JavaType]	6335		12968
13	[File, Git]	HAS_NEW_NAME	[File, Git]	6163		10577
14	[Java, ByteCode, Bound]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3554		7094
15	[Java, ByteCode, Bound, ParameterizedType]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3034		7154
16	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, WildcardType]	2902		7154
17	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound, ParameterizedType]	2650		12968
18	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, TypeVariable]	2453		7154
19	[Java, ByteCode, Constructor, Method, Member]	WRITES	[Java, ByteCode, Member, Field]	2423		2035
20	[Java, Value, ByteCode, Annotation]	OF_TYPE	[Type, File, Java, ByteCode, ExternalType, Ext...	2336		2813
21	[Xml, Element]	HAS_ELEMENT	[Xml, Element]	2126		2144
22	[Java, ByteCode, Constructor, Method, Member]	INVOKES	[Java, ByteCode, Constructor, Method, Member]	2102		2035
23	[Java, ByteCode, Method, Member]	RETURNS	[Type, File, Java, ByteCode, JavaType]	2089		13056
24	[Java, ByteCode, Method, Member]	INVOKES	[Java, ByteCode, Constructor, Method, Member]	2033		13056
25	[Java, ByteCode, Constructor, Method, Member]	HAS	[Java, ByteCode, Parameter]	2021		2035
26	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound]	2020		12968
27	[Java, ByteCode, Method, Member, Lambda]	INVOKES	[Java, ByteCode, Method, Member]	1859		931
28	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound]	1792		7154
29	[Java, ByteCode, Constructor, Method, Member]	INVOKES	[Java, ByteCode, Method, Member]	1791		2035

## Graph Density

```
total_number_of_nodes (vertices): 319323
total_number_of_relationships (edges): 967837
-> total directed graph density: 9.491681997805287e-06
-> total directed graph density in percent: 0.0009491681997805287
```