# 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%).

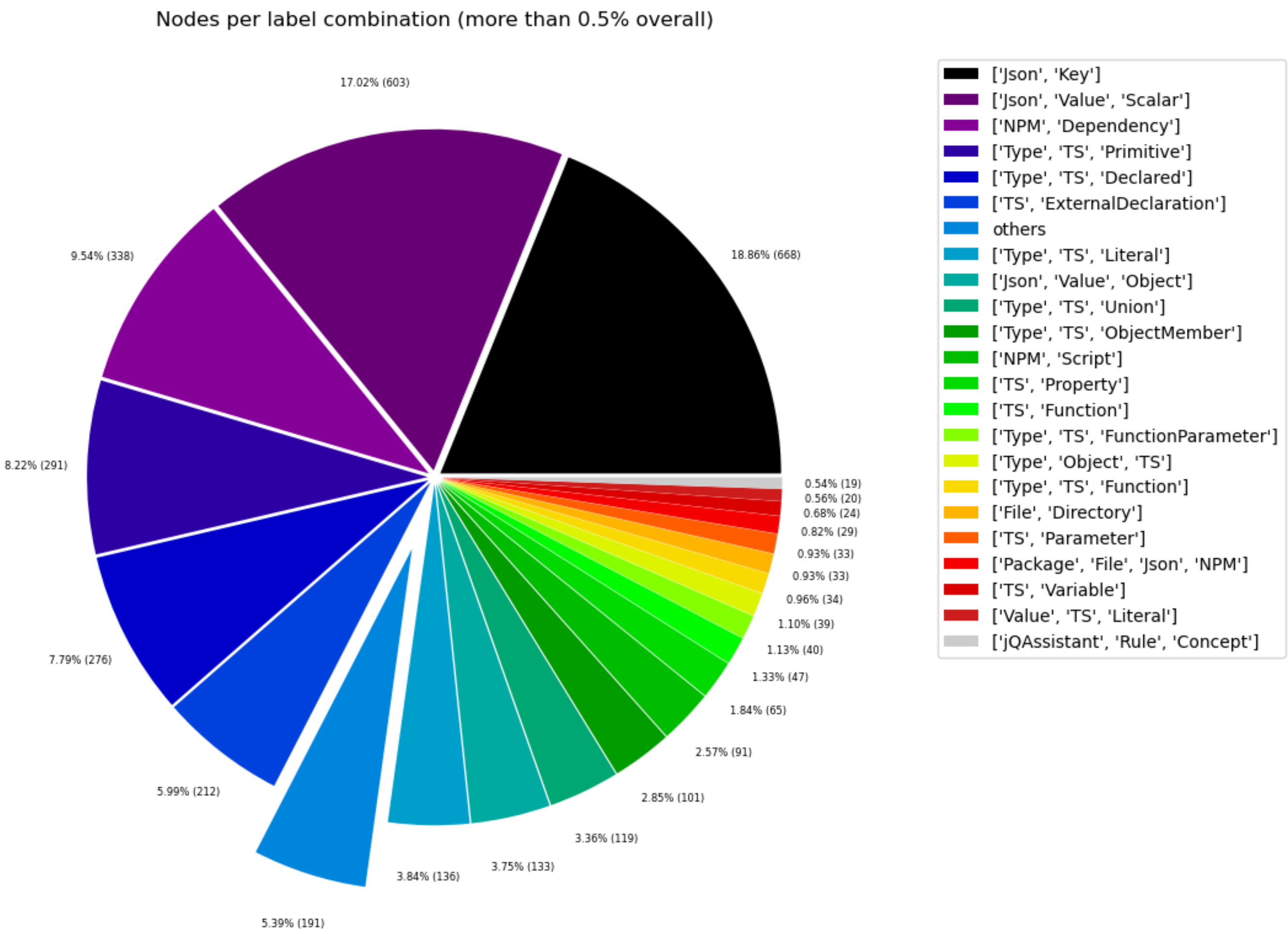
The whole table can be found in the CSV report `Node_label_combination_count`.

|  | nodeLabels | nodesWithThatLabels | nodesWithThatLabelsPercent |
|---|---|---|---|
| **0** | [Json, Key] | 668 | 18.859401 |
| **1** | [Json, Value, Scalar] | 603 | 17.024280 |
| **2** | [NPM, Dependency] | 338 | 9.542631 |
| **3** | [Type, TS, Primitive] | 291 | 8.215697 |
| **4** | [Type, TS, Declared] | 276 | 7.792208 |
| **5** | [TS, ExternalDeclaration] | 212 | 5.985319 |
| **6** | [Type, TS, Literal] | 136 | 3.839639 |
| **7** | [Json, Value, Object] | 133 | 3.754941 |
| **8** | [Type, TS, Union] | 119 | 3.359684 |
| **9** | [Type, TS, ObjectMember] | 101 | 2.851496 |
| **10** | [NPM, Script] | 91 | 2.569170 |
| **11** | [TS, Property] | 65 | 1.835121 |
| **12** | [TS, Function] | 47 | 1.326934 |
| **13** | [Type, TS, FunctionParameter] | 40 | 1.129305 |
| **14** | [Type, Object, TS] | 39 | 1.101073 |
| **15** | [Type, TS, Function] | 34 | 0.959910 |
| **16** | [File, Directory] | 33 | 0.931677 |
| **17** | [TS, Parameter] | 33 | 0.931677 |
| **18** | [Package, File, Json, NPM] | 29 | 0.818746 |
| **19** | [TS, Variable] | 24 | 0.677583 |
| **20** | [Value, TS, Literal] | 20 | 0.564653 |
| **21** | [jQAssistant, Rule, Concept] | 19 | 0.536420 |
| **22** | [File, Directory, Local] | 17 | 0.479955 |
| **23** | [Type, TS, Intersection] | 17 | 0.479955 |
| **24** | [TS, Interface] | 17 | 0.479955 |
| **25** | [TS, TypeAlias] | 16 | 0.451722 |
| **26** | [Value, TS, Declared] | 13 | 0.367024 |
| **27** | [Json, Value, Array] | 12 | 0.338792 |
| **28** | [TS, ExternalModule] | 11 | 0.310559 |
| **29** | [Type, TS, NotIdentified] | 11 | 0.310559 |

## 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

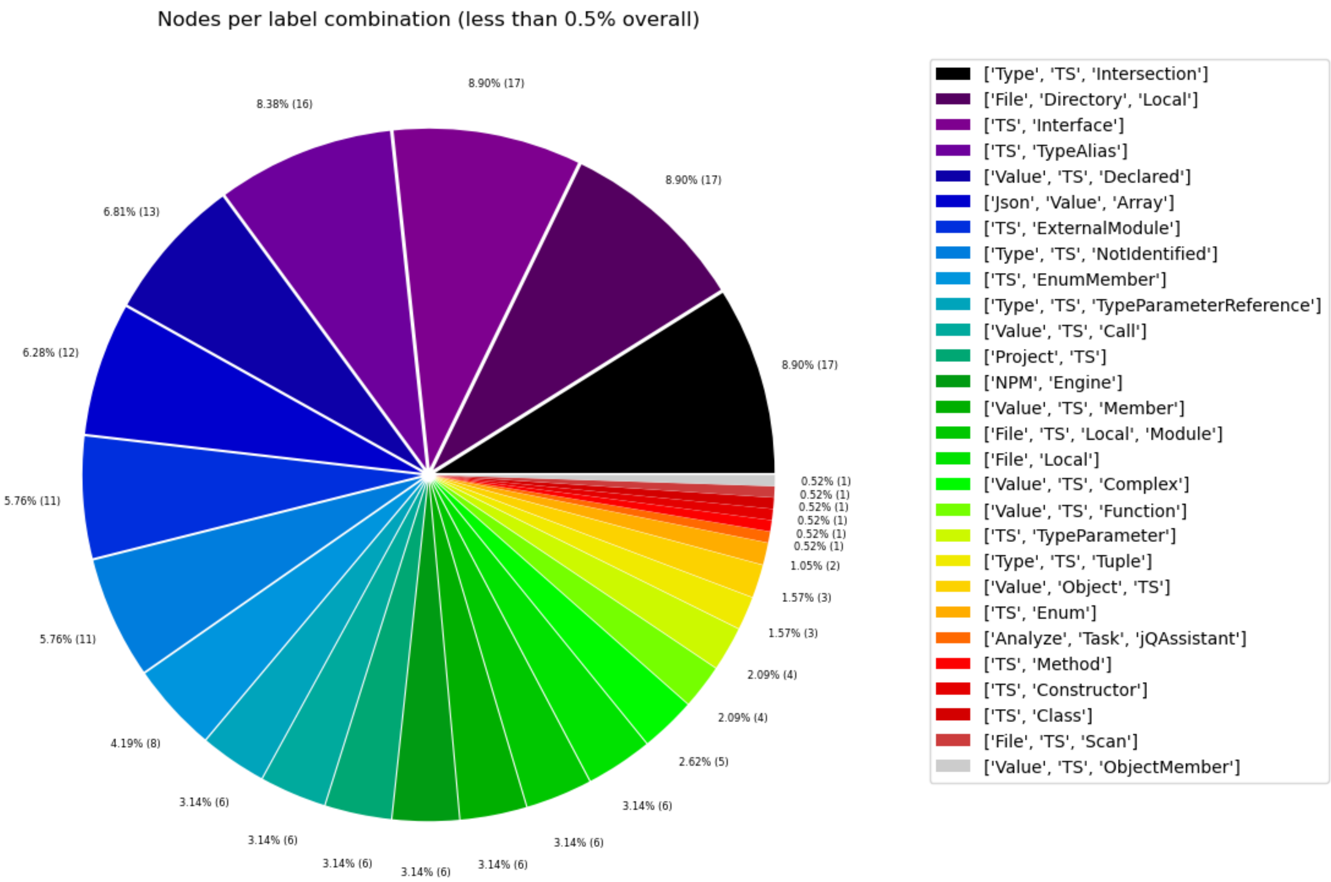
Lists the 30 label combinations with the lowest number of nodes until they reach 0.5% of the total node count, which are shown above.

|  | nodeLabels | nodesWithThatLabels | nodesWithThatLabelsPercent |
|---|---|---|---|
| **0** | [Analyze, Task, jQAssistant] | 1 | 0.028233 |
| **1** | [File, TS, Scan] | 1 | 0.028233 |
| **2** | [TS, Method] | 1 | 0.028233 |
| **3** | [Value, TS, ObjectMember] | 1 | 0.028233 |
| **4** | [TS, Constructor] | 1 | 0.028233 |
| **5** | [TS, Class] | 1 | 0.028233 |
| **6** | [TS, Enum] | 2 | 0.056465 |
| **7** | [Value, Object, TS] | 3 | 0.084698 |
| **8** | [Type, TS, Tuple] | 3 | 0.084698 |
| **9** | [Value, TS, Function] | 4 | 0.112931 |
| **10** | [TS, TypeParameter] | 4 | 0.112931 |
| **11** | [Value, TS, Complex] | 5 | 0.141163 |
| **12** | [NPM, Engine] | 6 | 0.169396 |
| **13** | [Project, TS] | 6 | 0.169396 |
| **14** | [File, Local] | 6 | 0.169396 |
| **15** | [File, TS, Local, Module] | 6 | 0.169396 |
| **16** | [Value, TS, Member] | 6 | 0.169396 |
| **17** | [Type, TS, TypeParameterReference] | 6 | 0.169396 |
| **18** | [Value, TS, Call] | 6 | 0.169396 |
| **19** | [TS, EnumMember] | 8 | 0.225861 |
| **20** | [Type, TS, NotIdentified] | 11 | 0.310559 |
| **21** | [TS, ExternalModule] | 11 | 0.310559 |
| **22** | [Json, Value, Array] | 12 | 0.338792 |
| **23** | [Value, TS, Declared] | 13 | 0.367024 |
| **24** | [TS, TypeAlias] | 16 | 0.451722 |
| **25** | [TS, Interface] | 17 | 0.479955 |
| **26** | [File, Directory, Local] | 17 | 0.479955 |
| **27** | [Type, TS, Intersection] | 17 | 0.479955 |

## 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

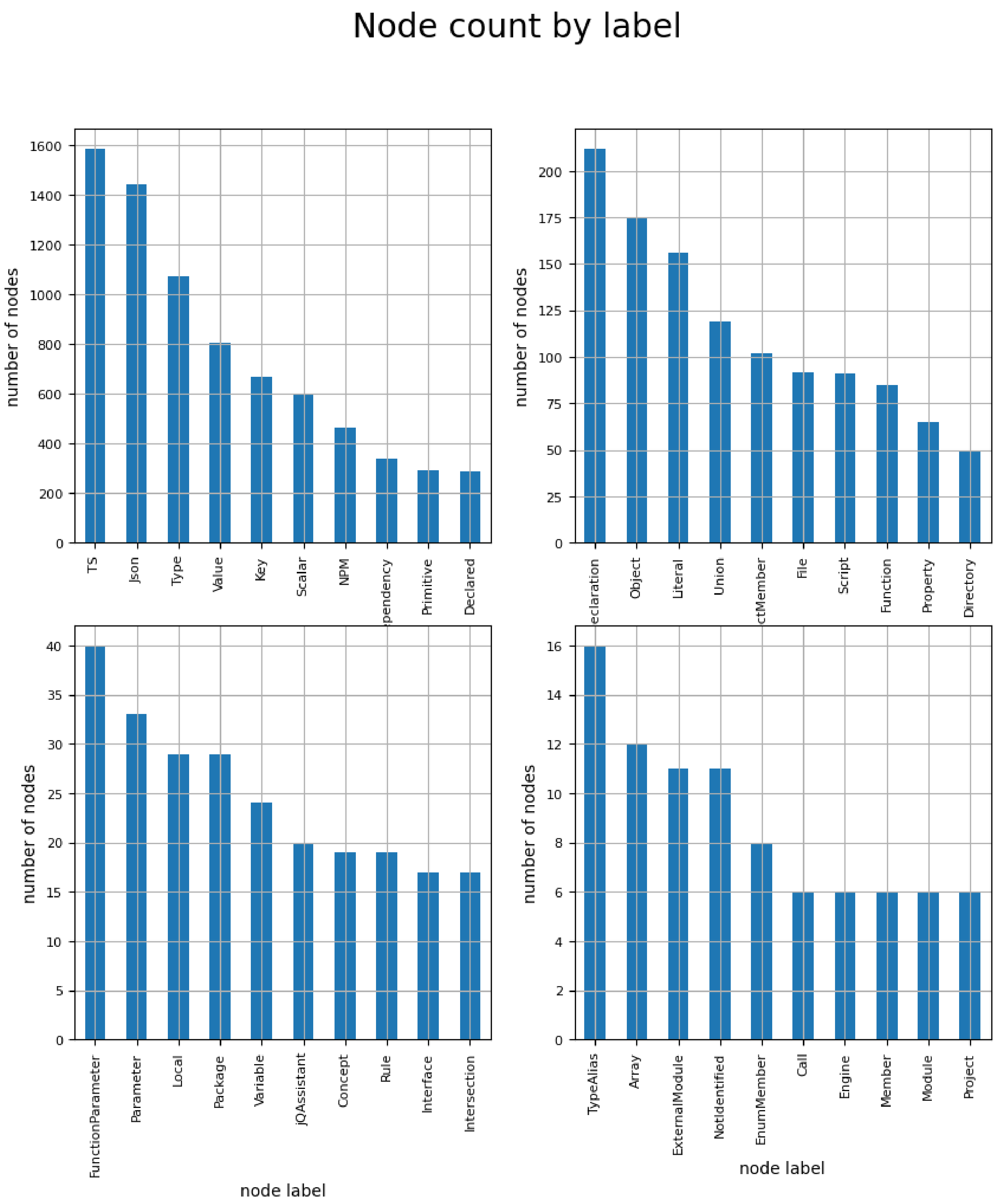
Lists the 40 labels with the highest number of nodes. Doesn't sum up to the total number of nodes or 100% because one node can have multiple labels. Helps to identify commonly used labels.

| | nodeLabel | nodesWithThatLabel | nodesWithThatLabelPercent |
|---|---|---|---|
| **0** | TS | 1586 | 44.776962 |
| **1** | Json | 1445 | 40.796160 |
| **2** | Type | 1073 | 30.293619 |
| **3** | Value | 806 | 22.755505 |
| **4** | Key | 668 | 18.859401 |
| **5** | Scalar | 603 | 17.024280 |
| **6** | NPM | 464 | 13.099944 |
| **7** | Dependency | 338 | 9.542631 |
| **8** | Primitive | 291 | 8.215697 |
| **9** | Declared | 289 | 8.159232 |
| **10** | ExternalDeclaration | 212 | 5.985319 |
| **11** | Object | 175 | 4.940711 |
| **12** | Literal | 156 | 4.404291 |
| **13** | Union | 119 | 3.359684 |
| **14** | ObjectMember | 102 | 2.879729 |
| **15** | File | 92 | 2.597403 |
| **16** | Script | 91 | 2.569170 |
| **17** | Function | 85 | 2.399774 |
| **18** | Property | 65 | 1.835121 |
| **19** | Directory | 50 | 1.411632 |
| **20** | FunctionParameter | 40 | 1.129305 |
| **21** | Parameter | 33 | 0.931677 |
| **22** | Local | 29 | 0.818746 |
| **23** | Package | 29 | 0.818746 |
| **24** | Variable | 24 | 0.677583 |
| **25** | jQAssistant | 20 | 0.564653 |
| **26** | Concept | 19 | 0.536420 |
| **27** | Rule | 19 | 0.536420 |
| **28** | Interface | 17 | 0.479955 |
| **29** | Intersection | 17 | 0.479955 |
| **30** | TypeAlias | 16 | 0.451722 |
| **31** | Array | 12 | 0.338792 |
| **32** | ExternalModule | 11 | 0.310559 |
| **33** | NotIdentified | 11 | 0.310559 |
| **34** | EnumMember | 8 | 0.225861 |
| **35** | Call | 6 | 0.169396 |
| **36** | Engine | 6 | 0.169396 |
| **37** | Member | 6 | 0.169396 |
| **38** | Module | 6 | 0.169396 |
| **39** | Project | 6 | 0.169396 |

## 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`.

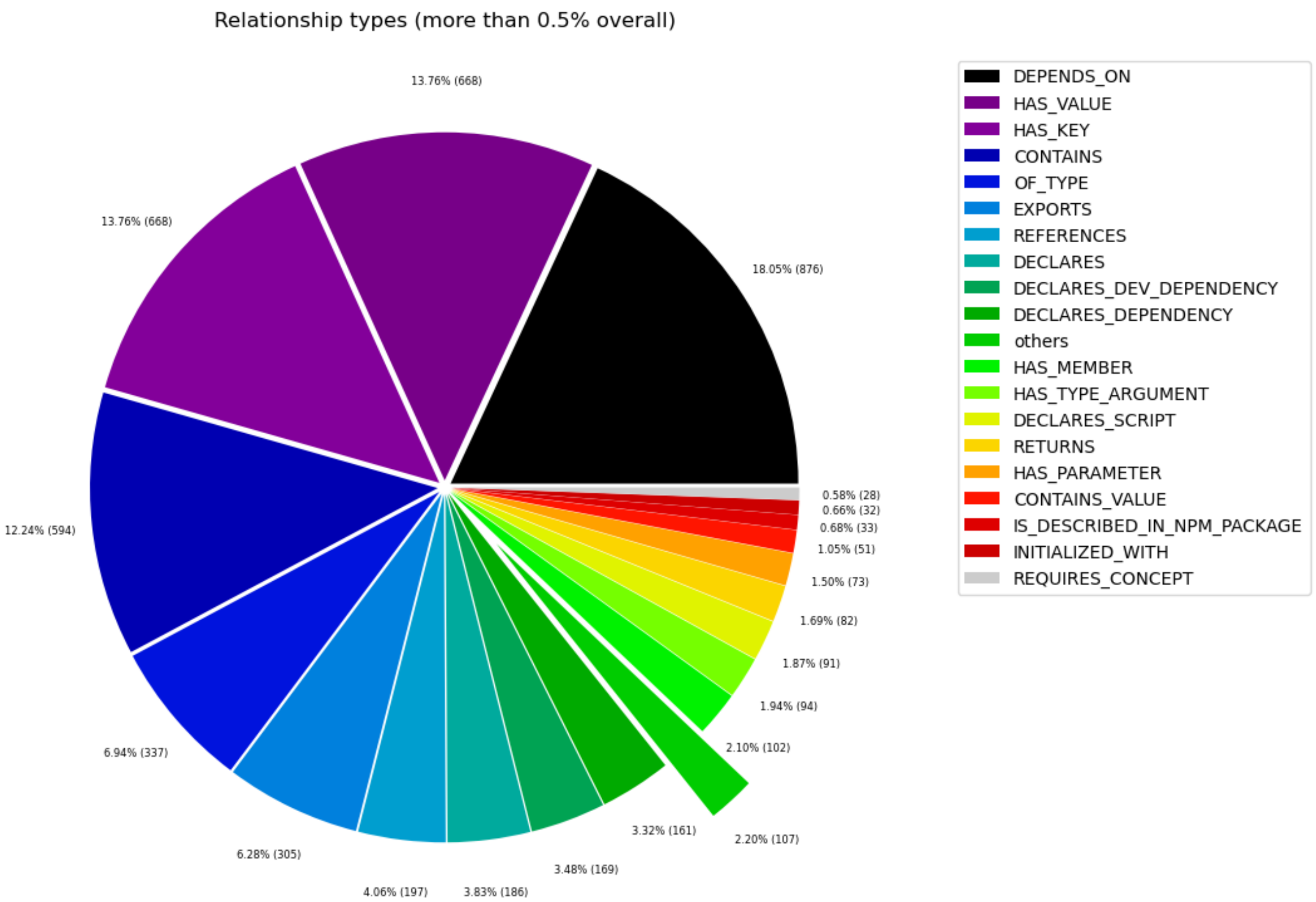
```
Total number of relationships: 4854
```

| | relationshipType | nodesWithThatRelationshipType | nodesWithThatRelationshipTypePercent |
|---|---|---|---|
| **0** | DEPENDS_ON | 876 | 18.046972 |
| **1** | HAS_KEY | 668 | 13.761846 |
| **2** | HAS_VALUE | 668 | 13.761846 |
| **3** | CONTAINS | 594 | 12.237330 |
| **4** | OF_TYPE | 337 | 6.942728 |
| **5** | EXPORTS | 305 | 6.283478 |
| **6** | REFERENCES | 197 | 4.058508 |
| **7** | DECLARES | 186 | 3.831891 |
| **8** | DECLARES_DEV_DEPENDENCY | 169 | 3.481665 |
| **9** | DECLARES_DEPENDENCY | 161 | 3.316852 |
| **10** | HAS_MEMBER | 102 | 2.101360 |
| **11** | HAS_TYPE_ARGUMENT | 94 | 1.936547 |
| **12** | DECLARES_SCRIPT | 91 | 1.874742 |
| **13** | RETURNS | 82 | 1.689328 |
| **14** | HAS_PARAMETER | 73 | 1.503914 |
| **15** | CONTAINS_VALUE | 51 | 1.050680 |
| **16** | IS_DESCRIBED_IN_NPM_PACKAGE | 33 | 0.679852 |
| **17** | INITIALIZED_WITH | 32 | 0.659250 |
| **18** | REQUIRES_CONCEPT | 28 | 0.576844 |
| **19** | INCLUDES_CONCEPT | 19 | 0.391430 |
| **20** | USES | 11 | 0.226617 |
| **21** | DECLARES_PEER_DEPENDENCY | 8 | 0.164813 |
| **22** | CALLS | 6 | 0.123609 |
| **23** | CONTAINS_PROJECT | 6 | 0.123609 |
| **24** | DECLARES_ENGINE | 6 | 0.123609 |
| **25** | EXTENDS | 6 | 0.123609 |
| **26** | HAS_ARGUMENT | 6 | 0.123609 |
| **27** | HAS_CONFIG | 6 | 0.123609 |
| **28** | HAS_NPM_PACKAGE | 6 | 0.123609 |
| **29** | HAS_ROOT | 6 | 0.123609 |

## 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

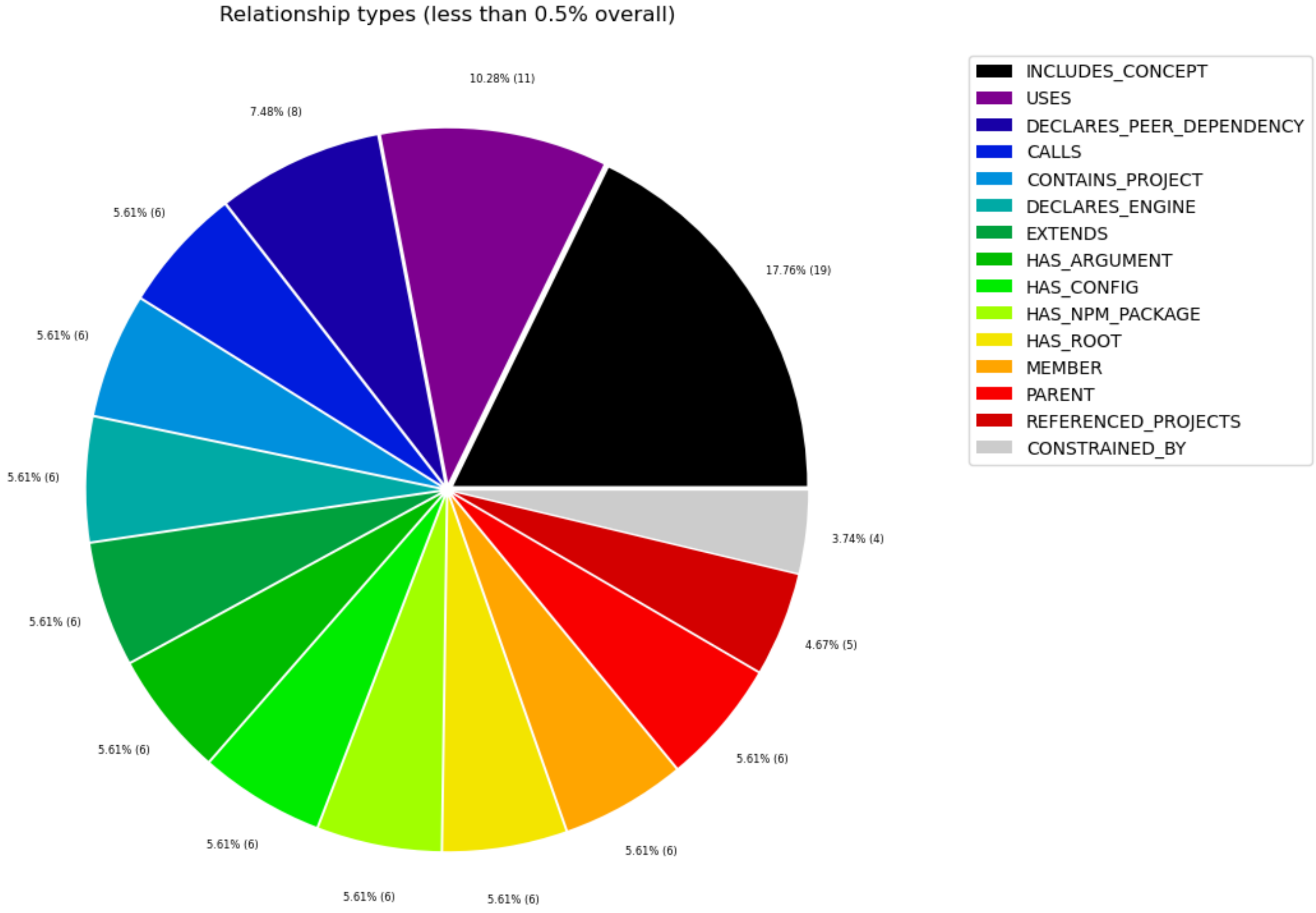
Lists the 30 relationships type with the lowest number of occurrences up to 0.5% of the total node count. This is essentially breaking down the "others" slice from the chart above.

| | relationshipType | nodesWithThatRelationshipType | nodesWithThatRelationshipTypePercent |
|---|---|---|---|
| **0** | CONSTRAINED_BY | 4 | 0.082406 |
| **1** | REFERENCED_PROJECTS | 5 | 0.103008 |
| **2** | MEMBER | 6 | 0.123609 |
| **3** | HAS_ROOT | 6 | 0.123609 |
| **4** | HAS_NPM_PACKAGE | 6 | 0.123609 |
| **5** | HAS_CONFIG | 6 | 0.123609 |
| **6** | HAS_ARGUMENT | 6 | 0.123609 |
| **7** | EXTENDS | 6 | 0.123609 |
| **8** | CONTAINS_PROJECT | 6 | 0.123609 |
| **9** | CALLS | 6 | 0.123609 |
| **10** | PARENT | 6 | 0.123609 |
| **11** | DECLARES_ENGINE | 6 | 0.123609 |
| **12** | DECLARES_PEER_DEPENDENCY | 8 | 0.164813 |
| **13** | USES | 11 | 0.226617 |
| **14** | INCLUDES_CONCEPT | 19 | 0.391430 |

## 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>
```



Relationship types (less than 0.5% overall)

# 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 | numberOfNodesWithSa |
|---|---|---|---|---|---|---|
| **0** | [Json, Value, Object] | HAS_KEY | [Json, Key] | 668 | 133 | |
| **1** | [Json, Key] | HAS_VALUE | [Json, Value, Scalar] | 552 | 668 | |
| **2** | [TS, Function] | DEPENDS_ON | [TS, ExternalDeclaration] | 289 | 47 | |
| **3** | [File, TS, Local, Module] | DEPENDS_ON | [TS, ExternalDeclaration] | 233 | 6 | |
| **4** | [TS, ExternalModule] | EXPORTS | [TS, ExternalDeclaration] | 212 | 11 | |
| **5** | [Package, File, Json, NPM] | DECLARES_DEV_DEPENDENCY | [NPM, Dependency] | 169 | 29 | |
| **6** | [Package, File, Json, NPM] | DECLARES_DEPENDENCY | [NPM, Dependency] | 161 | 29 | |
| **7** | [Type, TS, Union] | CONTAINS | [Type, TS, Primitive] | 147 | 119 | |
| **8** | [Type, TS, Declared] | REFERENCES | [TS, ExternalDeclaration] | 143 | 276 | |
| **9** | [Type, TS, Union] | CONTAINS | [Type, TS, Literal] | 119 | 119 | |
| **10** | [Json, Key] | HAS_VALUE | [Json, Value, Object] | 104 | 668 | |
| **11** | [Type, Object, TS] | HAS_MEMBER | [Type, TS, ObjectMember] | 101 | 39 | |
| **12** | [Package, File, Json, NPM] | DECLARES_SCRIPT | [NPM, Script] | 91 | 29 | |
| **13** | [TS, Function] | DEPENDS_ON | [TS, ExternalModule] | 76 | 47 | |
| **14** | [Type, TS, Union] | CONTAINS | [Type, TS, Declared] | 70 | 119 | |
| **15** | [File, Directory] | CONTAINS | [File, Directory] | 63 | 33 | |
| **16** | [TS, Interface] | DECLARES | [TS, Property] | 61 | 17 | |
| **17** | [File, Directory] | CONTAINS | [Package, File, Json, NPM] | 58 | 33 | |
| **18** | [Json, Value, Array] | CONTAINS_VALUE | [Json, Value, Scalar] | 51 | 12 | |
| **19** | [File, TS, Local, Module] | DECLARES | [TS, Function] | 47 | 6 | |
| **20** | [TS, Property] | OF_TYPE | [Type, TS, Union] | 46 | 65 | |
| **21** | [TS, Variable] | DEPENDS_ON | [TS, ExternalDeclaration] | 44 | 24 | |
| **22** | [Type, TS, Declared] | HAS_TYPE_ARGUMENT | [Type, TS, Declared] | 41 | 276 | |
| **23** | [Type, TS, Function] | HAS_PARAMETER | [Type, TS, FunctionParameter] | 40 | 34 | |
| **24** | [Type, TS, ObjectMember] | OF_TYPE | [Type, TS, Union] | 35 | 101 | |
| **25** | [NPM, Dependency] | IS_DESCRIBED_IN_NPM_PACKAGE | [Package, File, Json, NPM] | 33 | 338 | |
| **26** | [TS, Function] | HAS_PARAMETER | [TS, Parameter] | 33 | 47 | |
| **27** | [Type, TS, ObjectMember] | OF_TYPE | [Type, TS, Primitive] | 32 | 101 | |
| **28** | [File, TS, Local, Module] | EXPORTS | [TS, ExternalDeclaration] | 32 | 6 | |
| **29** | [File, TS, Local, Module] | EXPORTS | [TS, Function] | 31 | 6 | |

# Graph Density

```
total_number_of_nodes (vertices): 3542
total_number_of_relationships (edges): 4854
-> total directed graph density: 0.00038701276376705817
-> total directed graph density in percent: 0.03870127637670582
```