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`.

	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Git, Change]	259028	74.297335
1	[Java, ByteCode, Member, Method]	13284	3.810267
2	[Java, ByteCode, Parameter]	13029	3.737125
3	[Git, Commit]	12701	3.643044
4	[File, Git]	10809	3.100359
5	[Java, ByteCode, ParameterizedType, Bound]	7176	2.058301
6	[Java, ByteCode, Bound]	7118	2.041665
7	[Java, ByteCode, Member, Field]	3511	1.007065
8	[Java, ByteCode, Bound, WildcardType]	2908	0.834105
9	[Java, Value, ByteCode, Annotation]	2822	0.809438
10	[Xml, Element]	2144	0.614966
11	[Java, ByteCode, Member, Constructor, Method]	2068	0.593167
12	[Xml, Text]	1436	0.411890
13	[Java, ByteCode, Bound, TypeVariable]	1096	0.314367
14	[Java, ByteCode, Member, Method, Lambda]	942	0.270195
15	[Type, File, Java, ByteCode, ResolvedDuplicate...	877	0.251551
16	[Type, File, Java, ByteCode, Class]	810	0.232333
17	[Java, Value, ByteCode, Primitive]	652	0.187014
18	[Type, File, Java, ByteCode, JavaType]	644	0.184719
19	[Java, ByteCode, Member, Method, GenericDeclar...	569	0.163207
20	[Json, Key]	560	0.160626
21	[Value, Json, Scalar]	544	0.156036
22	[Type, File, Java, ByteCode, ExternalType]	380	0.108996
23	[Author, Git, Person]	298	0.085476
24	[Value, Array]	267	0.076584
25	[Committer, Git, Person]	252	0.072281
26	[Type, File, Java, ByteCode, Class, GenericDec...	236	0.067692
27	[Value, Property]	202	0.057940
28	[Type, File, Java, ByteCode, Interface]	188	0.053924
29	[Java, Value, ByteCode, Class]	172	0.049335

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>
```

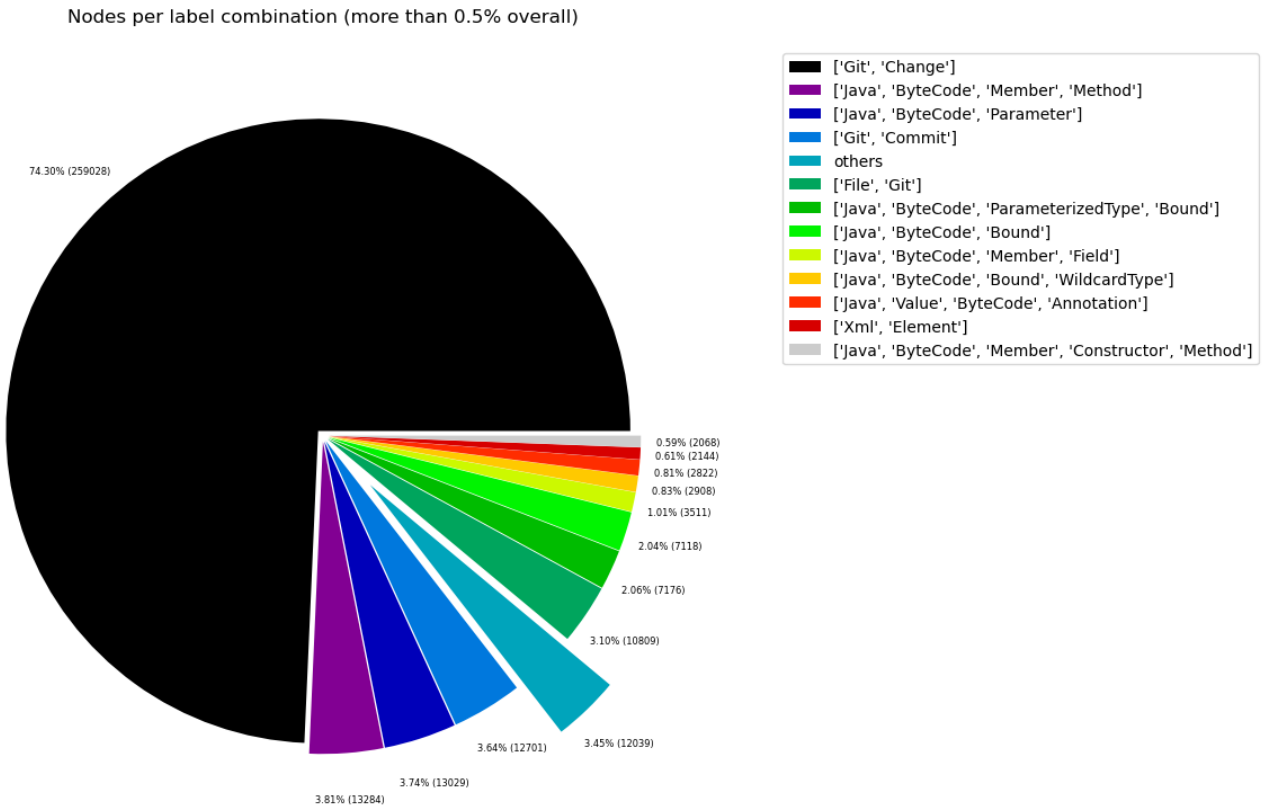


Table 1b - Lowest node count by label combination

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	0.000287
1	[Repository, File, Git]	1	0.000287
2	[File, Json]	2	0.000574
3	[File]	3	0.000860
4	[Java, ByteCode, Member, Constructor, Method, ...	4	0.001147
5	[Maven, Exclusion]	5	0.001434
6	[Value, Json, Array]	6	0.001721
7	[File, Maven, Xml, Pom, Document]	9	0.002581
8	[Type, File, Java, ByteCode, Void]	9	0.002581
9	[Java, ManifestSection]	9	0.002581
10	[File, Java, Manifest]	9	0.002581
11	[Artifact, File, Jar, Archive, Zip, Java]	9	0.002581
12	[File, Java, ServiceLoader]	10	0.002868
13	[File, Java, Properties]	12	0.003442
14	[Maven, ExecutionGoal]	16	0.004589
15	[Maven, PluginExecution]	16	0.004589
16	[Type, File, Java, ByteCode, Throwable, Extern...	16	0.004589
17	[Xml, Attribute]	18	0.005163
18	[jQAssistant, Rule, Concept]	19	0.005450
19	[Maven, Plugin]	21	0.006023
20	[Maven, Configuration]	21	0.006023
21	[Type, File, Java, ByteCode, Throwable, Resolv...	22	0.006310
22	[Type, File, Java, ByteCode, Enum]	28	0.008031
23	[Type, File, Java, ByteCode, PrimitiveType]	29	0.008318
24	[Git, Branch]	36	0.010326
25	[Xml, Namespace]	36	0.010326
26	[Type, File, Java, ByteCode, Annotation]	43	0.012334
27	[File, Directory]	44	0.012621
28	[Type, File, Java, ByteCode, Class, Throwable]	54	0.015489
29	[Type, File, Java, ByteCode, GenericDeclaratio...	85	0.024381

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>
```

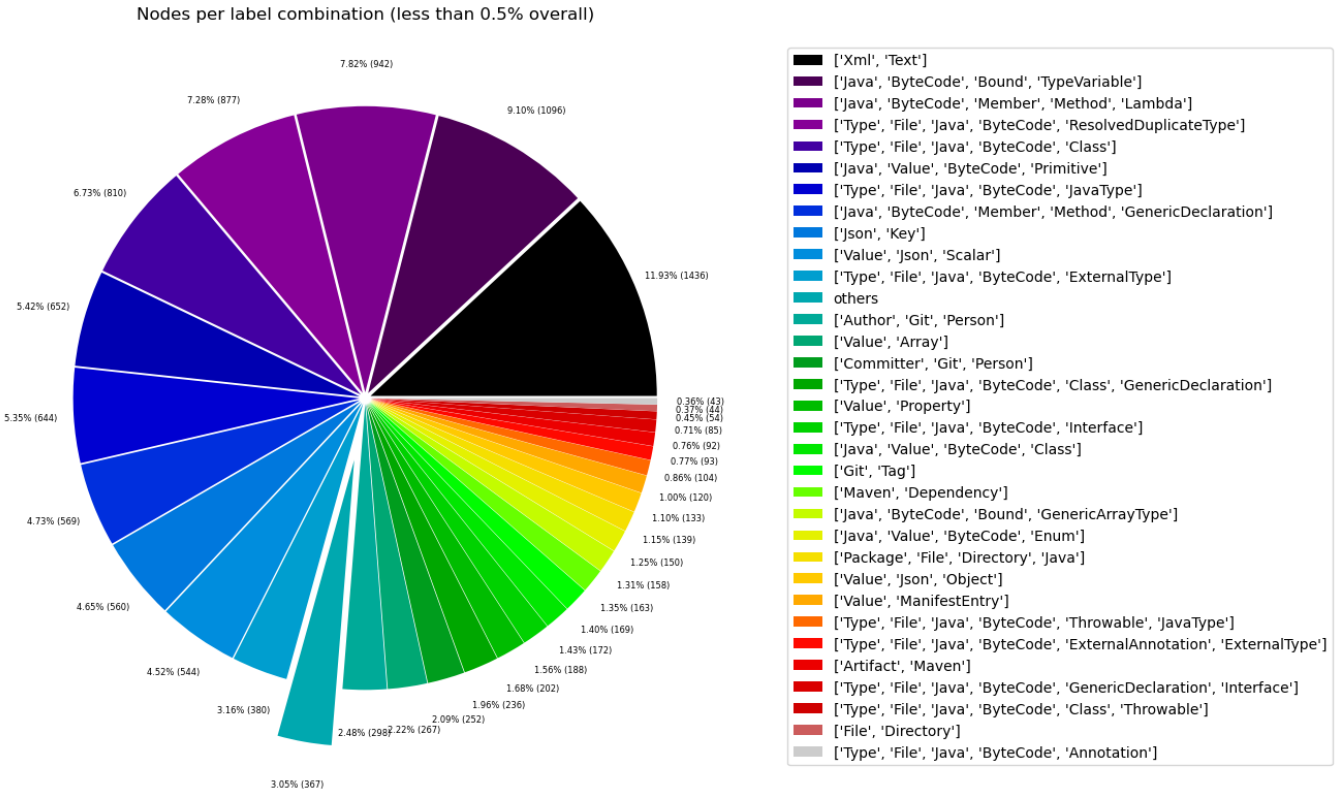


Table 1c - Highest node count by single label

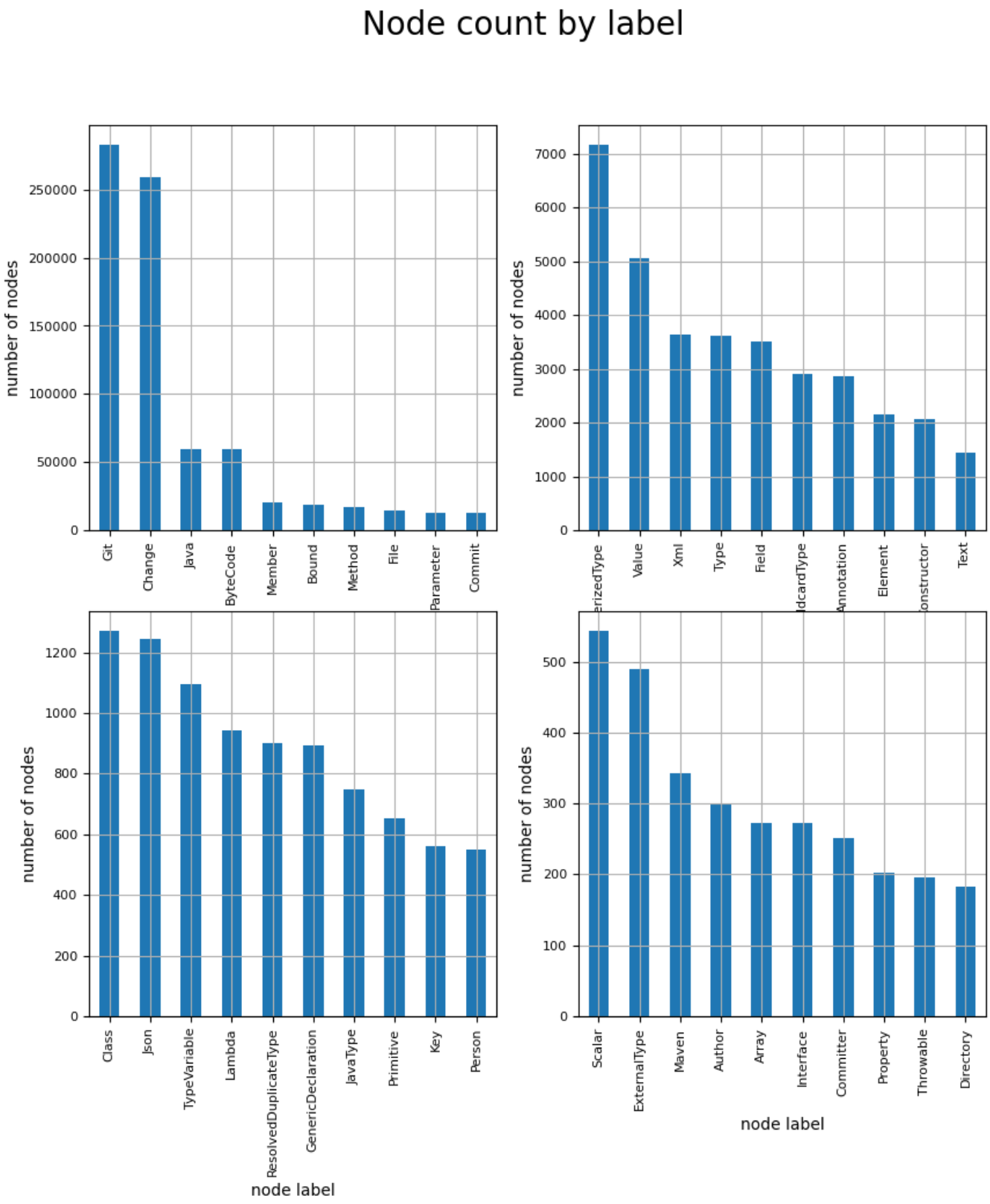
Lists the 40 labels with the highest number of nodes. Doesn't sum up to the total number of nodes or 100% because one node can have multiple labels. Helps to identify commonly used labels.

	nodeLabel	nodesWithThatLabel	nodesWithThatLabelPercent
0	Git	283294	81.257583
1	Change	259028	74.297335
2	Java	59465	17.056423
3	ByteCode	59277	17.002498
4	Member	20378	5.845048
5	Bound	18456	5.293758
6	Method	16867	4.837983
7	File	14665	4.206381
8	Parameter	13029	3.737125
9	Commit	12701	3.643044
10	ParameterizedType	7176	2.058301
11	Value	5068	1.453661
12	Xml	3643	1.044926
13	Type	3618	1.037756
14	Field	3511	1.007065
15	WildcardType	2908	0.834105
16	Annotation	2865	0.821772
17	Element	2144	0.614966
18	Constructor	2072	0.594314
19	Text	1436	0.411890
20	Class	1272	0.364849
21	Json	1245	0.357105
22	TypeVariable	1096	0.314367
23	Lambda	942	0.270195
24	ResolvedDuplicateType	899	0.257861
25	GenericDeclaration	894	0.256427
26	JavaType	748	0.214550
27	Primitive	652	0.187014
28	Key	560	0.160626
29	Person	550	0.157757
30	Scalar	544	0.156036
31	ExternalType	489	0.140261
32	Maven	343	0.098383
33	Author	298	0.085476
34	Array	273	0.078305
35	Interface	273	0.078305
36	Committer	252	0.072281
37	Property	202	0.057940
38	Throwable	196	0.056219
39	Directory	183	0.052490

Chart 1c - Highest node count by label

Shows the 40 labels with the highest number of nodes.

```
<Figure size 640x480 with 0 Axes>
```



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: 1082594
```

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	CONTAINS_CHANGE	259028	23.926606
1	MODIFIES	259028	23.926606
2	UPDATES	170406	15.740527
3	CREATES	61192	5.652350
4	DELETES	37976	3.507871
5	INVOKES	36005	3.325808
6	COMMITTED	25402	2.346401
7	DEPENDS_ON	21931	2.025783
8	OF_TYPE	21394	1.976179
9	DECLARES	20823	1.923436
10	OF_RAW_TYPE	17093	1.578893
11	HAS_PARENT	15382	1.420847
12	HAS	14125	1.304737
13	HAS_COMMIT	12701	1.173201
14	RETURNS	12578	1.161839
15	HAS_FILE	10809	0.998435
16	RENAMES	10546	0.974142
17	READS	9166	0.846670
18	HAS_ACTUAL_TYPE_ARGUMENT	8288	0.765569
19	HAS_NEW_NAME	6237	0.576116
20	OF_GENERIC_TYPE	5906	0.545542
21	RESOLVES_TO	5253	0.485223
22	SIMILAR	3977	0.367358
23	WRITES	3818	0.352671
24	CONTAINS	3814	0.352302
25	RETURNS_GENERIC	3545	0.327454
26	ANNOTATED_BY	2810	0.259562
27	REQUIRES	2174	0.200814
28	HAS_FIRST_CHILD	2144	0.198043
29	HAS_LAST_CHILD	2144	0.198043

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>
```

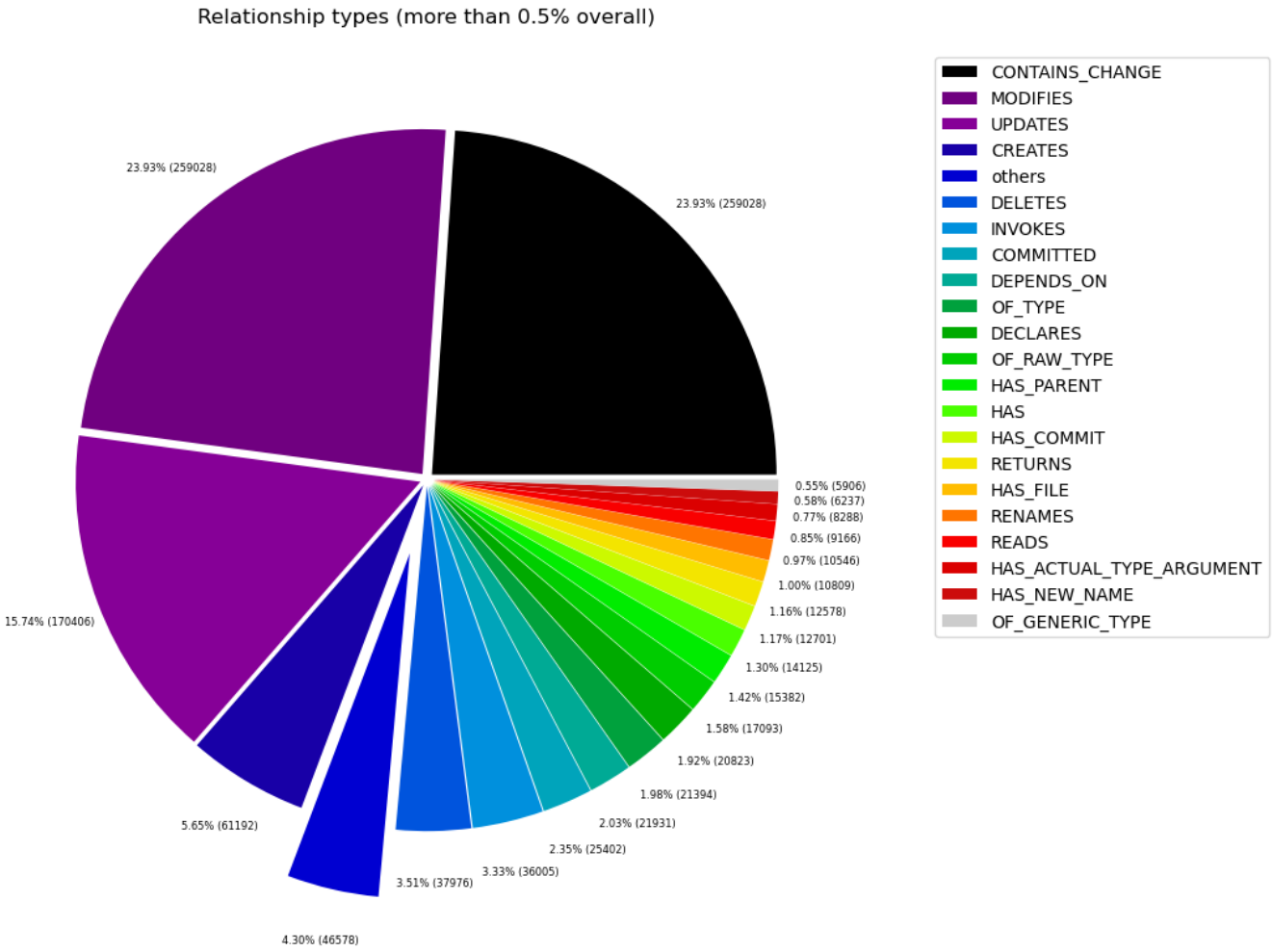


Table 2b - Lowest relationship count by type

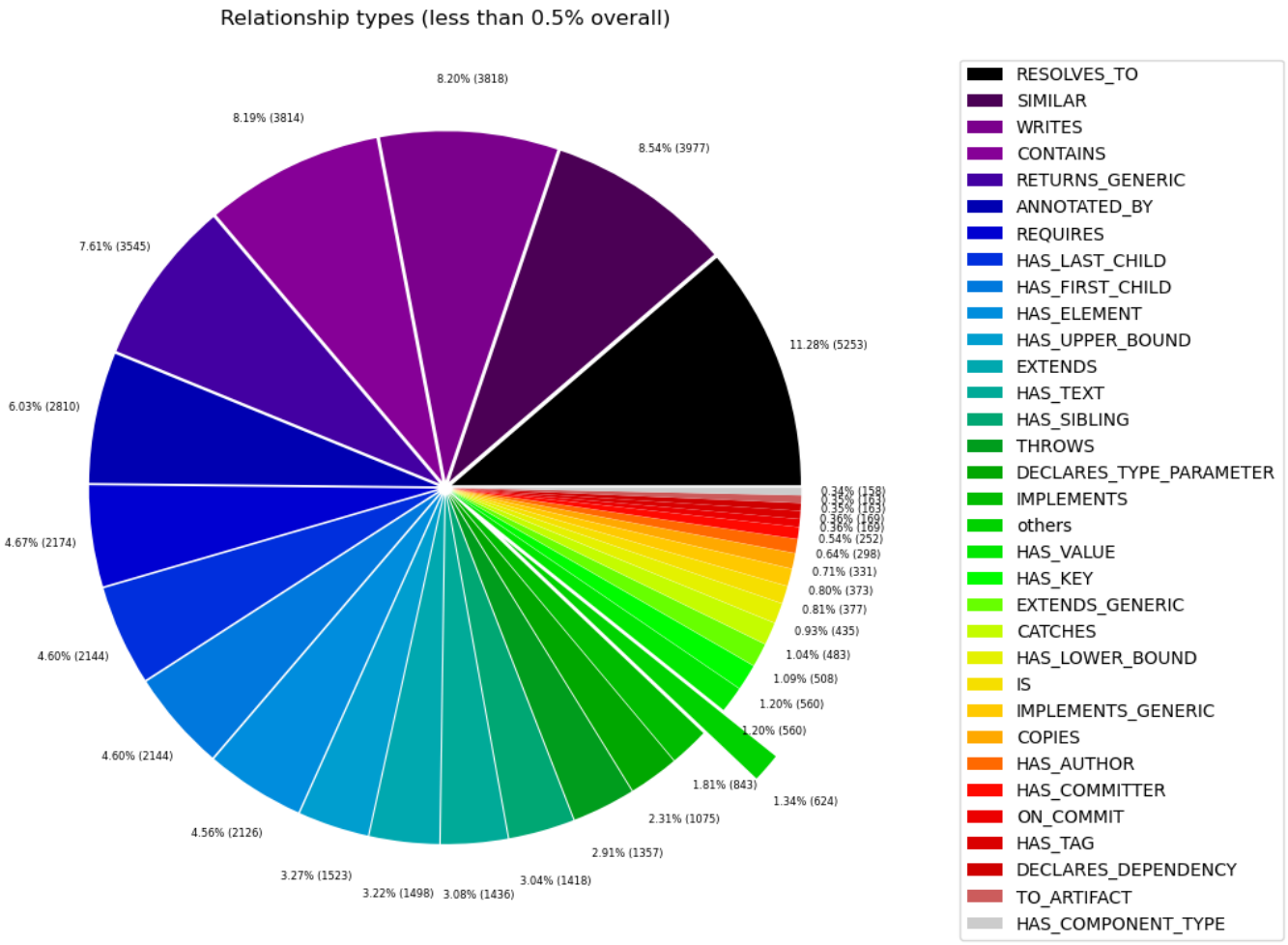
Lists the 30 relationships type with the lowest number of occurrences up to 0.5% of the total node count. This is essentially breaking down the "others" slice from the chart above.

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	HAS_PROPERTY	1	0.000092
1	THROWS_GENERIC	5	0.000462
2	EXCLUDES	5	0.000462
3	DESCRIBES	9	0.000831
4	HAS_ROOT_ELEMENT	13	0.001201
5	HAS_GOAL	16	0.001478
6	HAS_EXECUTION	16	0.001478
7	OF_NAMESPACE	18	0.001663
8	HAS_ATTRIBUTE	18	0.001663
9	INCLUDES_CONCEPT	19	0.001755
10	USES_PLUGIN	21	0.001940
11	IS_ARTIFACT	21	0.001940
12	HAS_CONFIGURATION	21	0.001940
13	REQUIRES_TYPE_PARAMETER	21	0.001940
14	REQUIRES_CONCEPT	28	0.002586
15	HAS_DEFAULT	36	0.003325
16	HAS_BRANCH	36	0.003325
17	DECLARES_NAMESPACE	36	0.003325
18	HAS_HEAD	37	0.003418
19	CONTAINS_VALUE	121	0.011177
20	COPY_OF	126	0.011639
21	HAS_COMPONENT_TYPE	158	0.014595
22	DECLARES_DEPENDENCY	163	0.015056
23	TO_ARTIFACT	163	0.015056
24	ON_COMMIT	169	0.015611
25	HAS_TAG	169	0.015611
26	HAS_COMMITTER	252	0.023277
27	HAS_AUTHOR	298	0.027526
28	COPIES	331	0.030575
29	IMPLEMENTS_GENERIC	373	0.034454

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, Change]	MODIFIES	[File, Git]	259028	259028	
1	[Git, Commit]	CONTAINS_CHANGE	[Git, Change]	259028	12701	
2	[Git, Change]	UPDATES	[File, Git]	170406	259028	
3	[Git, Change]	CREATES	[File, Git]	61192	259028	
4	[Git, Change]	DELETES	[File, Git]	37976	259028	
5	[Java, ByteCode, Member, Method]	INVOKES	[Java, ByteCode, Member, Method]	21955	13192	
6	[Git, Commit]	HAS_PARENT	[Git, Commit]	15373	12701	
7	[Repository, File, Git]	HAS_COMMIT	[Git, Commit]	12701	1	
8	[Committer, Git, Person]	COMMITTED	[Git, Commit]	12701	252	
9	[Author, Git, Person]	COMMITTED	[Git, Commit]	12701	298	
10	[Repository, File, Git]	HAS_FILE	[File, Git]	10809	1	
11	[Git, Change]	RENAMES	[File, Git]	10546	259028	
12	[Java, ByteCode, Member, Method]	HAS	[Java, ByteCode, Parameter]	8361	13192	
13	[Java, ByteCode, Member, Method]	READS	[Java, ByteCode, Member, Field]	8192	13192	
14	[File, Git]	HAS_NEW_NAME	[File, Git]	6237	10809	
15	[Java, ByteCode, Parameter]	OF_TYPE	[Type, File, Java, ByteCode, JavaType]	6079	13029	
16	[Type, File, Java, ByteCode, Class]	DECLARES	[Java, ByteCode, Member, Method]	5014	761	
17	[Type, File, Java, ByteCode, Class]	DEPENDS_ON	[Type, File, Java, ByteCode, JavaType]	3996	761	
18	[Java, ByteCode, Bound]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3427	7118	
19	[Java, ByteCode, ParameterizedType, Bound]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3053	7176	
20	[Java, ByteCode, ParameterizedType, Bound]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, WildcardType]	2908	7176	
21	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, ParameterizedType, Bound]	2657	13029	
22	[Java, ByteCode, ParameterizedType, Bound]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, TypeVariable]	2454	7176	
23	[Java, ByteCode, Member, Constructor, Method]	WRITES	[Java, ByteCode, Member, Field]	2438	2068	
24	[Java, Value, ByteCode, Annotation]	OF_TYPE	[Type, File, Java, ByteCode, ExternalAnnotatio...	2341	2822	
25	[Xml, Element]	HAS_ELEMENT	[Xml, Element]	2126	2144	
26	[Java, ByteCode, Member, Constructor, Method]	INVOKES	[Java, ByteCode, Member, Constructor, Method]	2123	2068	
27	[Type, File, Java, ByteCode, Class]	DECLARES	[Java, ByteCode, Member, Field]	2091	761	
28	[Java, ByteCode, Member, Method]	RETURNS	[Type, File, Java, ByteCode, JavaType]	2078	13192	
29	[Type, File, Java, ByteCode, Class, GenericDec...	DECLARES	[Java, ByteCode, Member, Method]	2070	229	

Graph Density

```
total_number_of_nodes (vertices): 348637
total_number_of_relationships (edges): 1082594
-> total directed graph density: 8.90676327641264e-06
-> total directed graph density in percent: 0.0008906763276412641
```