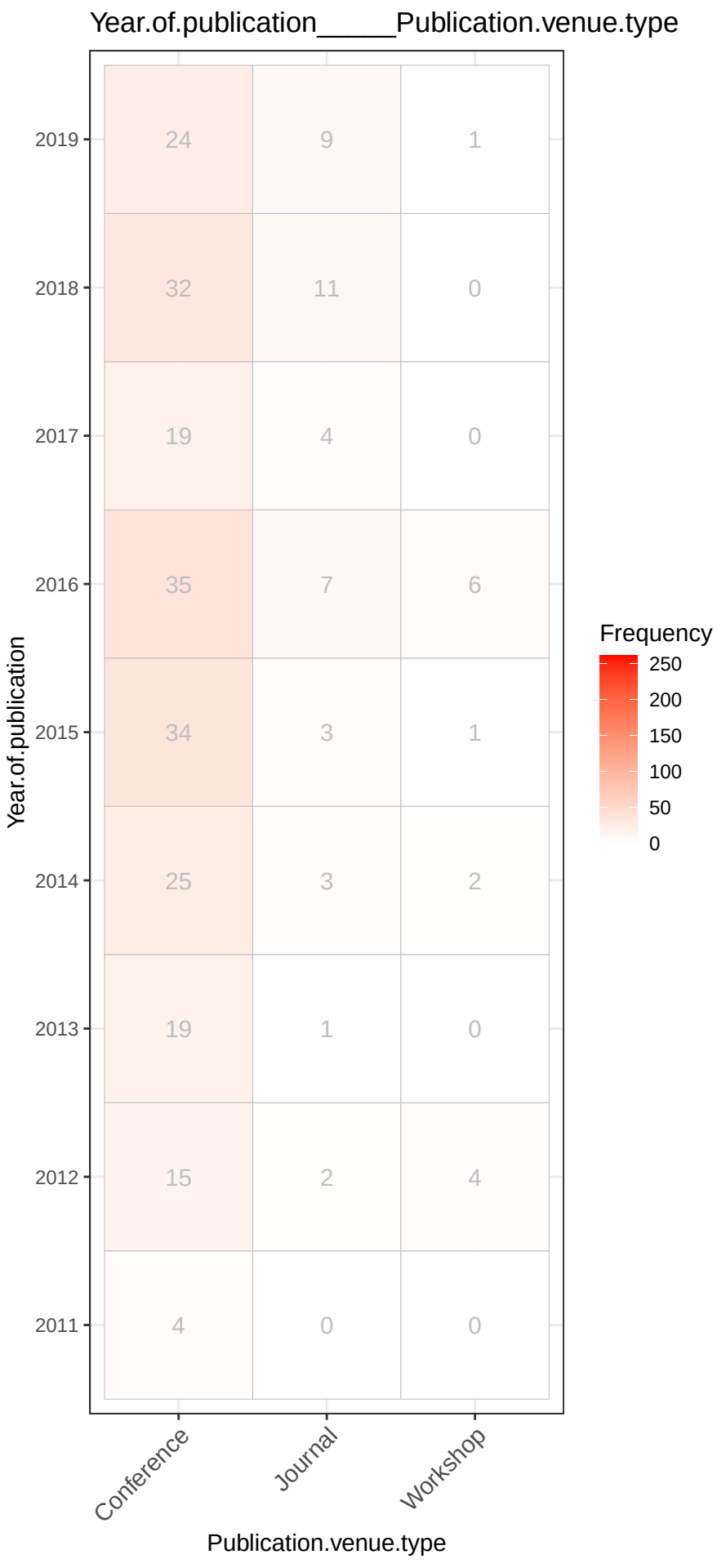
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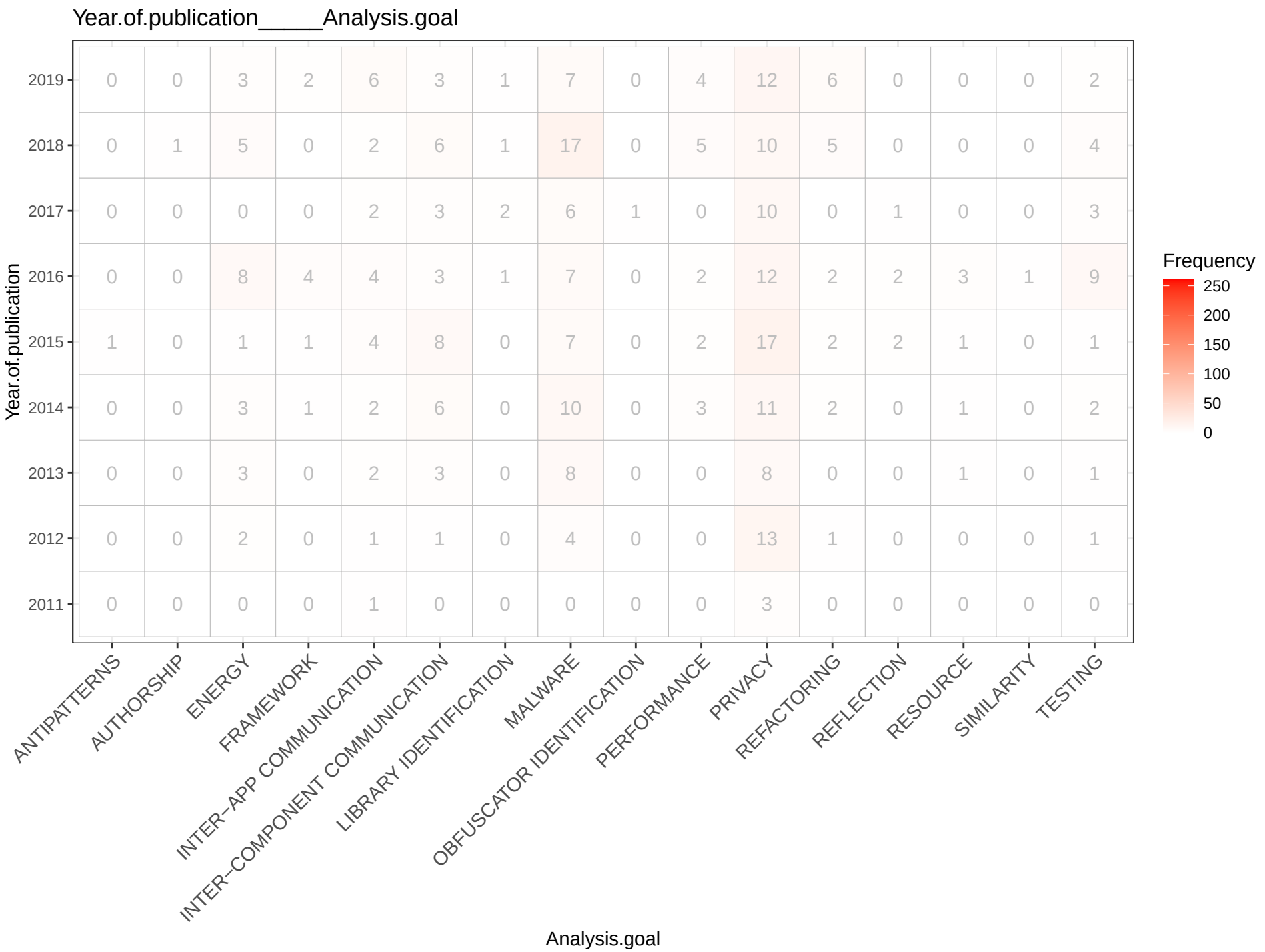
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INTER−COMPONENT COMMUNICATION
LIBRARY IDENTIFICATION
MALWARE
OBFUSCATOR IDENTIFICATION
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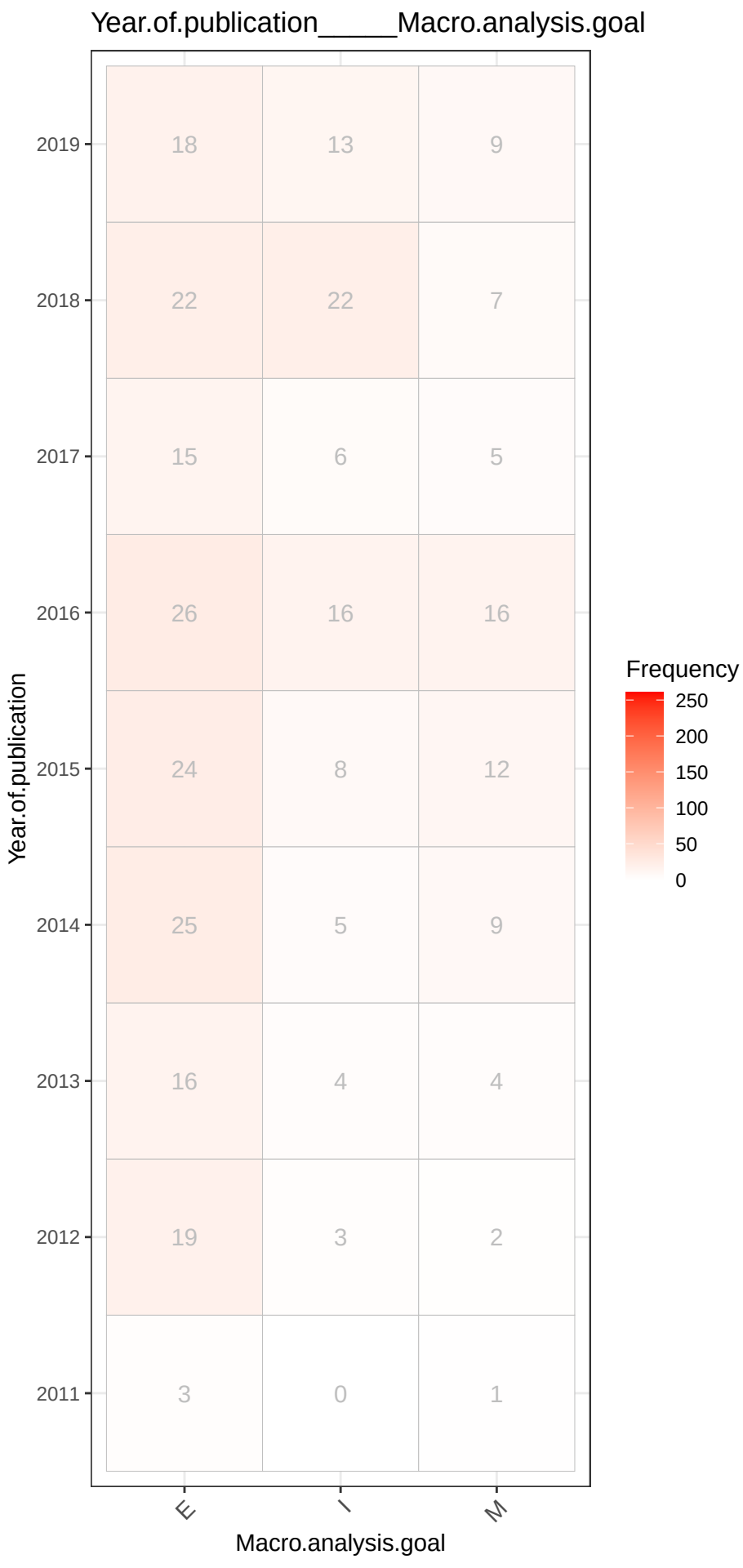
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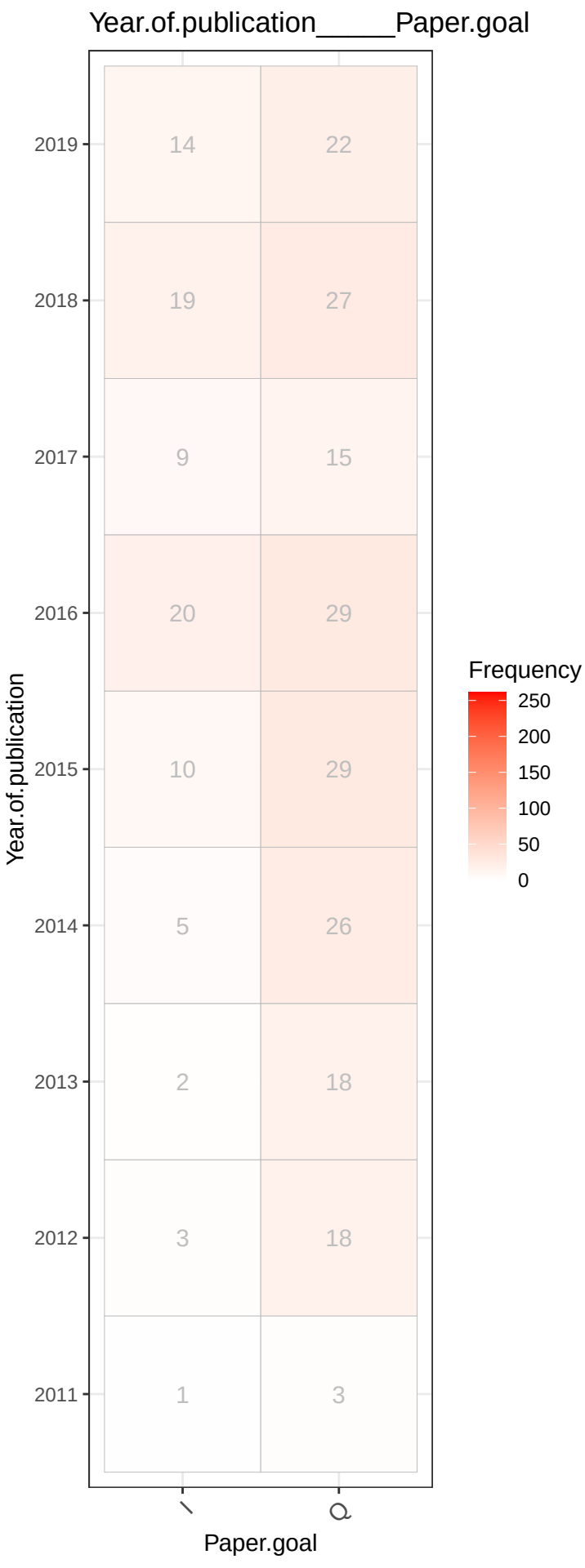
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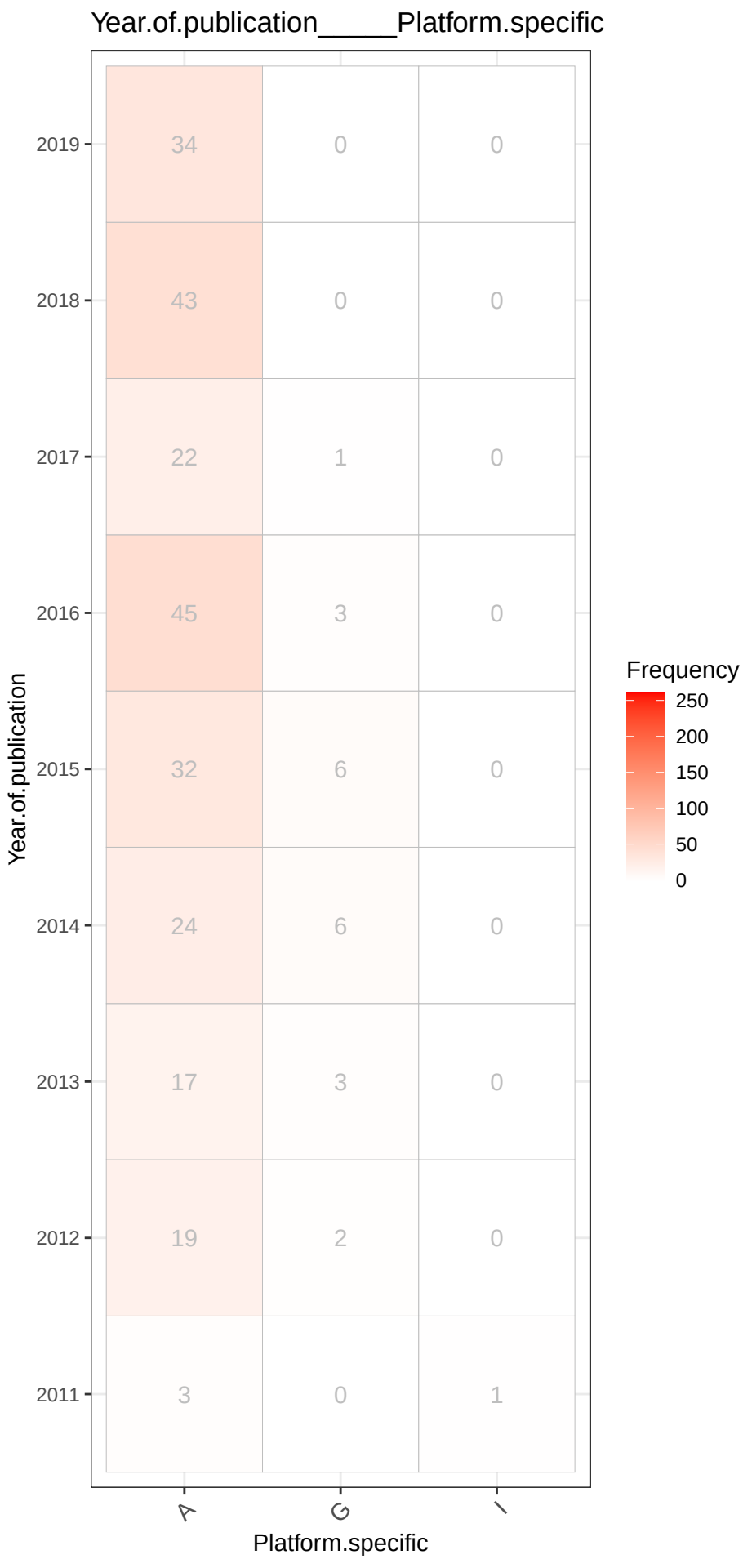
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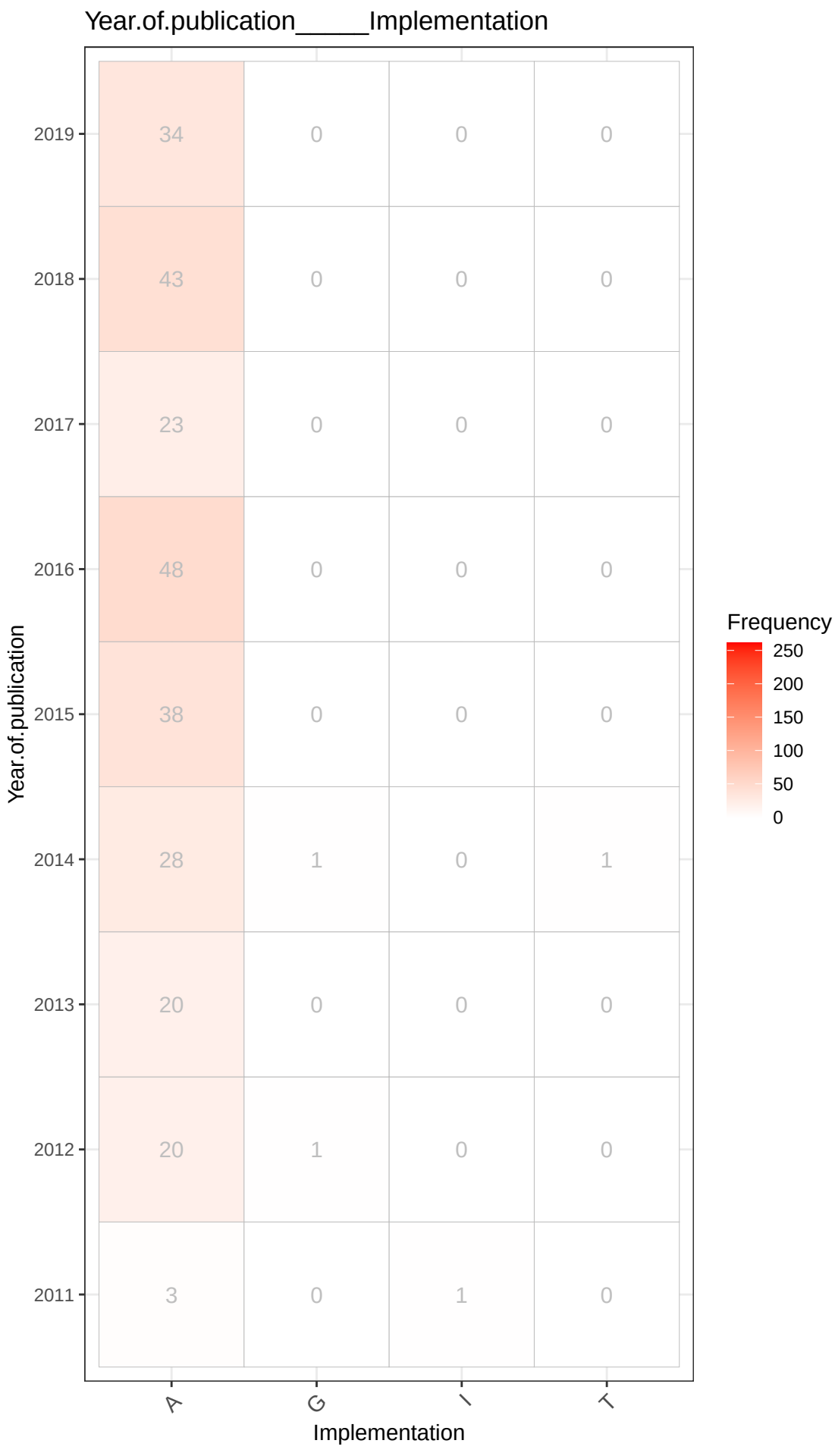
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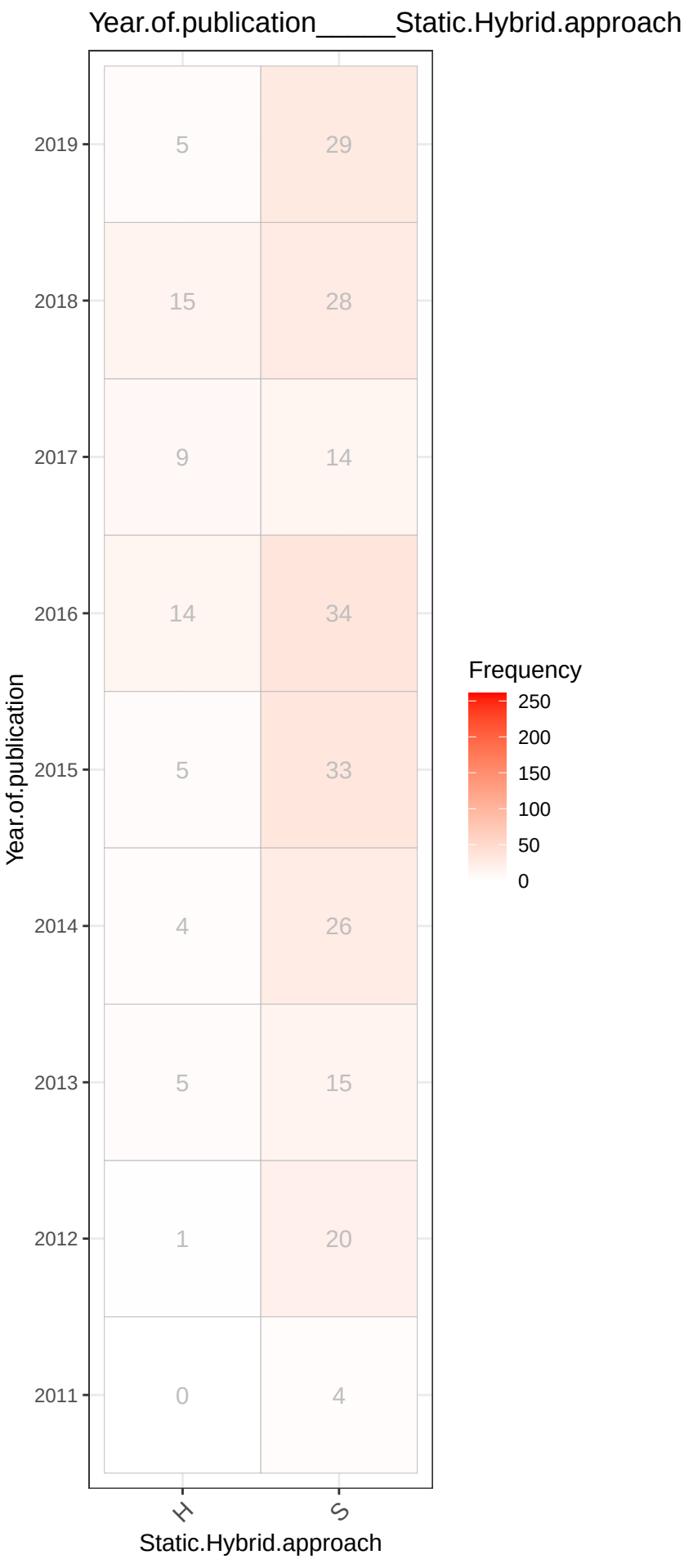
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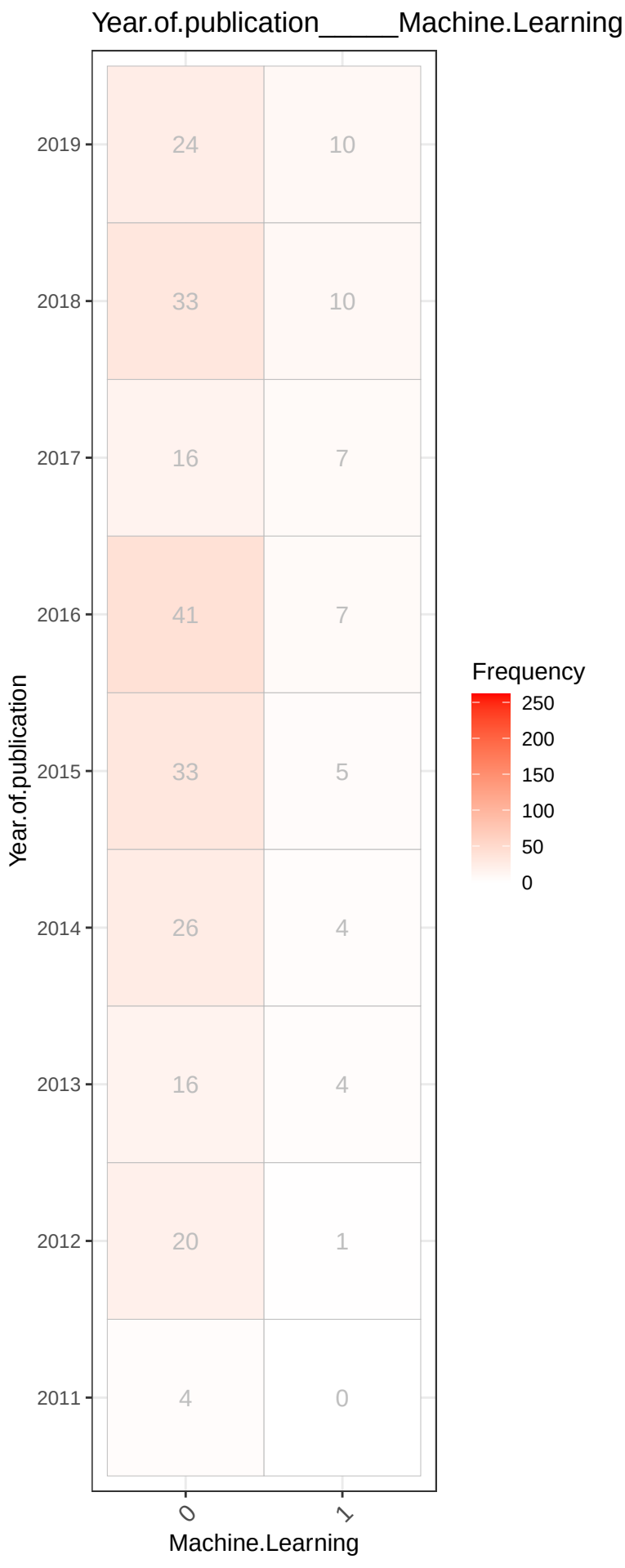
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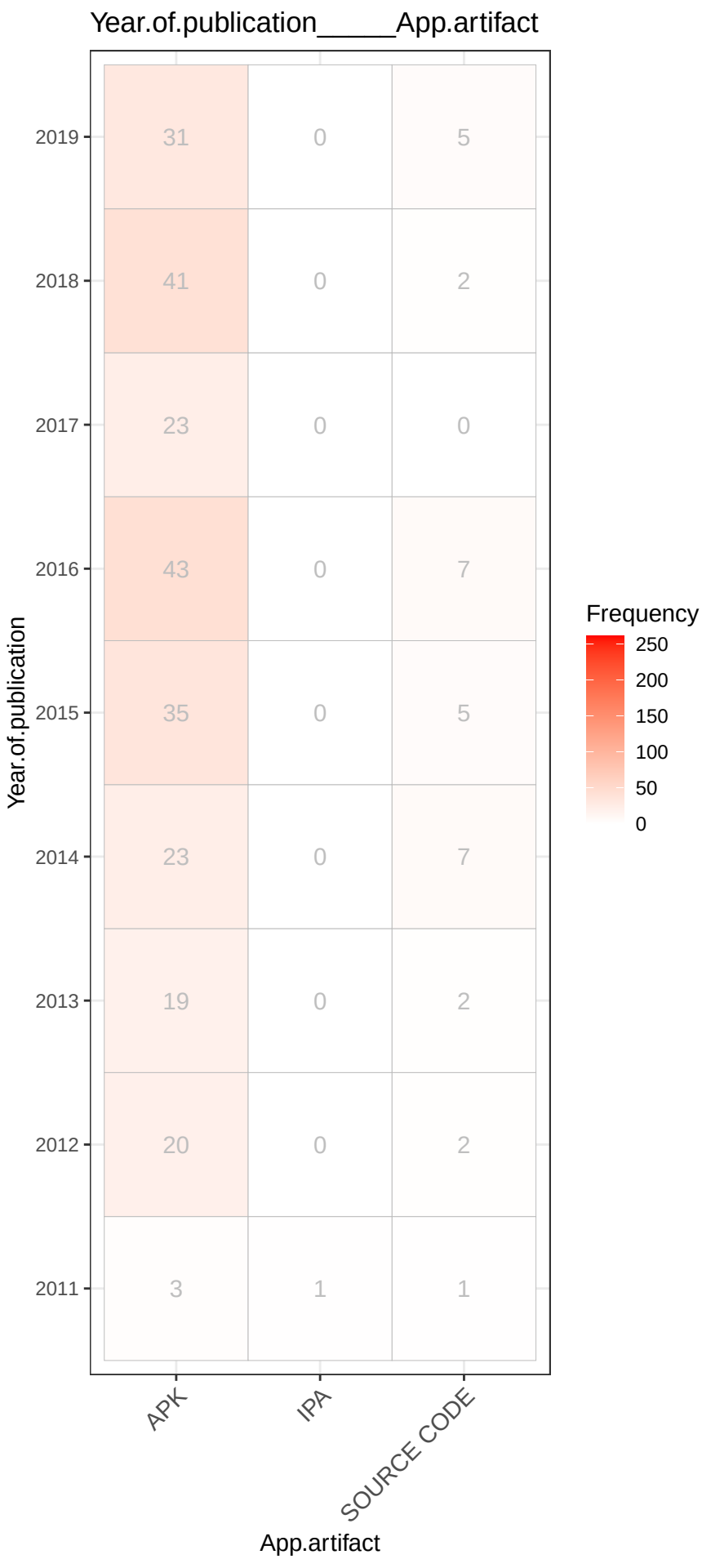
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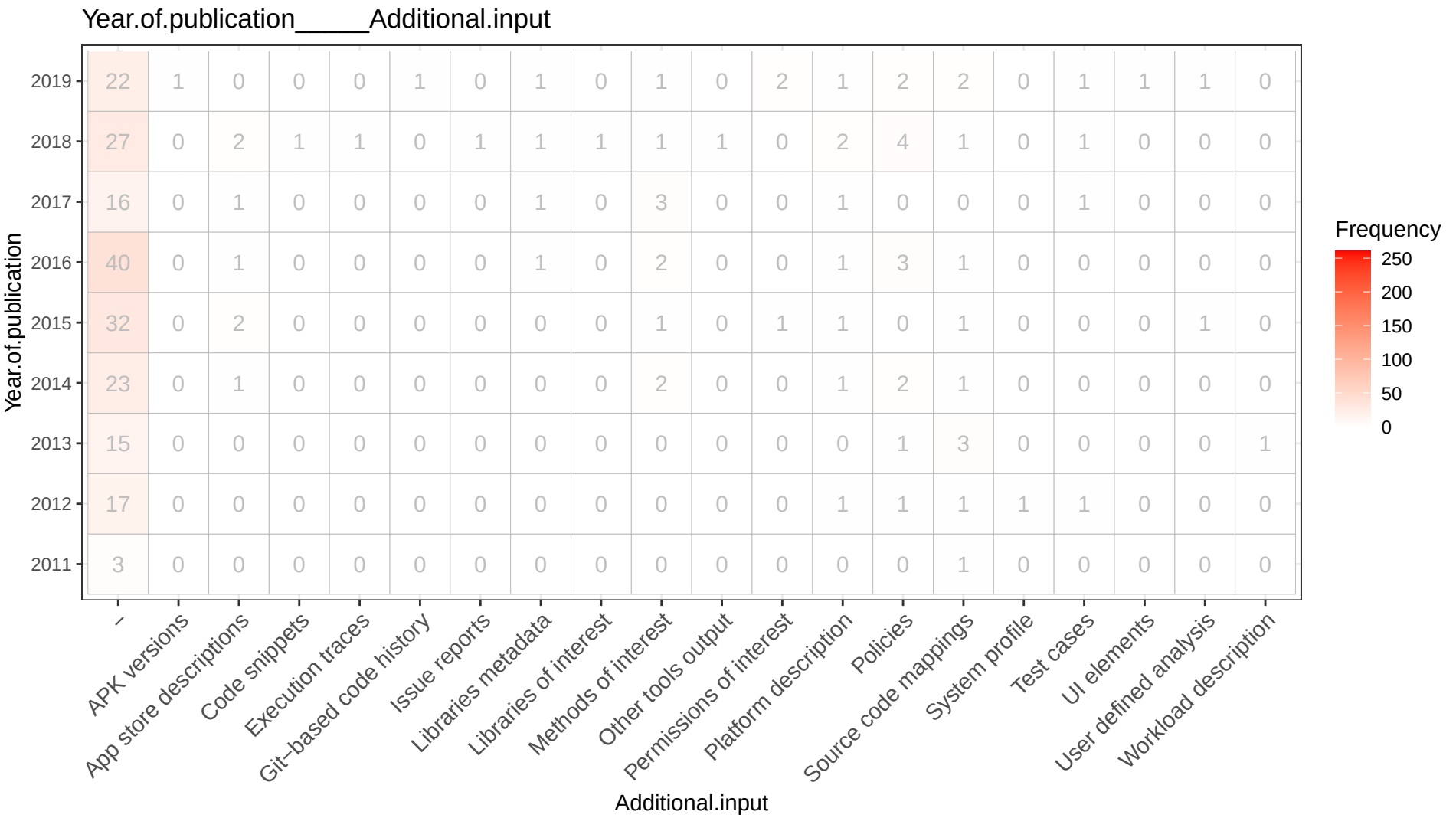
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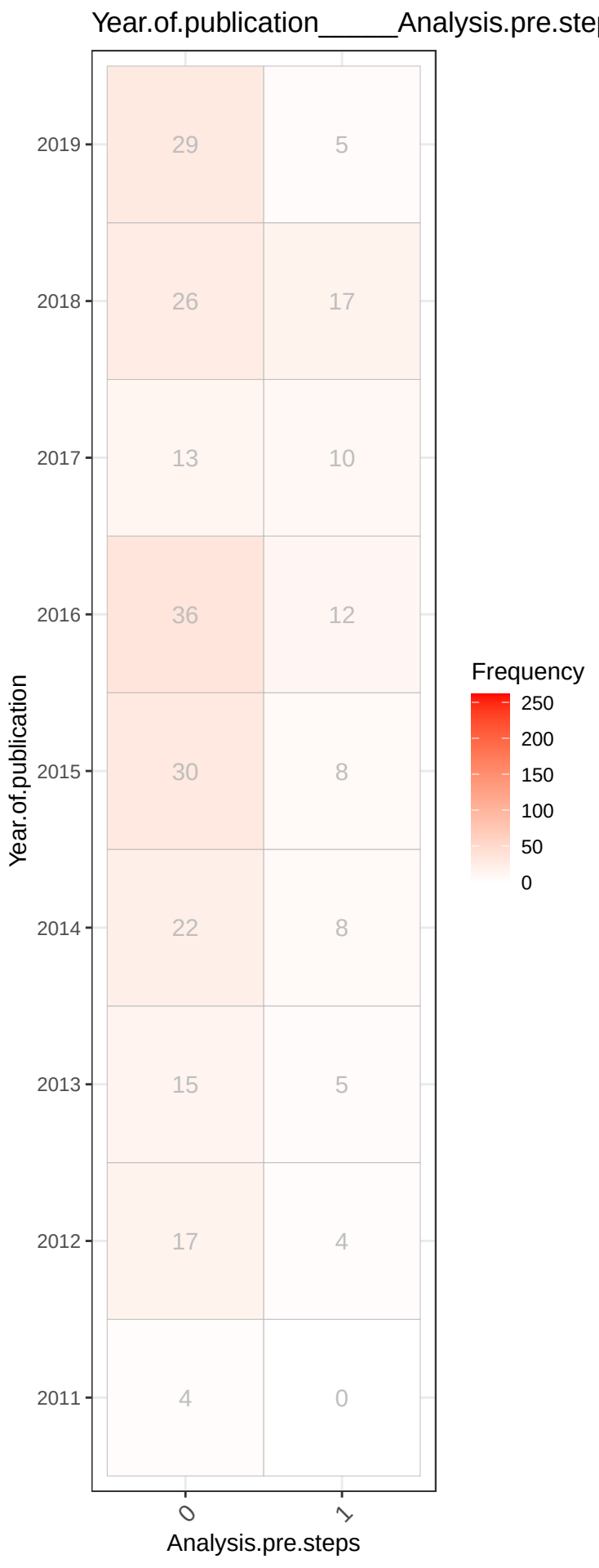
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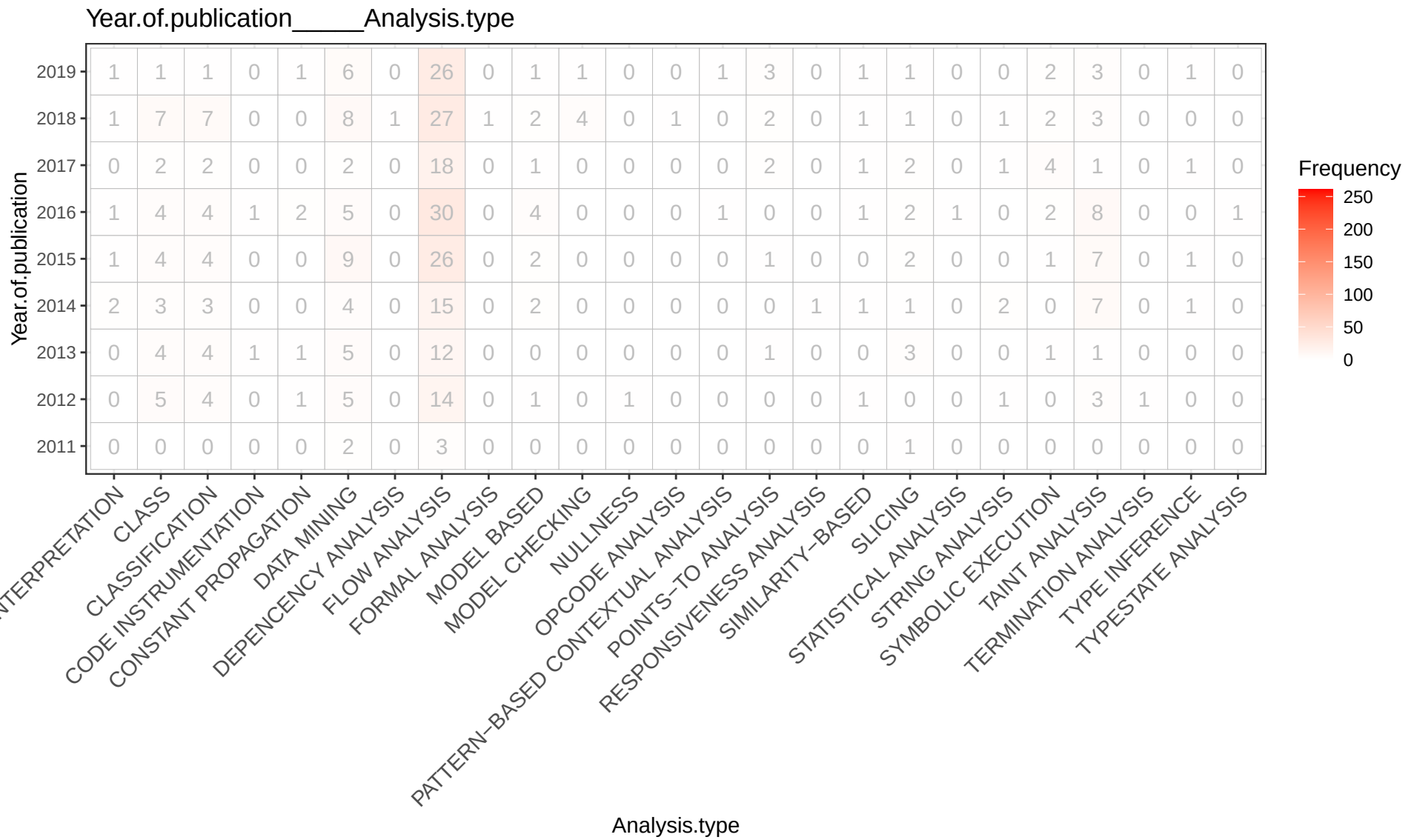
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NTERPRETATION
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CONSTANT PROPAGATION
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DEPENCENCY ANALYSIS
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FORMAL ANALYSIS
MODEL BASED
MODEL CHECKING
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OPCODE ANALYSIS
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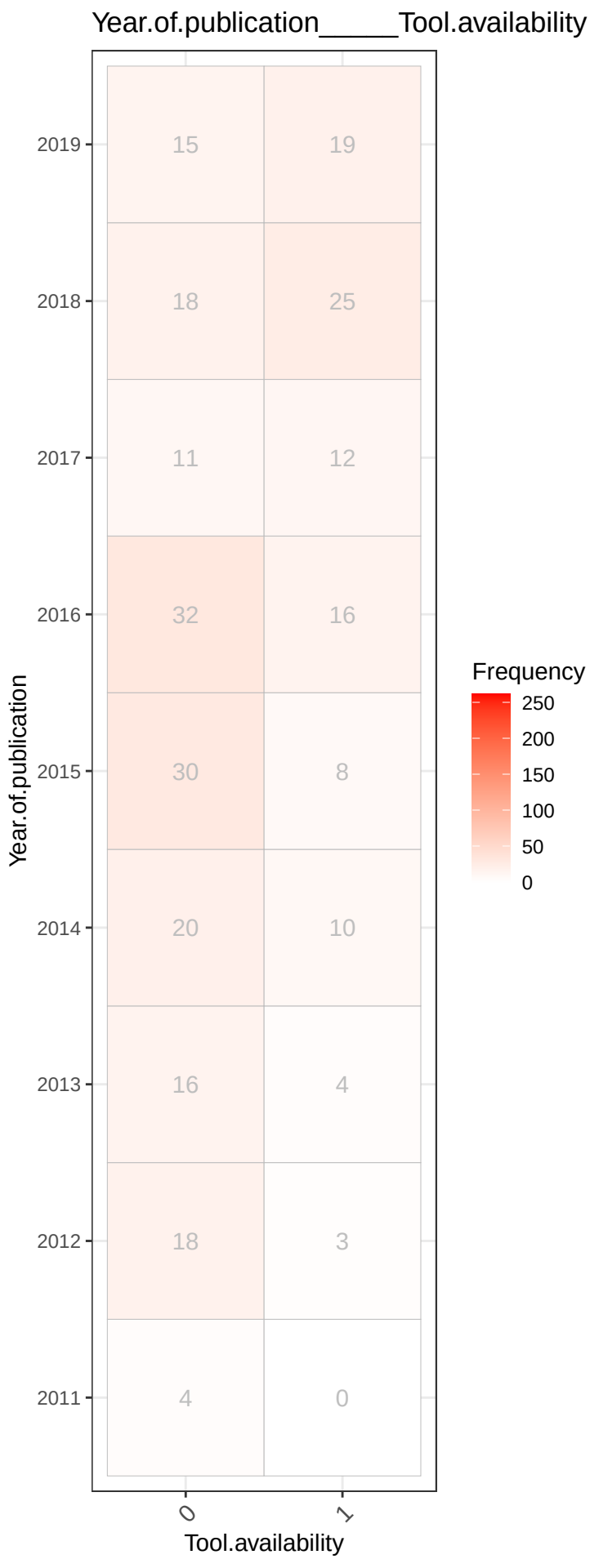
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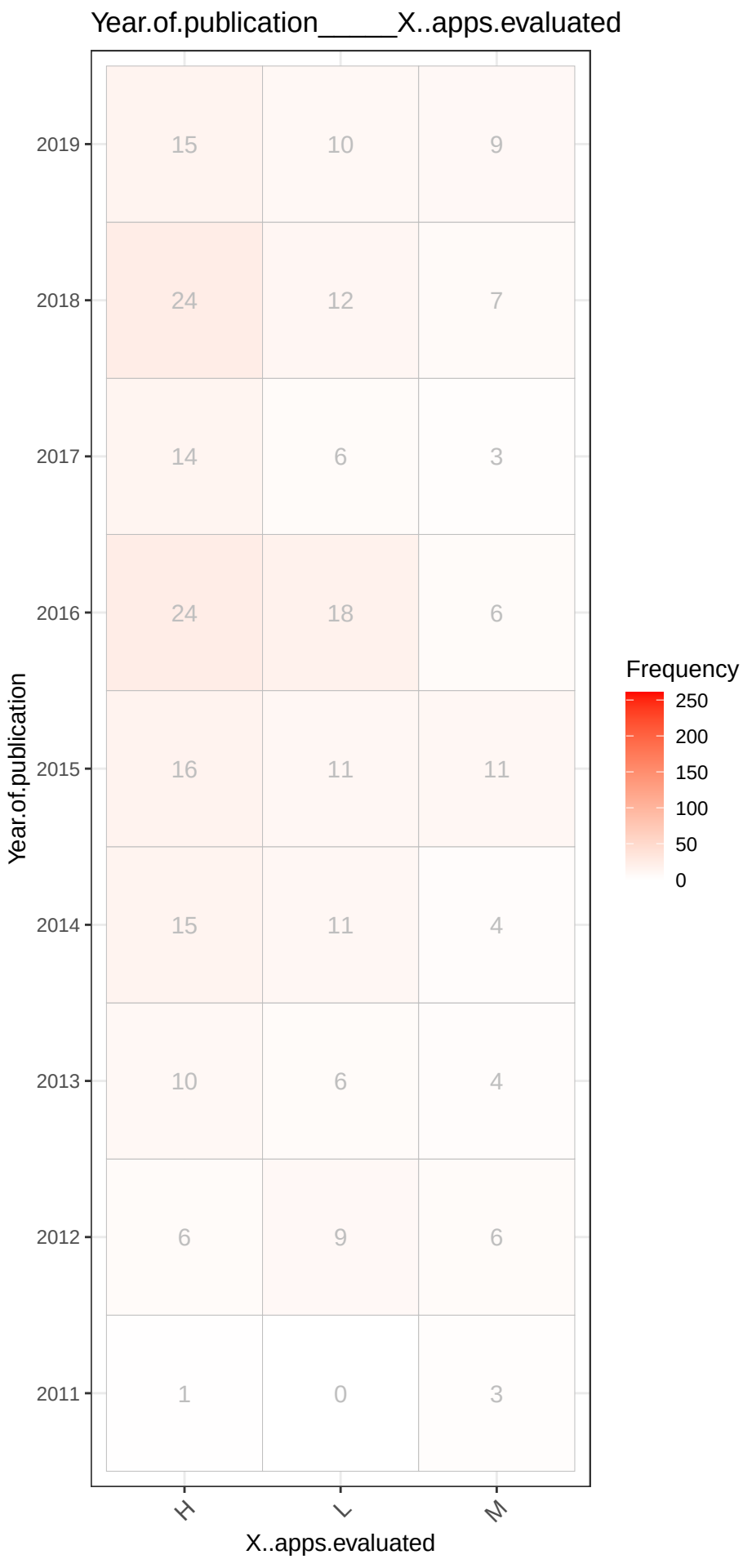
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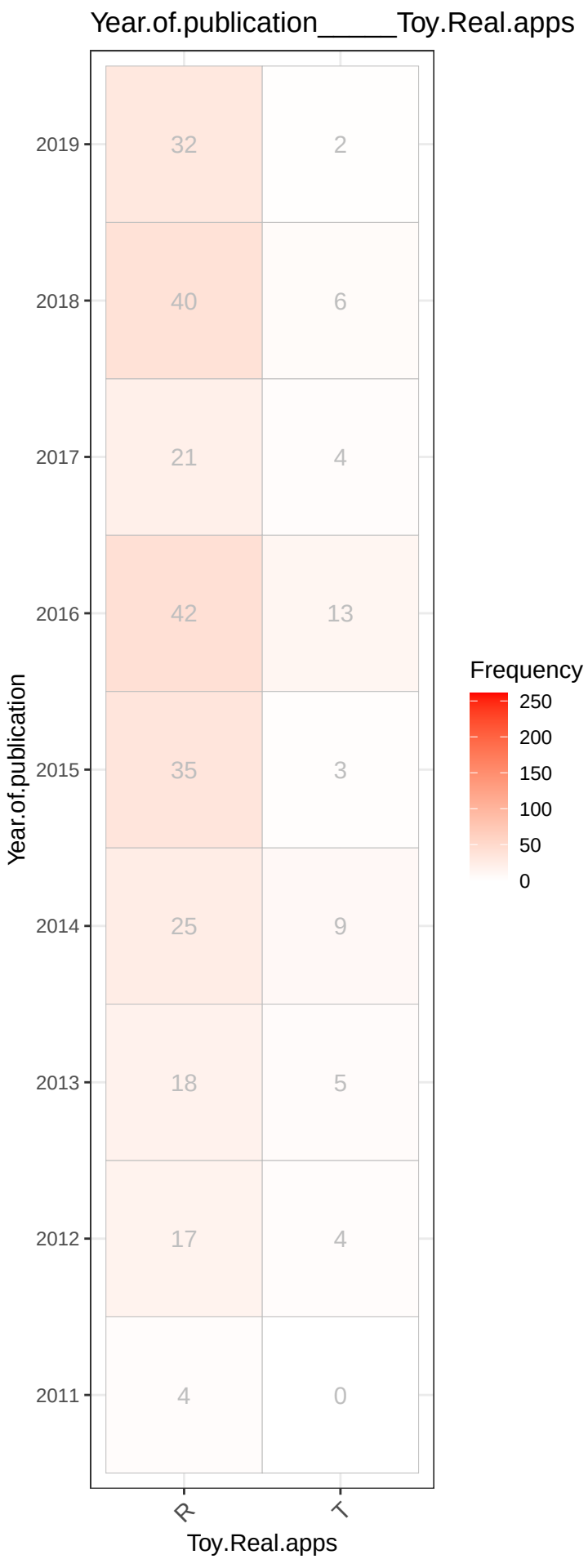
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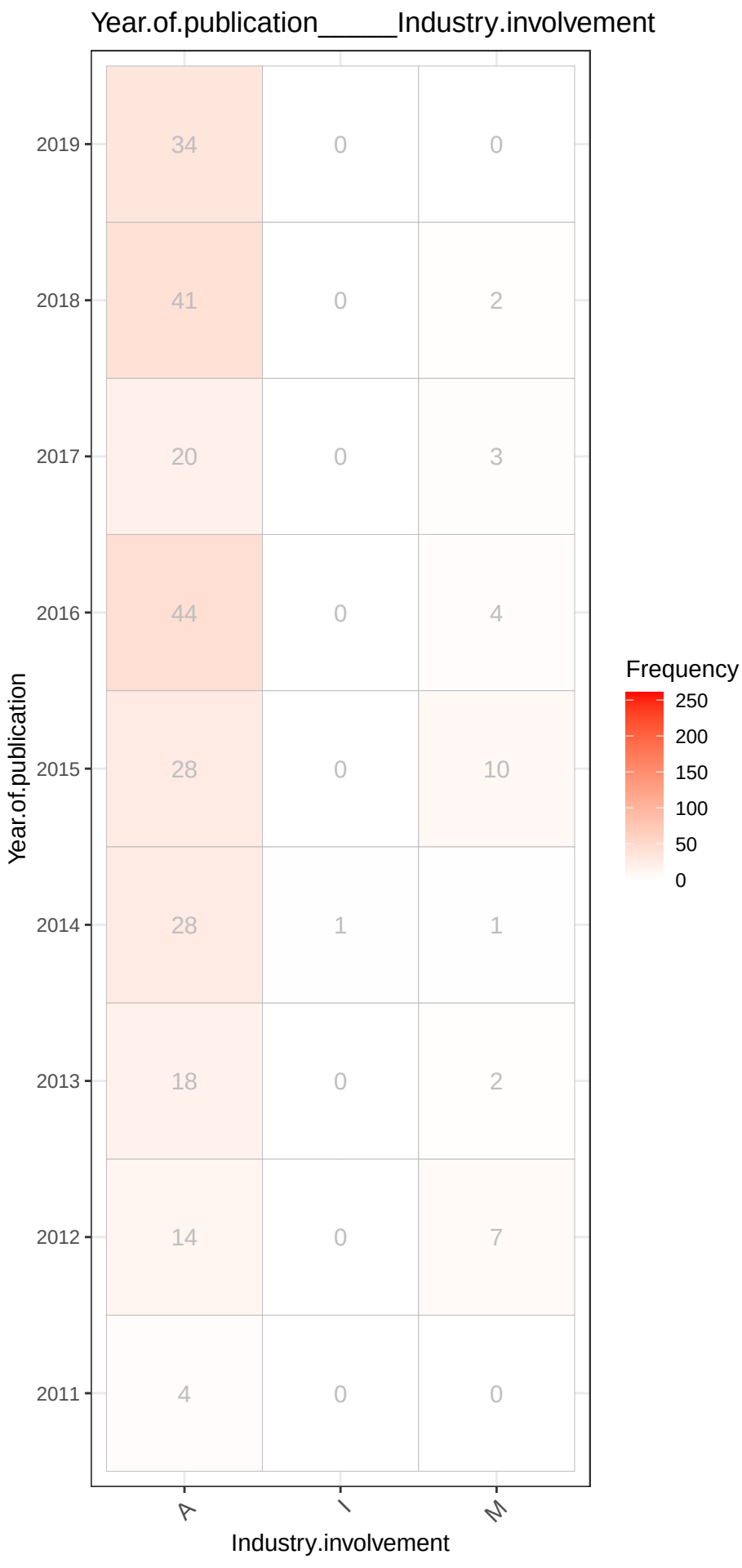
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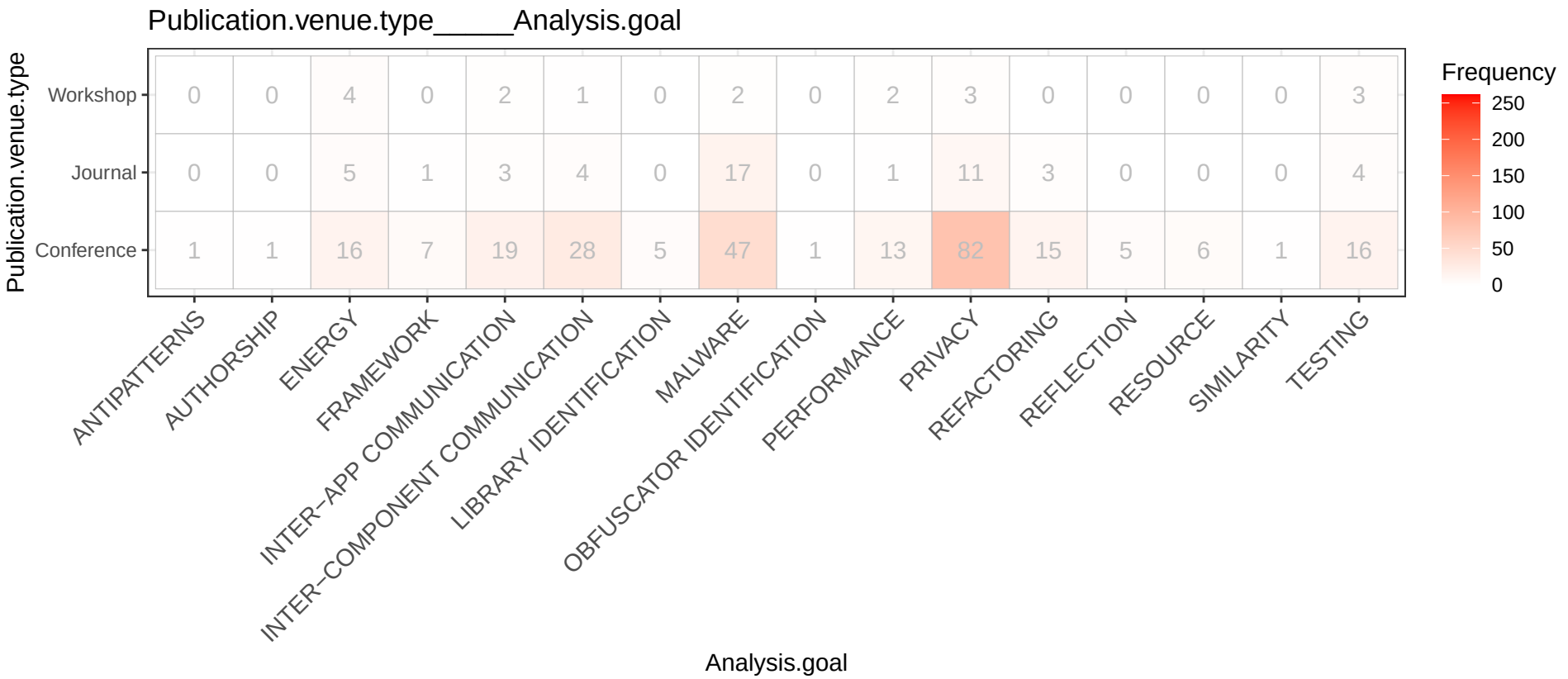
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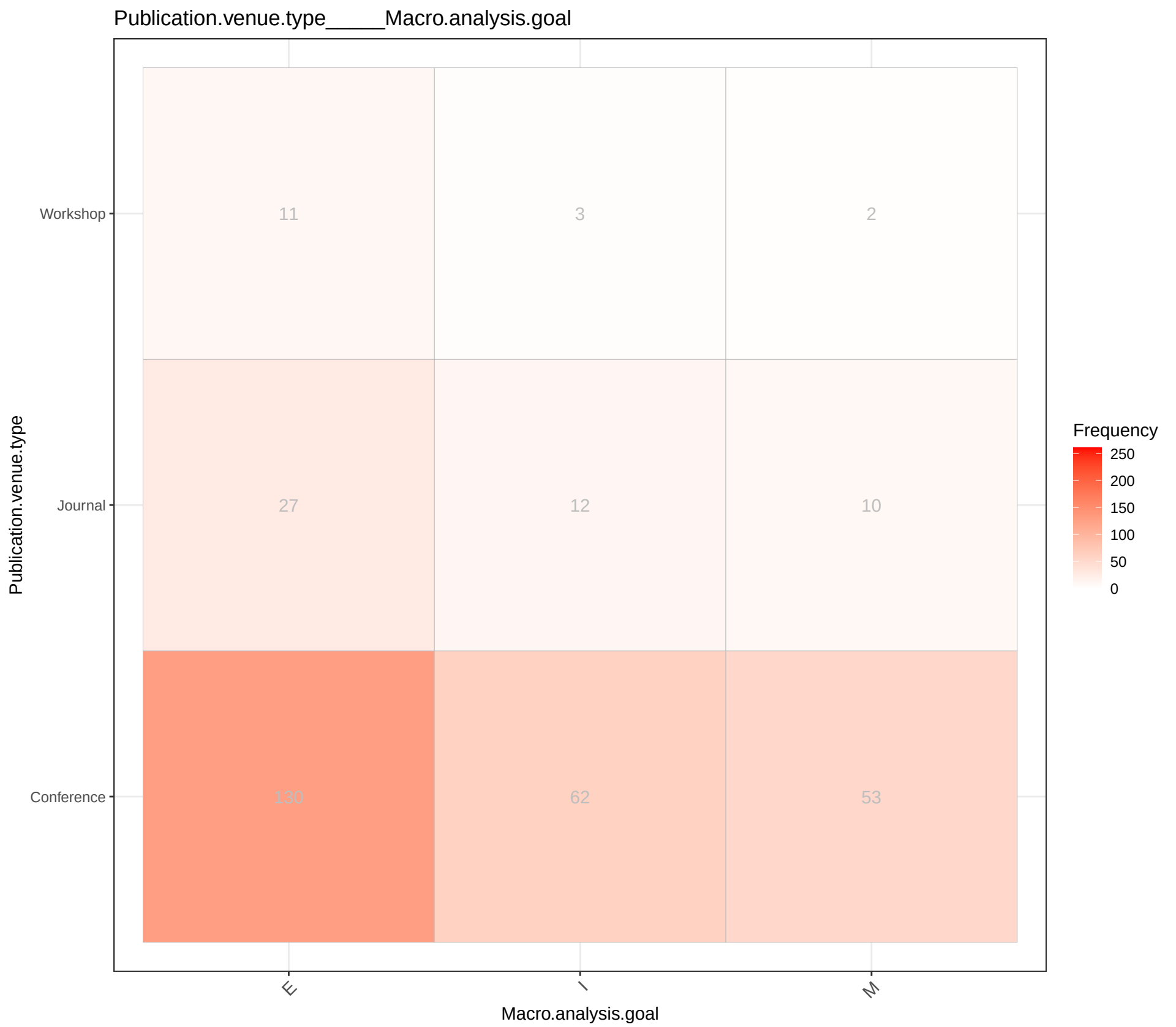
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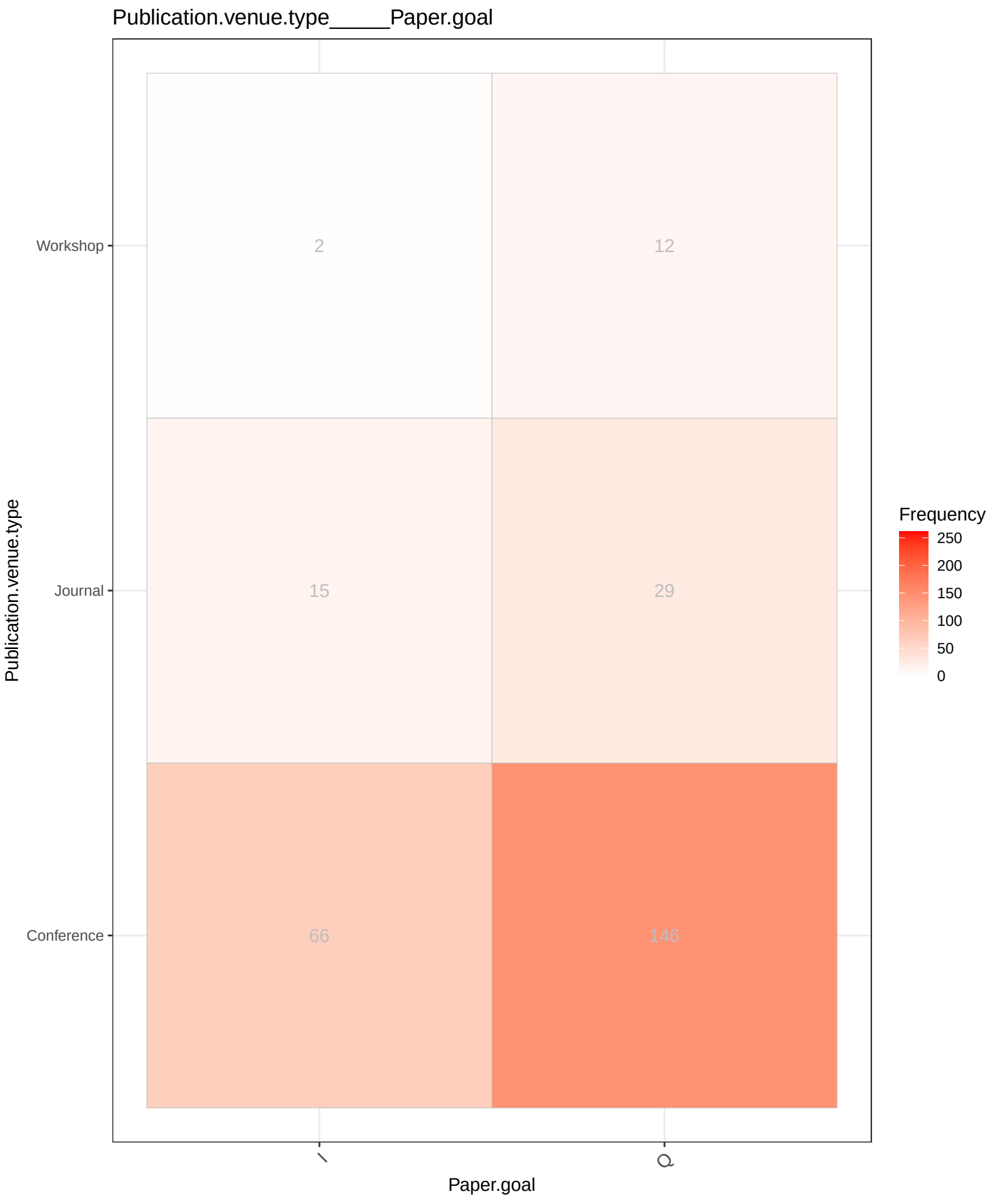
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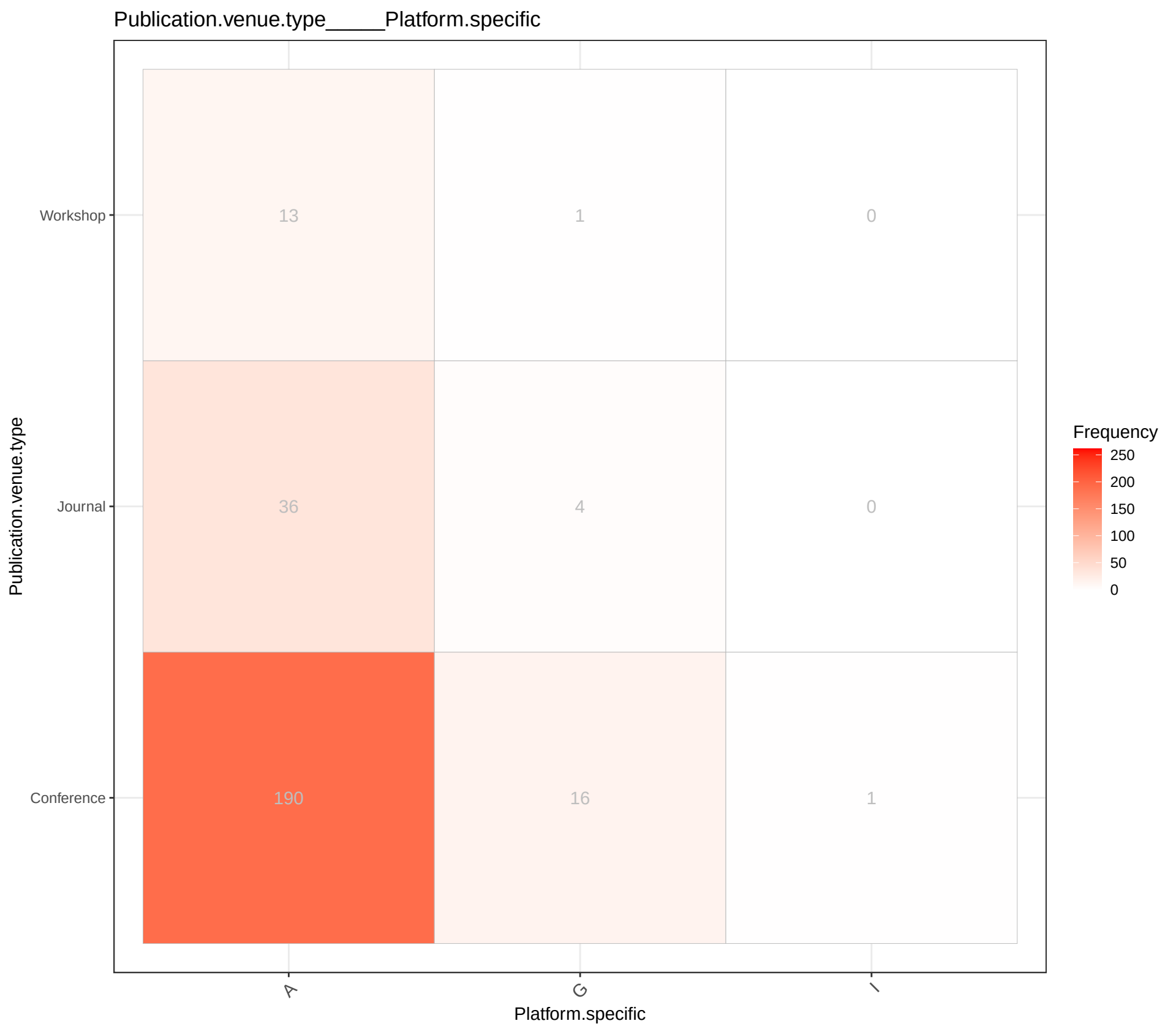
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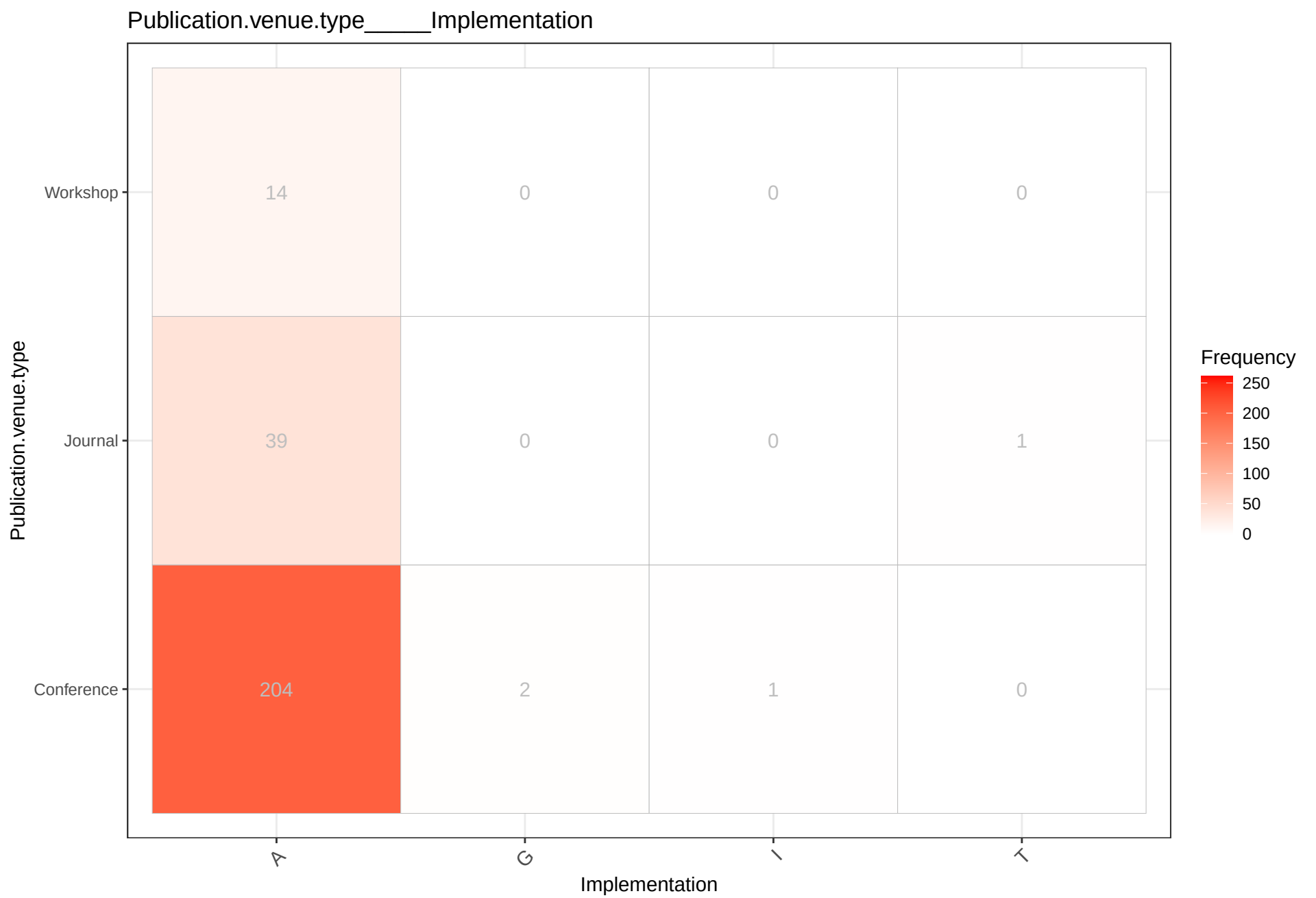
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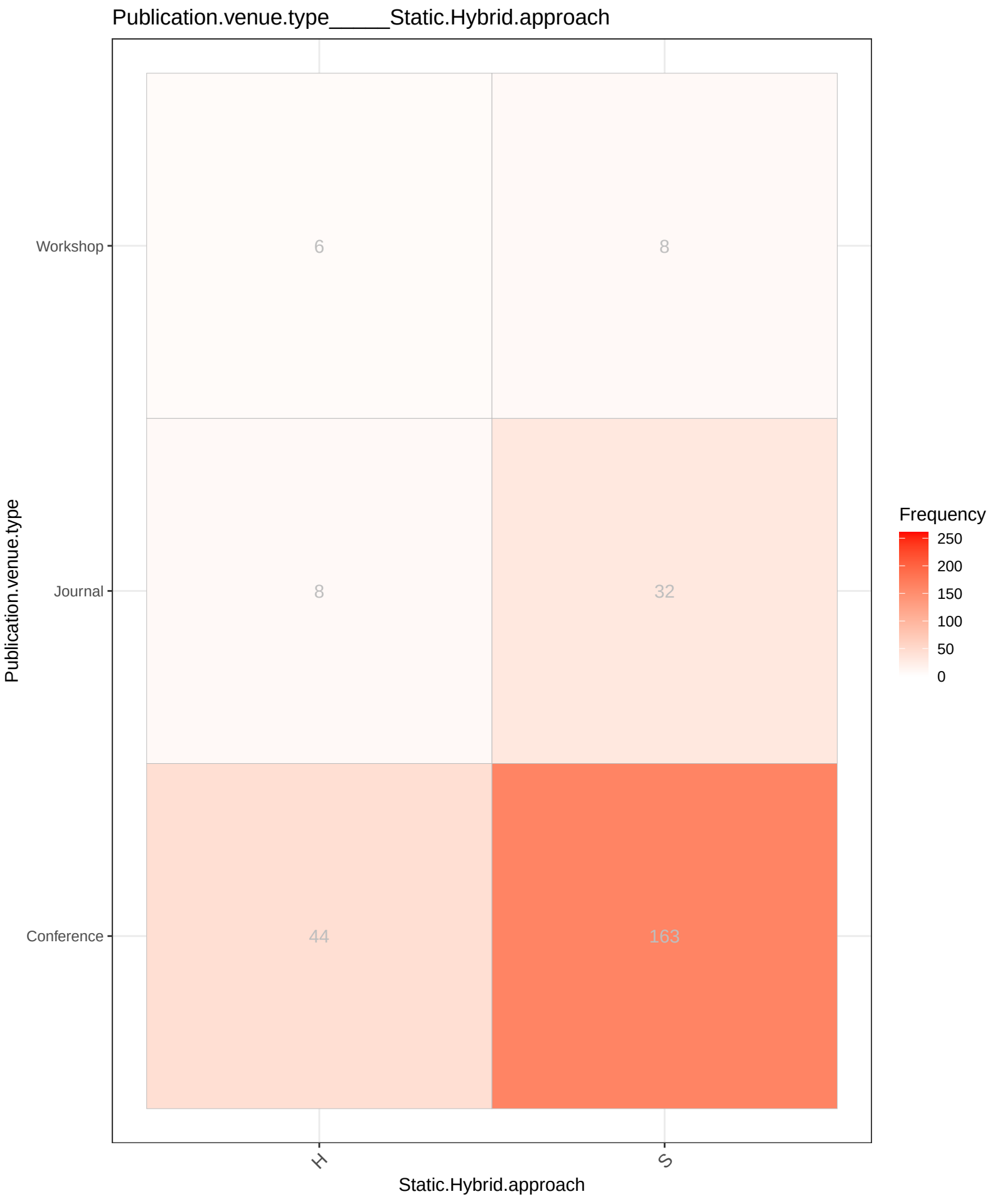
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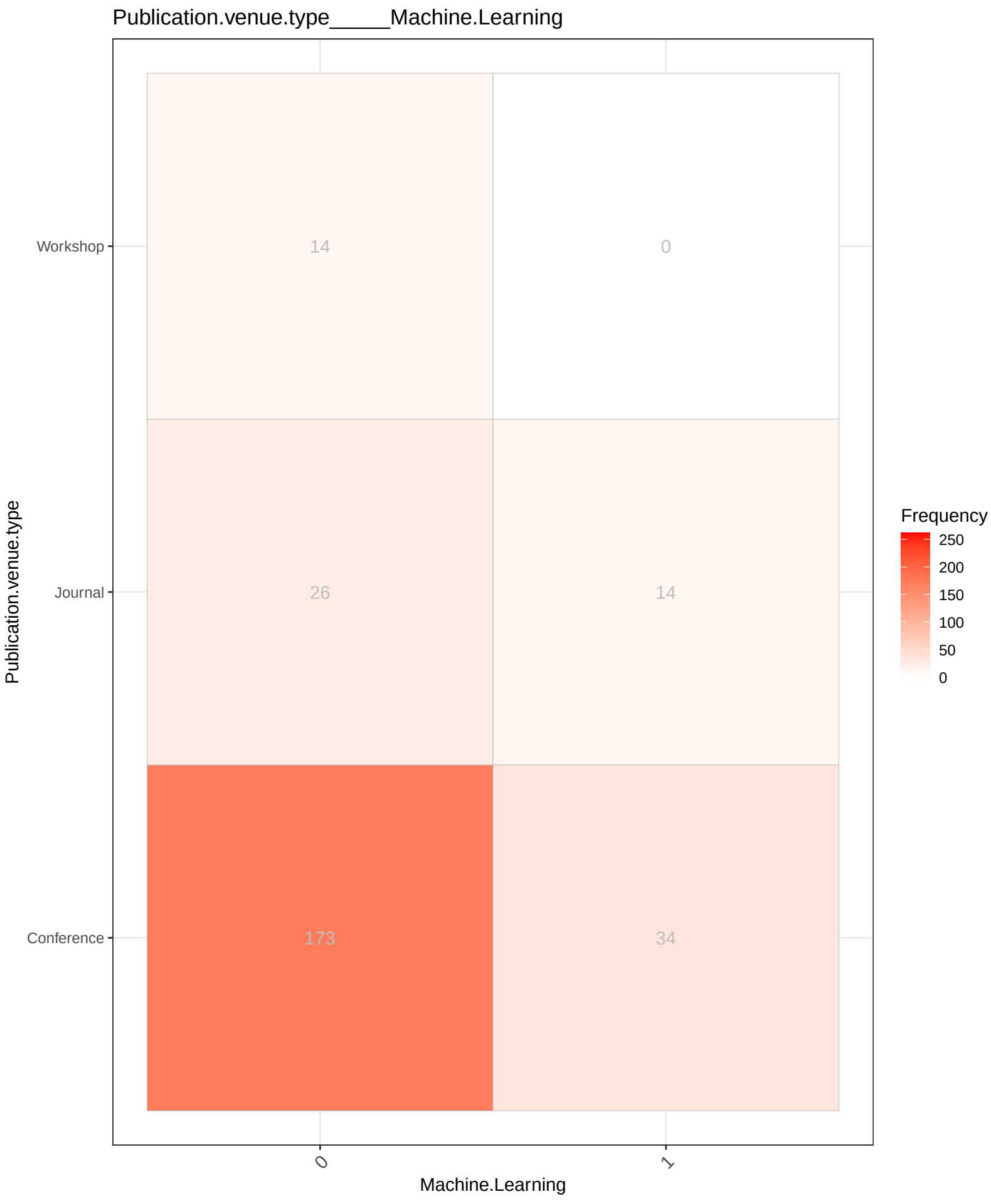
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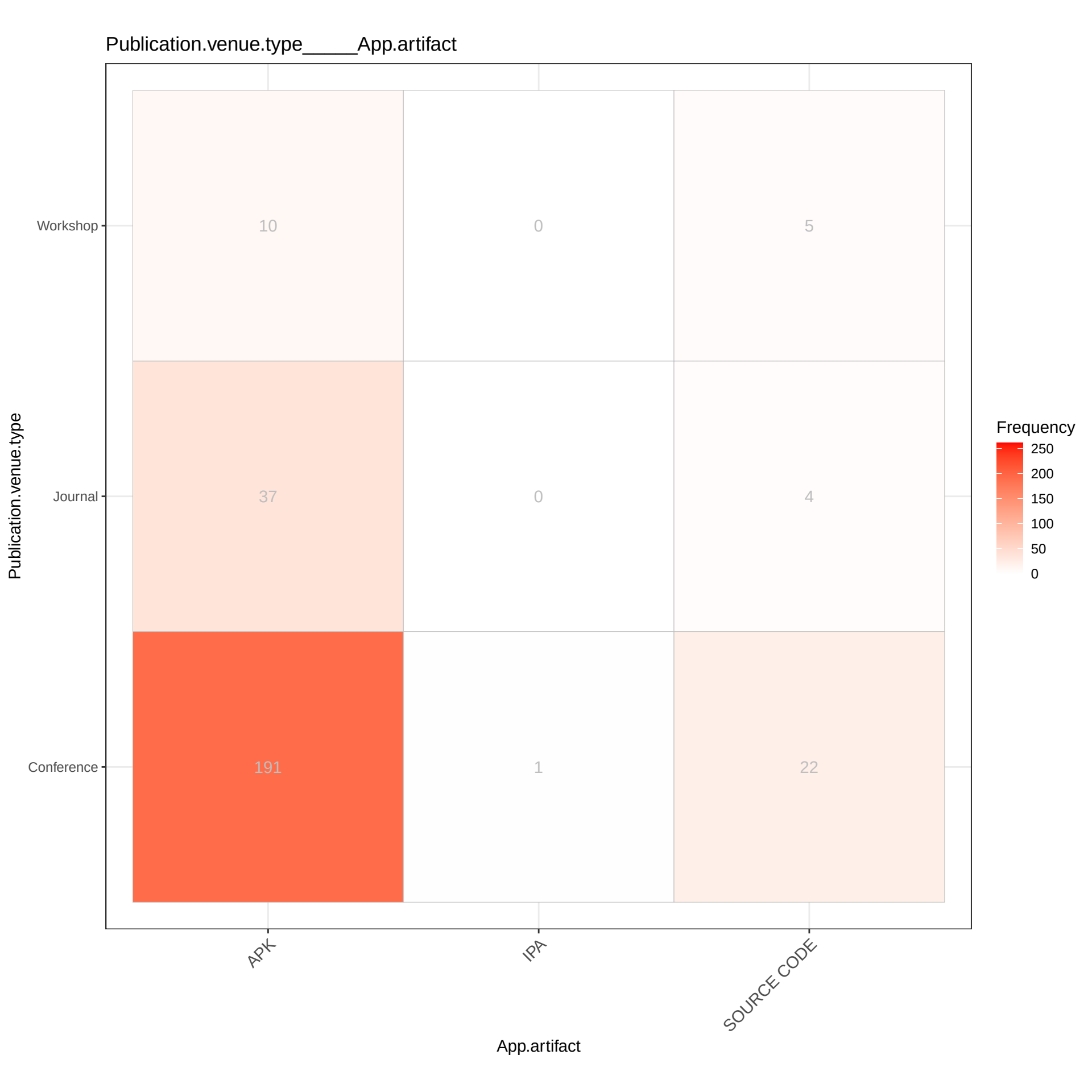
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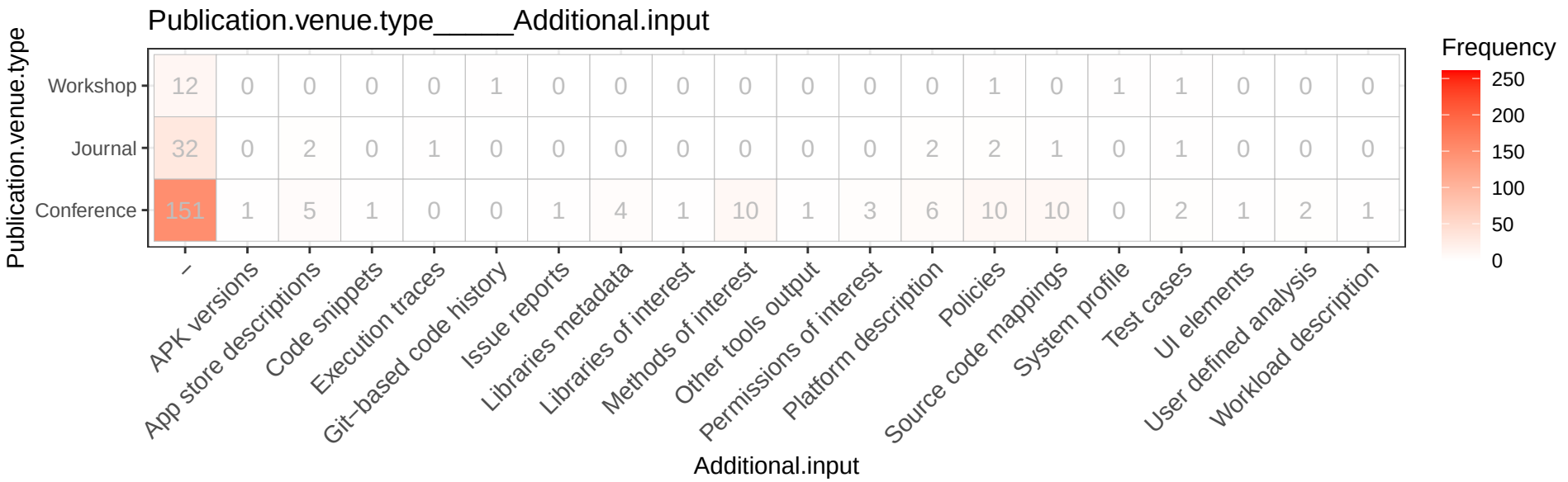
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Workload description
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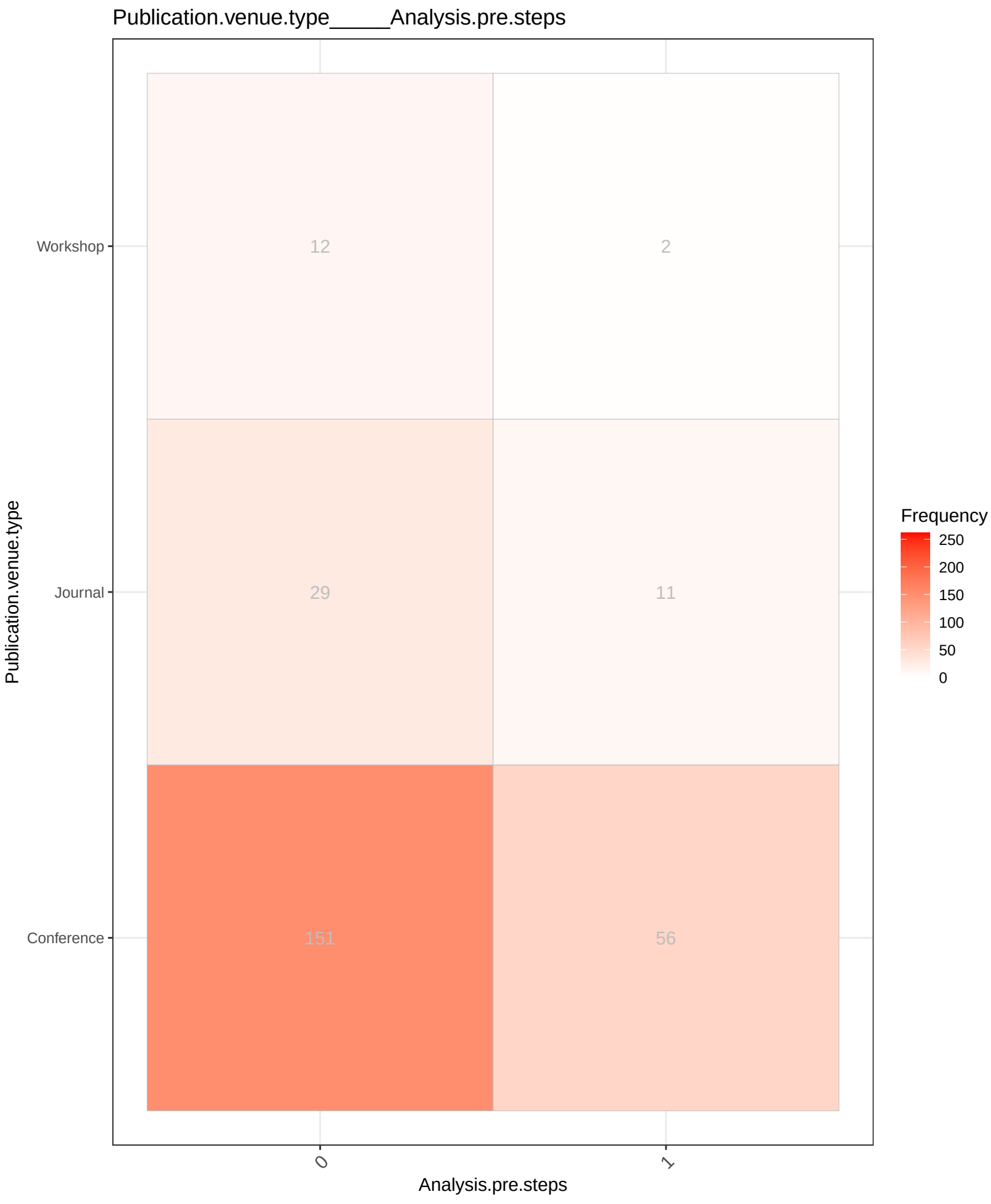
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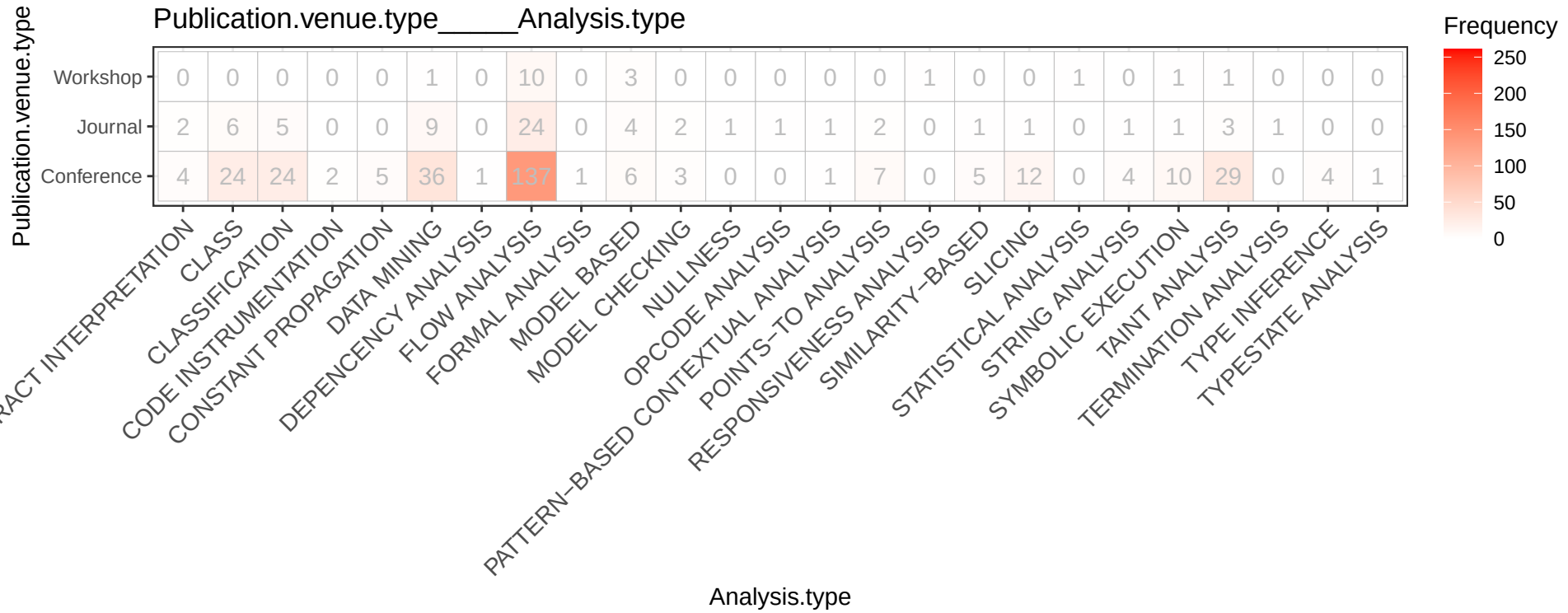
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Journal
Conference
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RACT INTERPRETATION
CLASS
CLASSIFICATION
CODE INSTRUMENTATION
CONSTANT PROPAGATION
DATA MINING
DEPENCENCY ANALYSIS
FLOW ANALYSIS
FORMAL ANALYSIS
MODEL BASED
MODEL CHECKING
NULLNESS
OPCODE ANALYSIS
PATTERN−BASED CONTEXTUAL ANALYSIS
POINTS−TO ANALYSIS
RESPONSIVENESS ANALYSIS
SIMILARITY−BASED
SLICING
STATISTICAL ANALYSIS
STRING ANALYSIS
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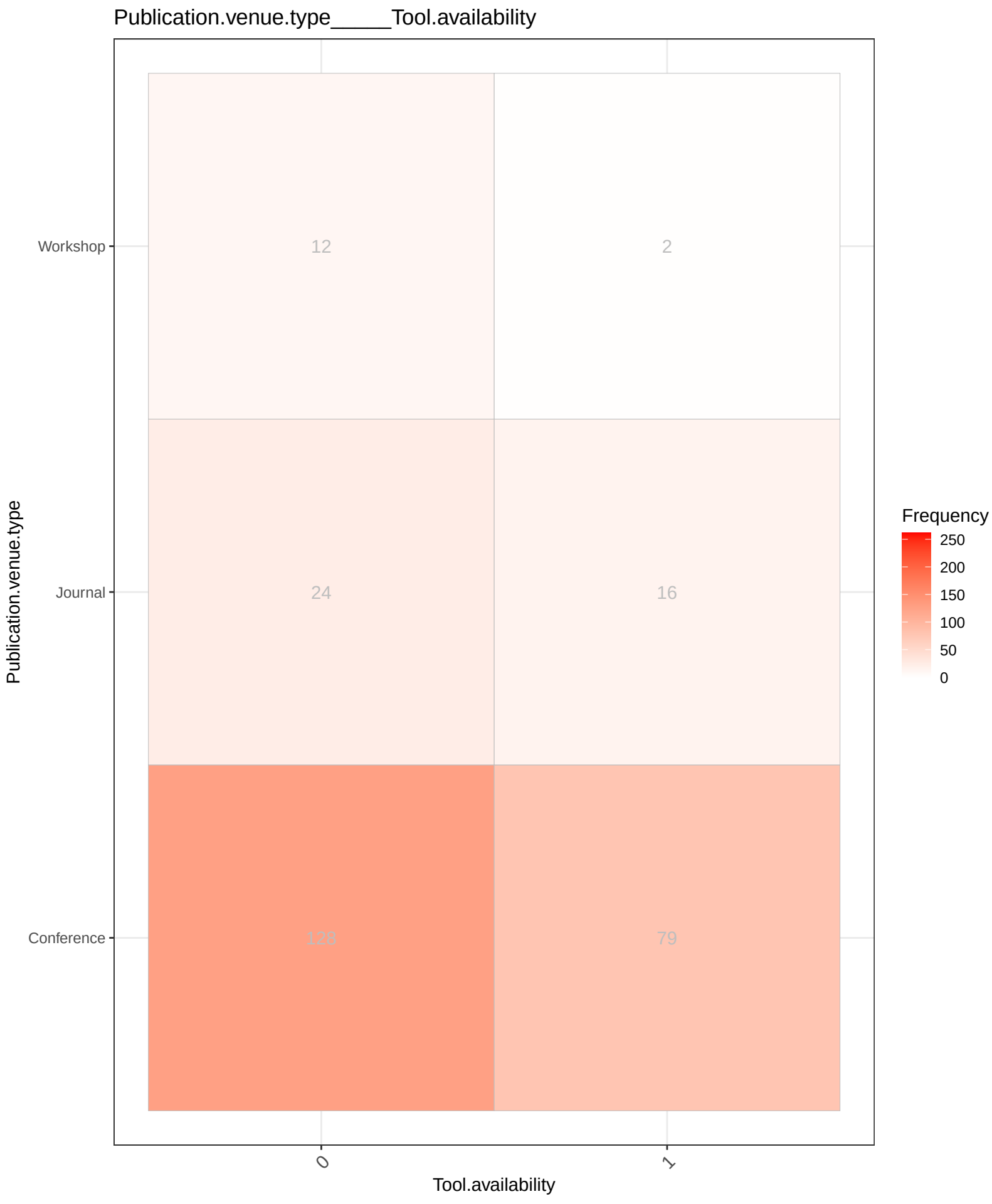
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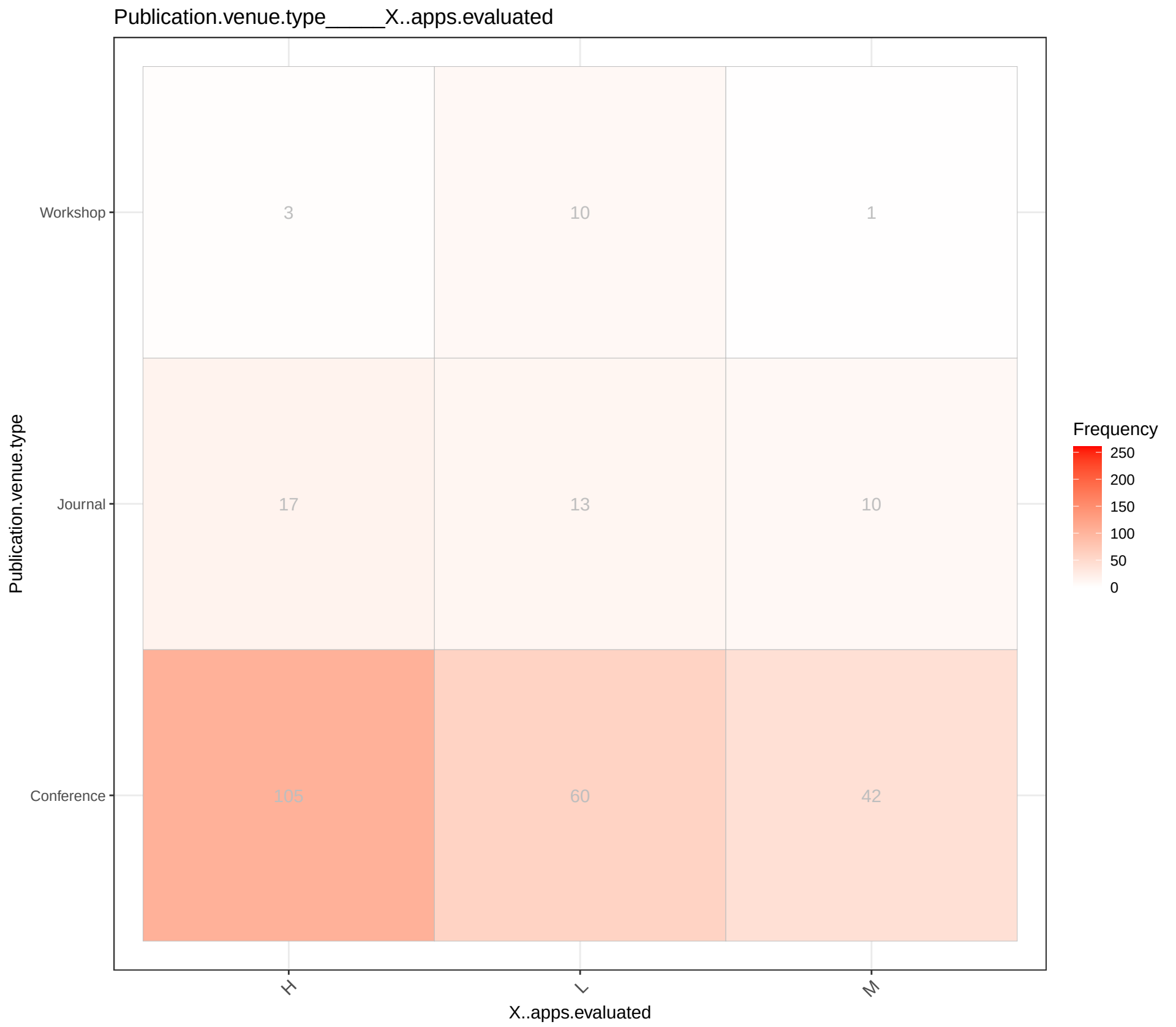
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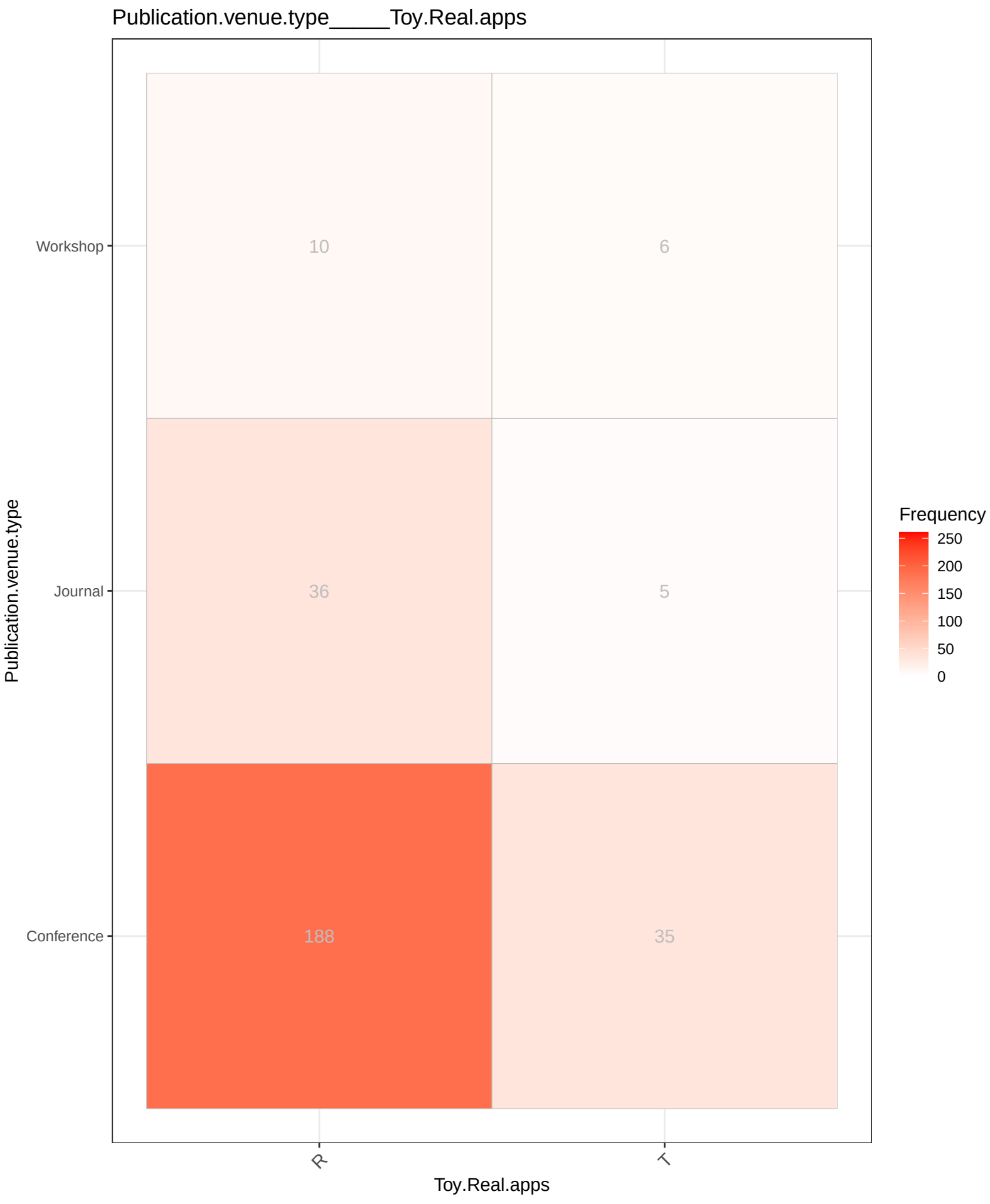
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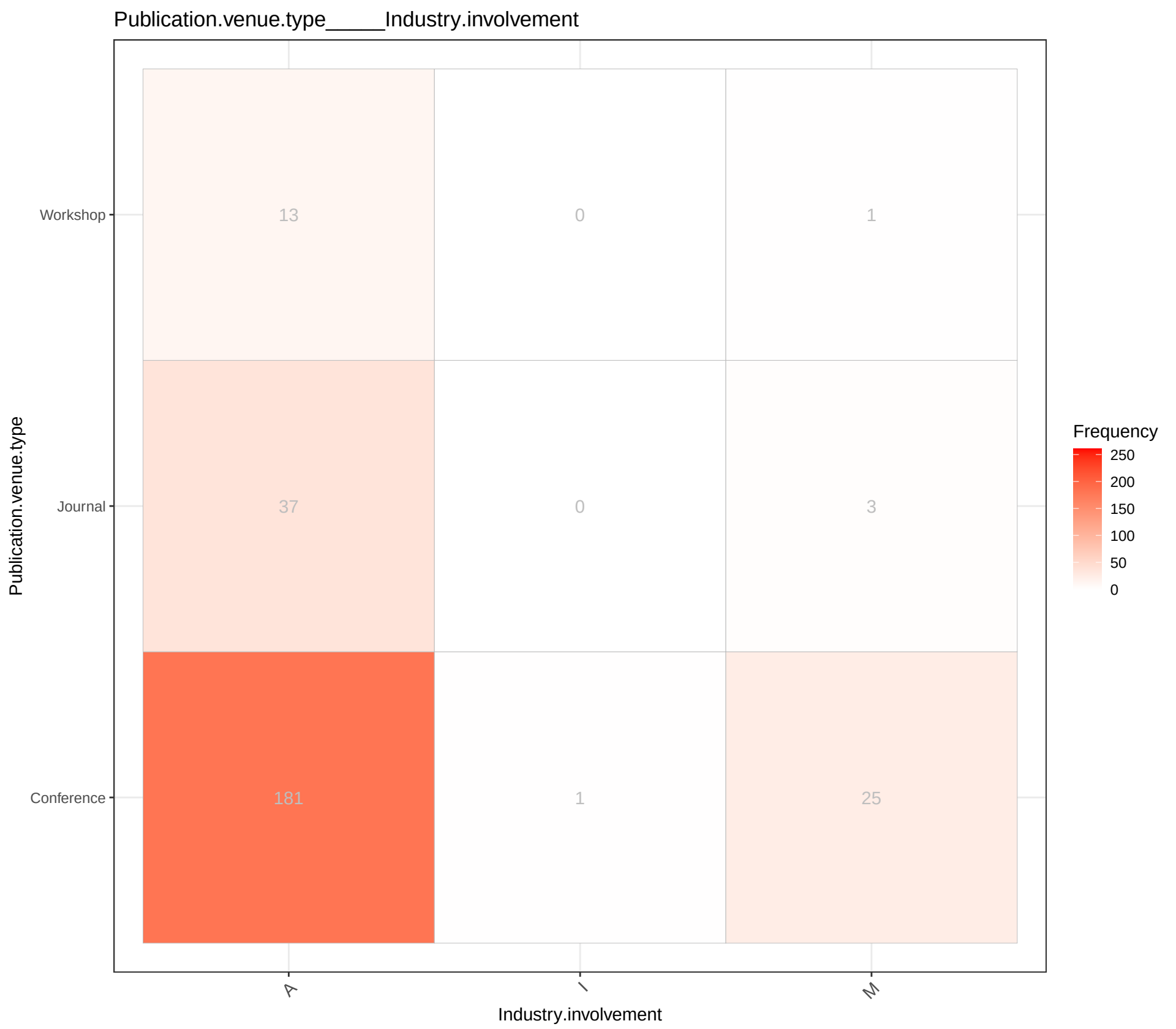
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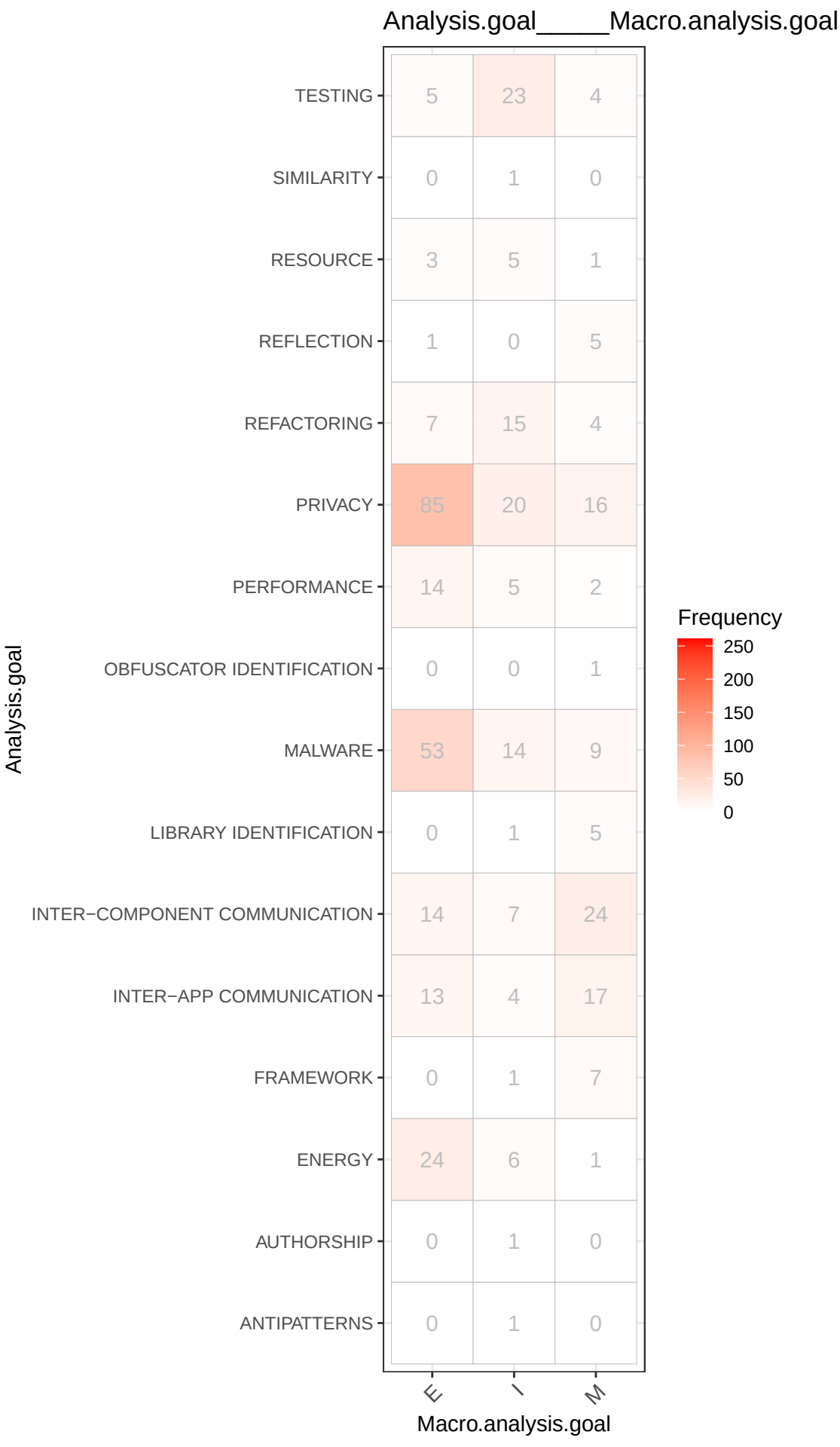
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INTER−APP COMMUNICATION
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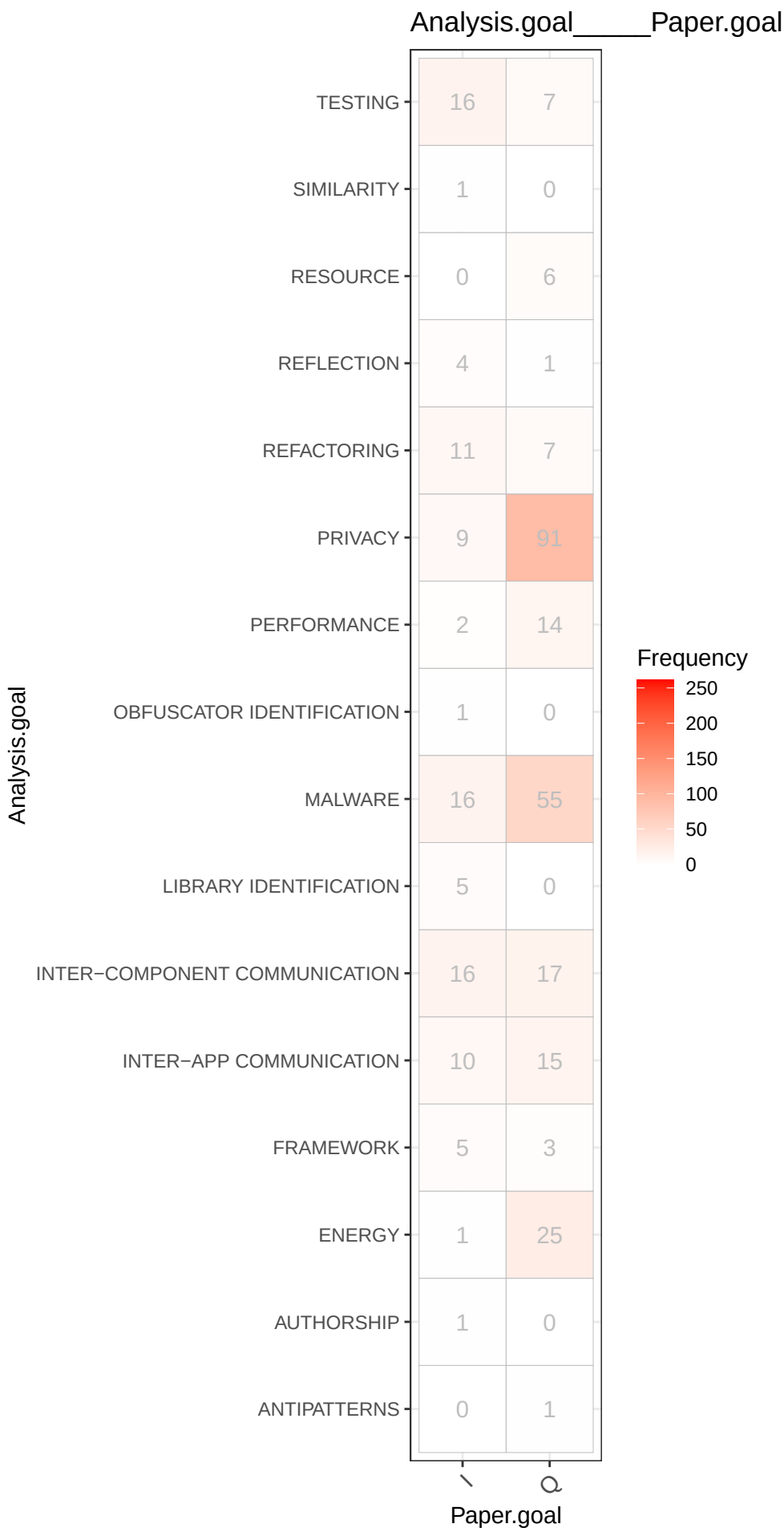
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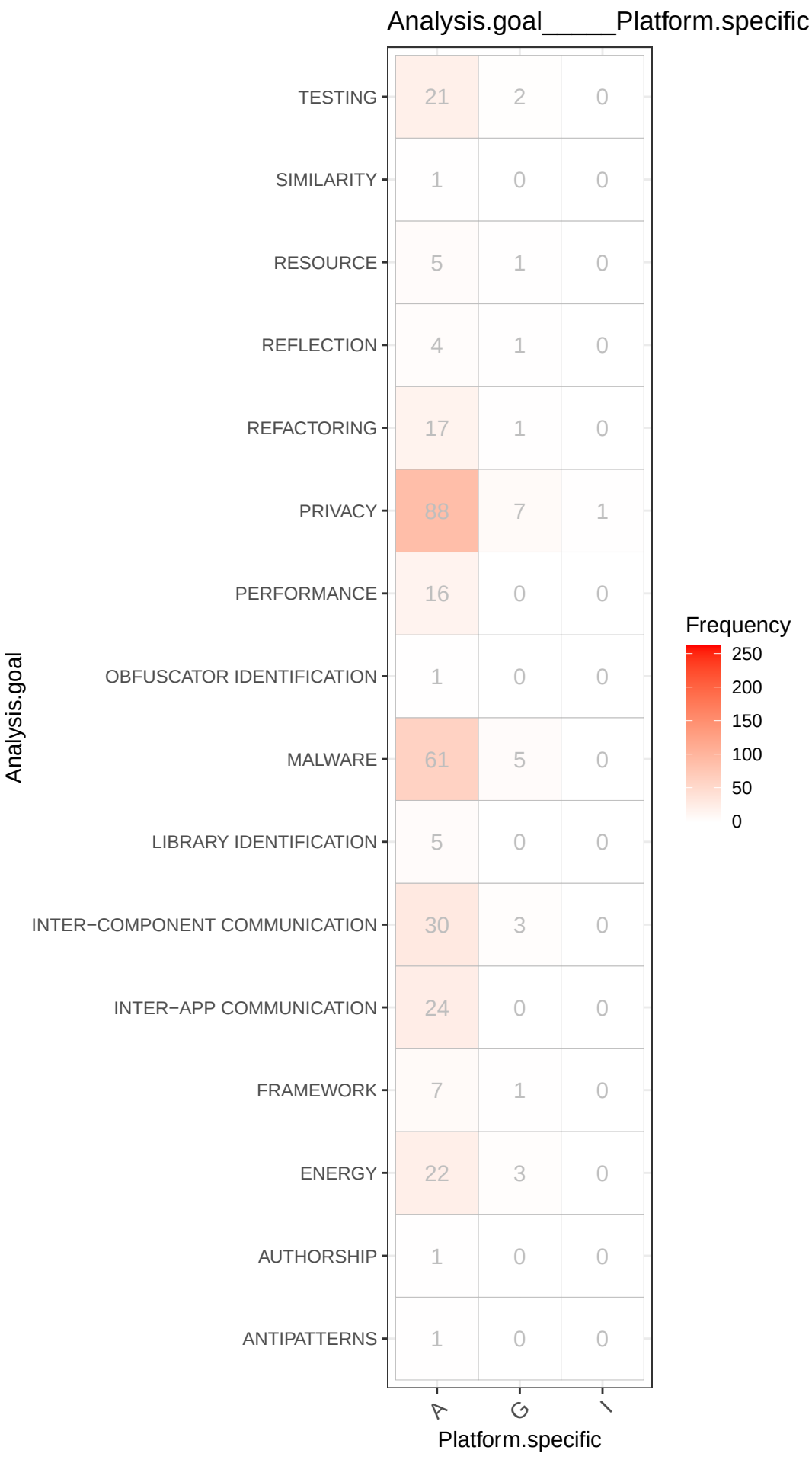
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INTER−APP COMMUNICATION
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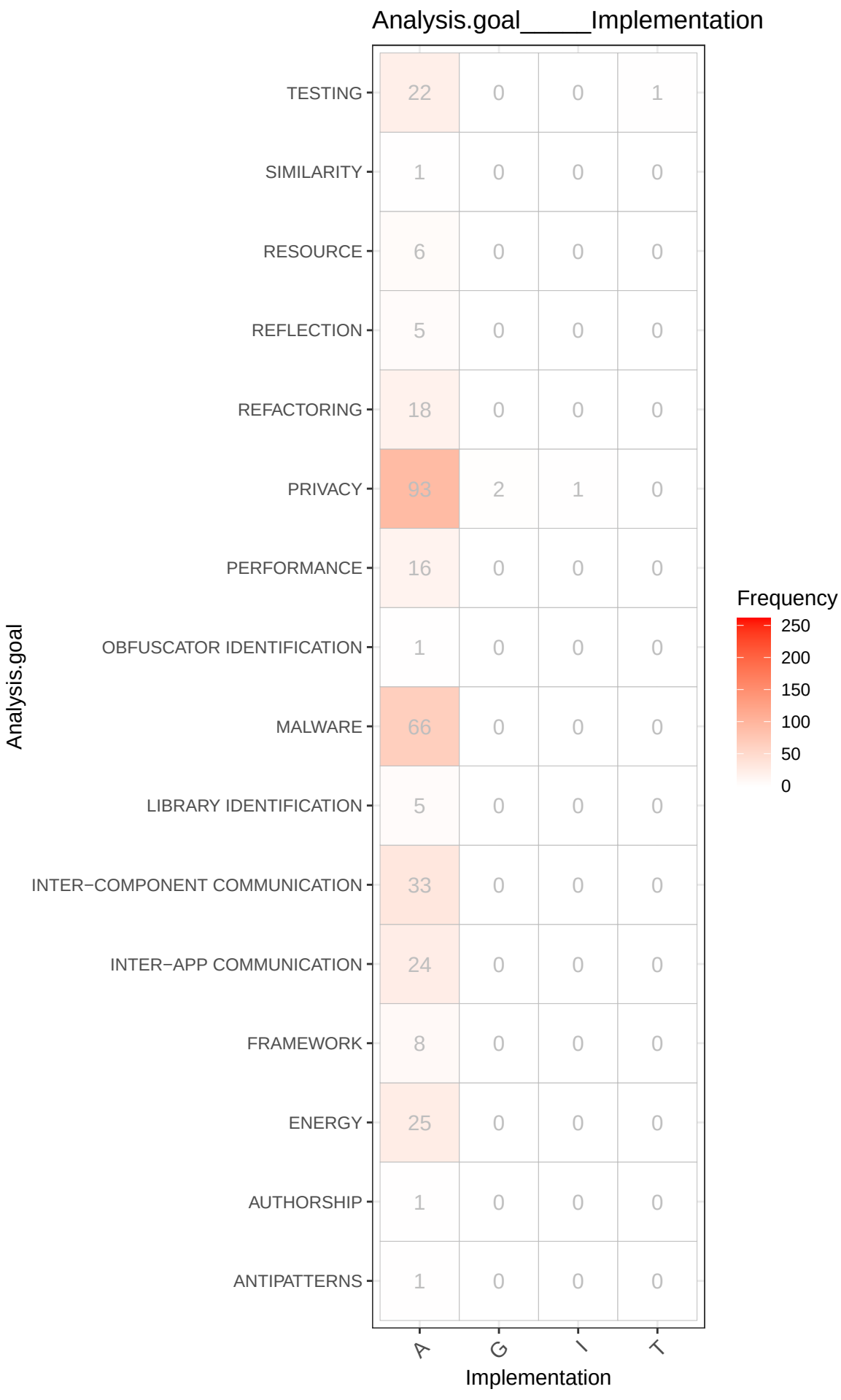
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PERFORMANCE
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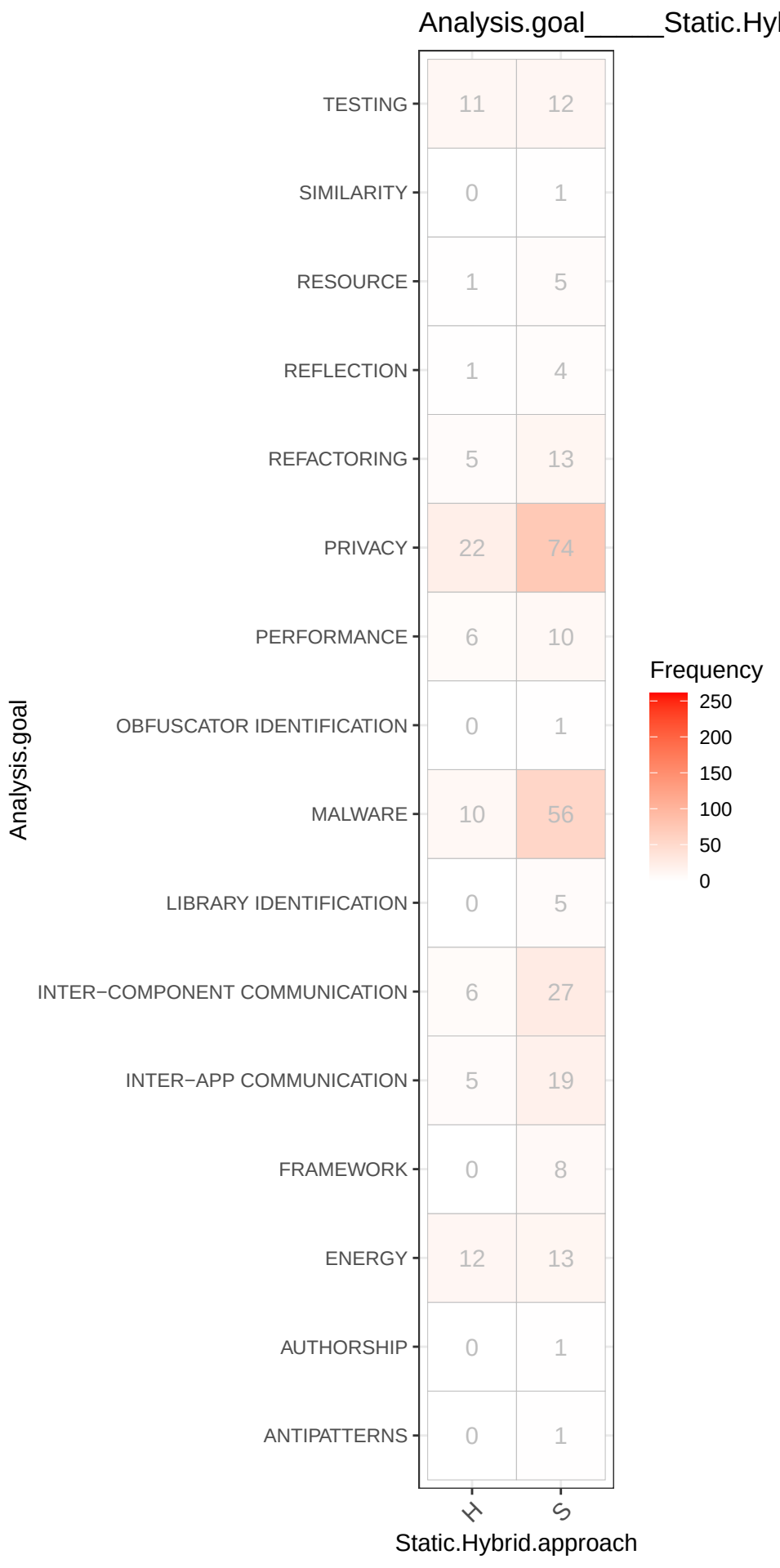
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REFACTORING
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PERFORMANCE
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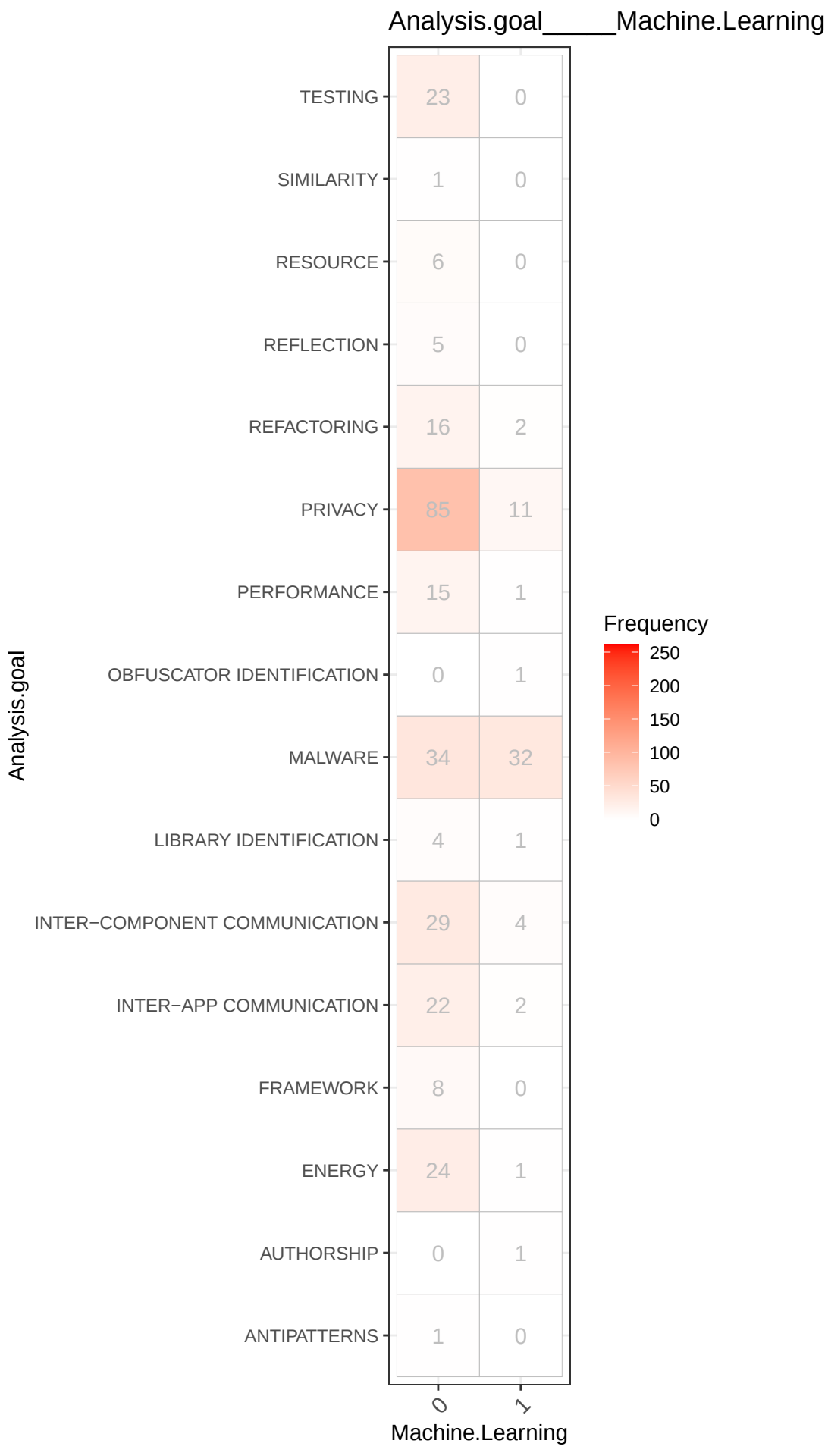
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REFACTORING
PRIVACY
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MALWARE
LIBRARY IDENTIFICATION
INTER−COMPONENT COMMUNICATION
INTER−APP COMMUNICATION
FRAMEWORK
ENERGY
AUTHORSHIP
ANTIPATTERNS
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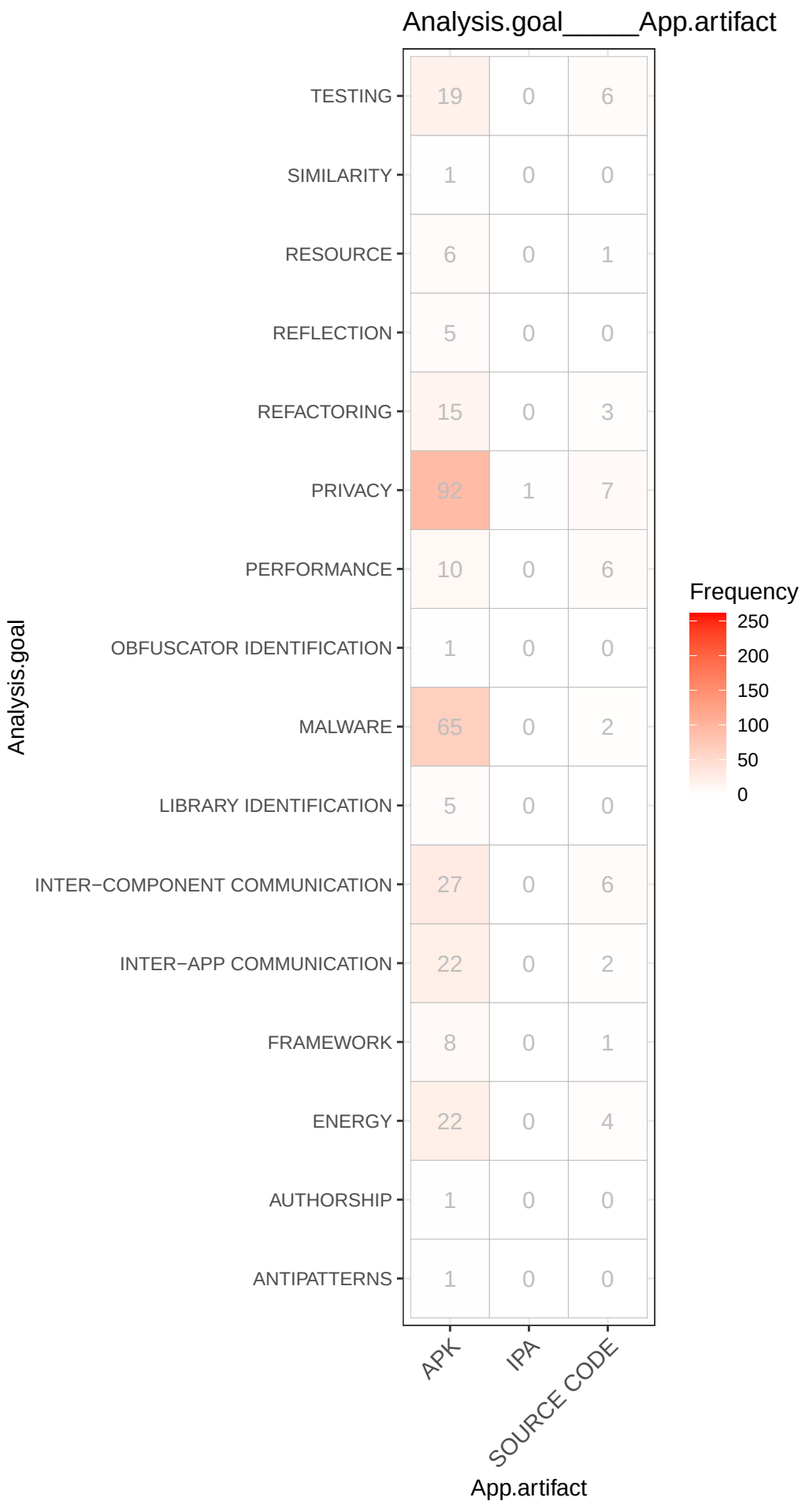
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RESOURCE
REFLECTION
REFACTORING
PRIVACY
PERFORMANCE
OBFUSCATOR IDENTIFICATION
MALWARE
LIBRARY IDENTIFICATION
INTER−COMPONENT COMMUNICATION
INTER−APP COMMUNICATION
FRAMEWORK
ENERGY
AUTHORSHIP
ANTIPATTERNS
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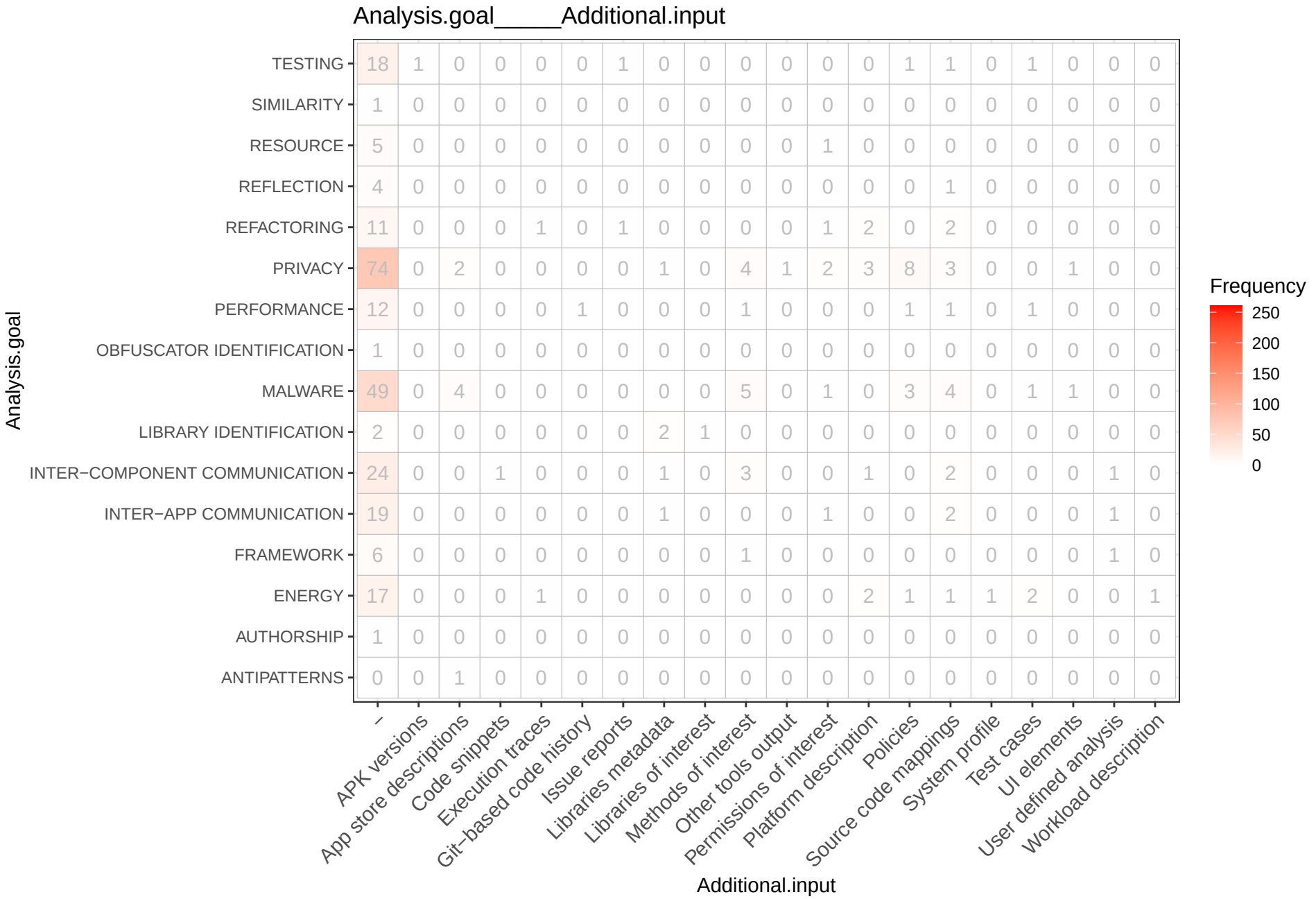
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INTER−APP COMMUNICATION 19 0 0 0 0 0 0 1 0 0 0 1 0 0 2 0 0 0 1 0
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APK versions
App store descriptions
Code snippets
Execution traces
Git−based code history
Issue reports
Libraries metadata
Libraries of interest
Methods of interest
Other tools output
Permissions of interest
Platform description
Policies
Source code mappings
System profile
Test cases
UI elements
User defined analysis
Workload description
Additional.input
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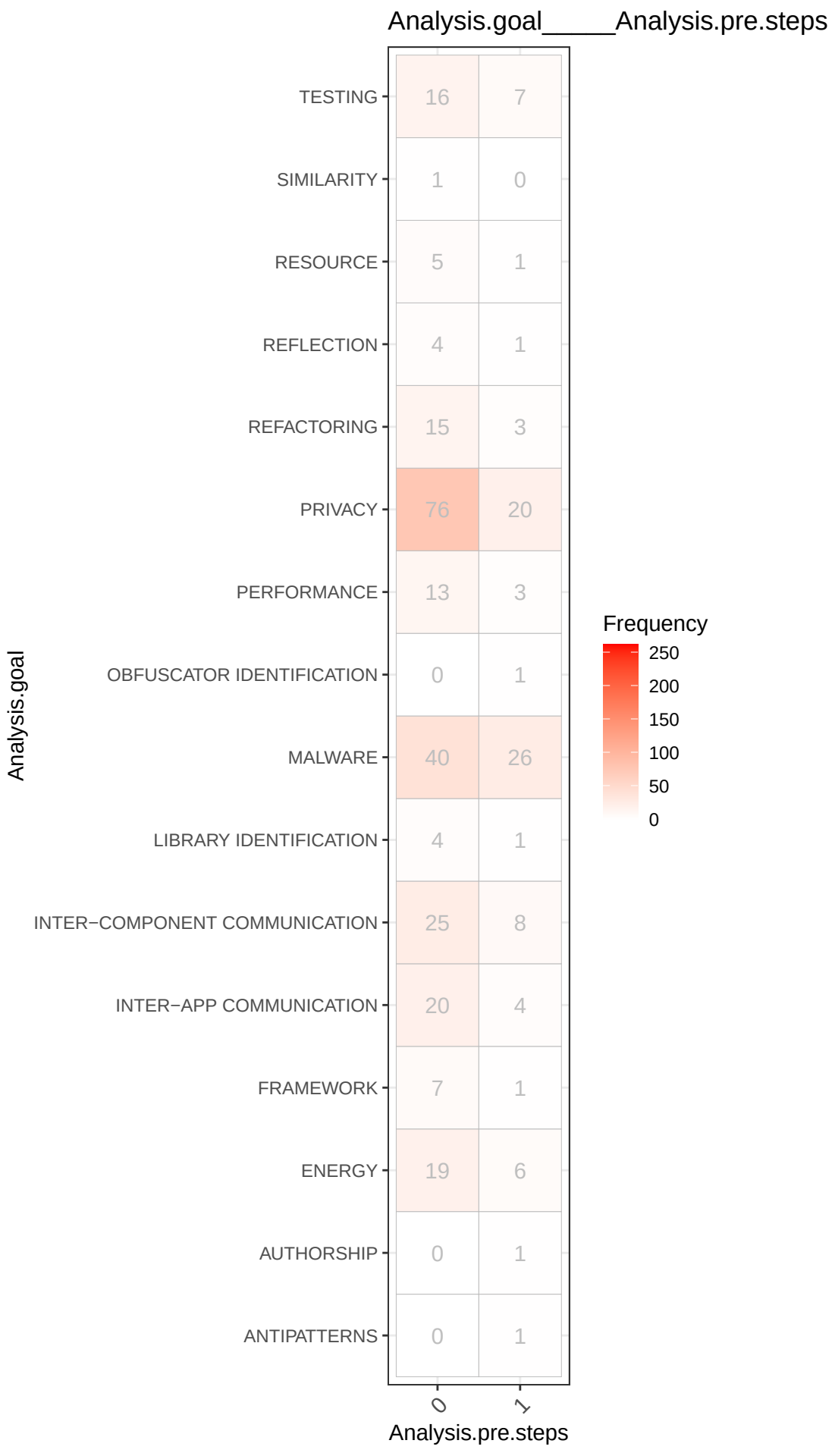
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REFACTORING
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MALWARE
LIBRARY IDENTIFICATION
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INTER−APP COMMUNICATION
FRAMEWORK
ENERGY
AUTHORSHIP
ANTIPATTERNS
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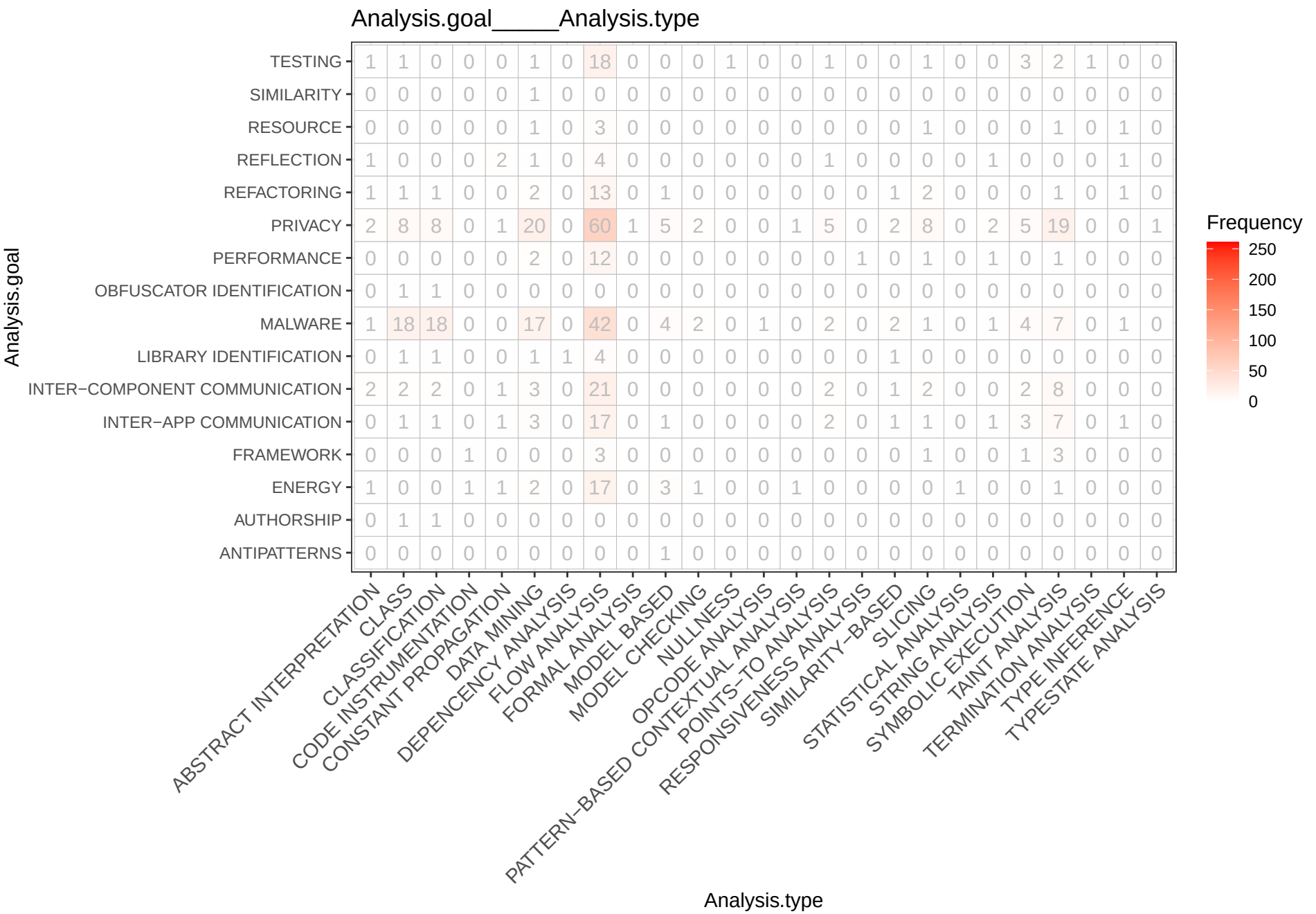
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CLASS CLASSIFICATION
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CONSTANT PROPAGATION
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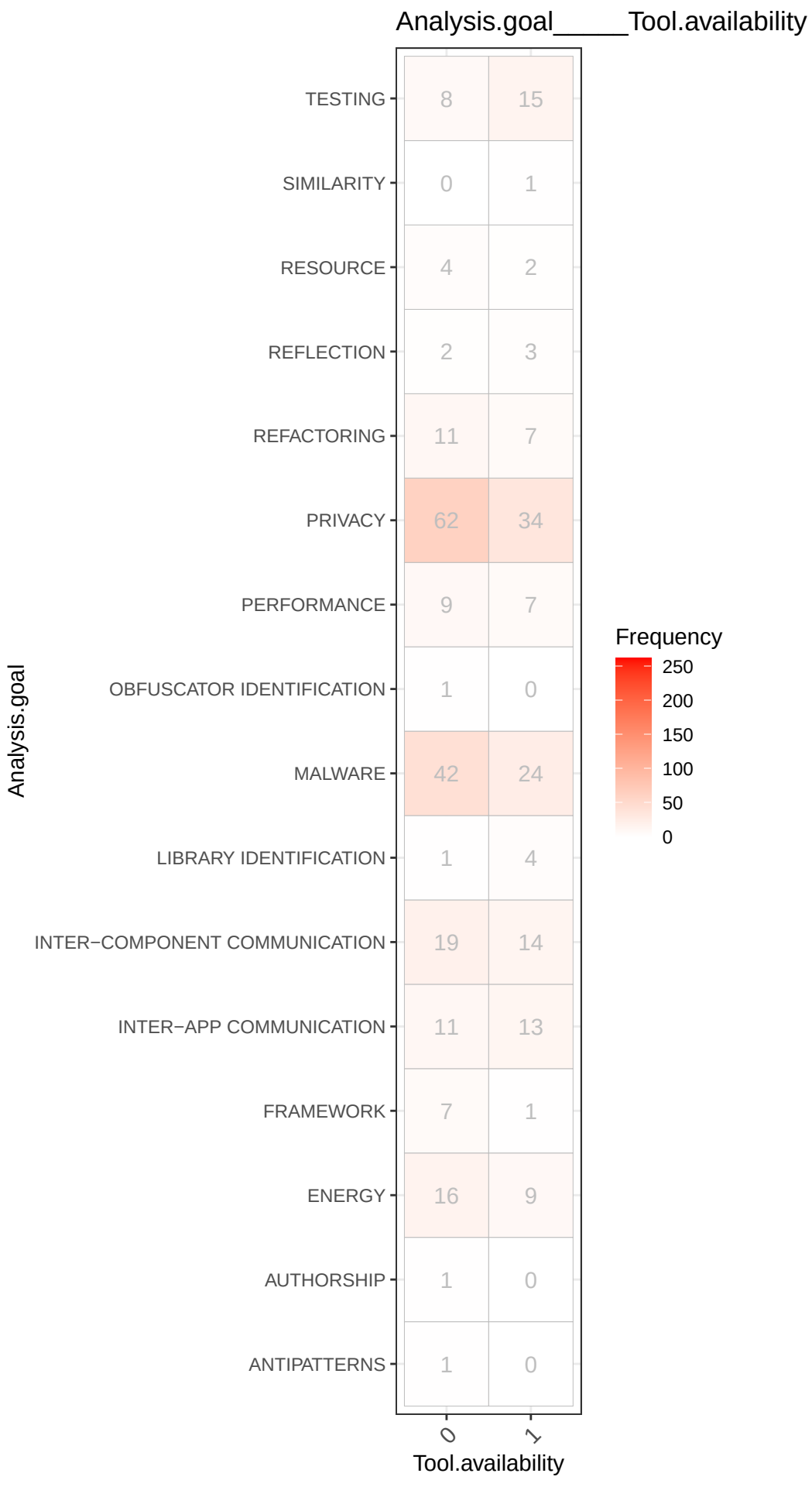
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ENERGY
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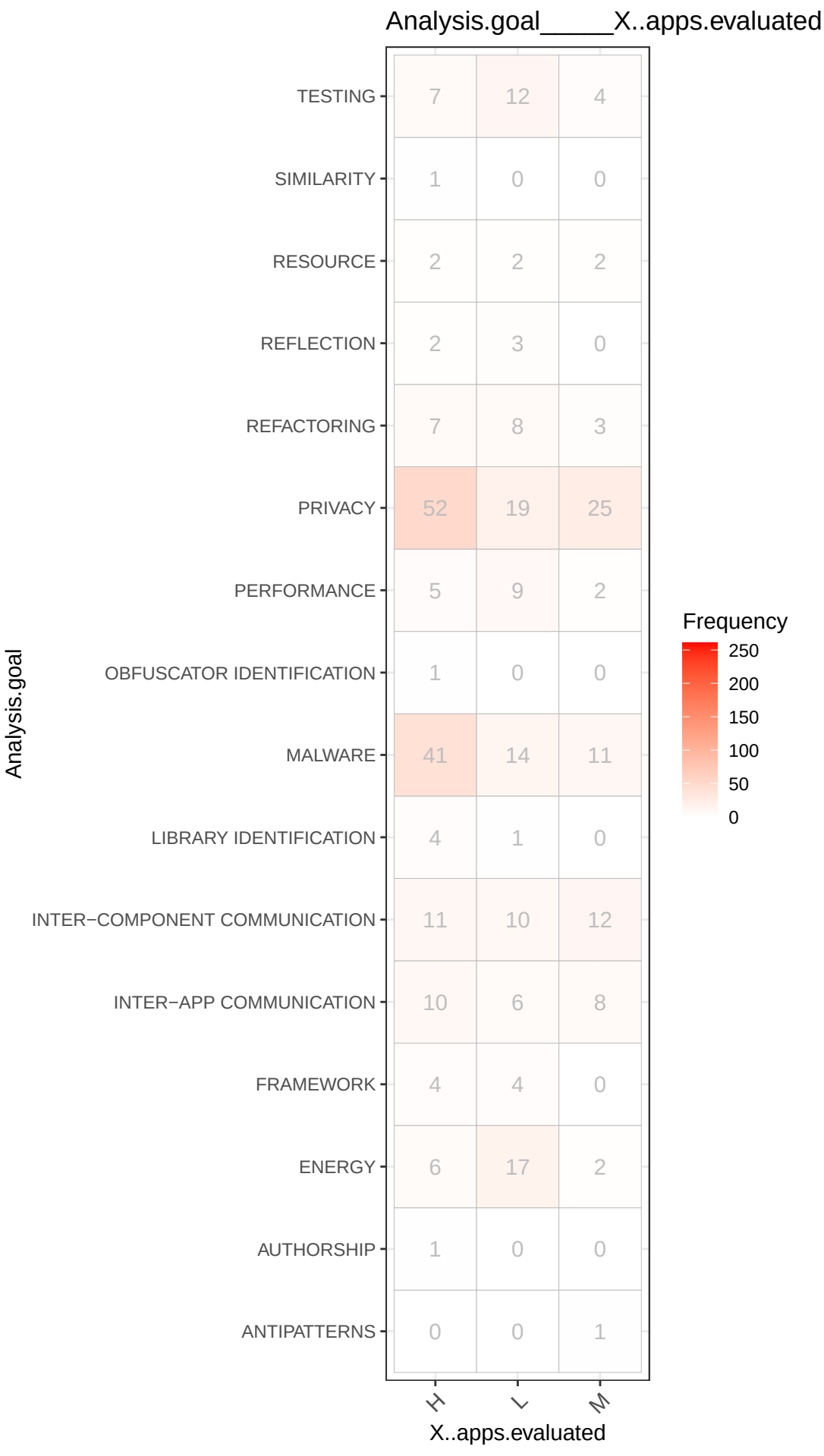
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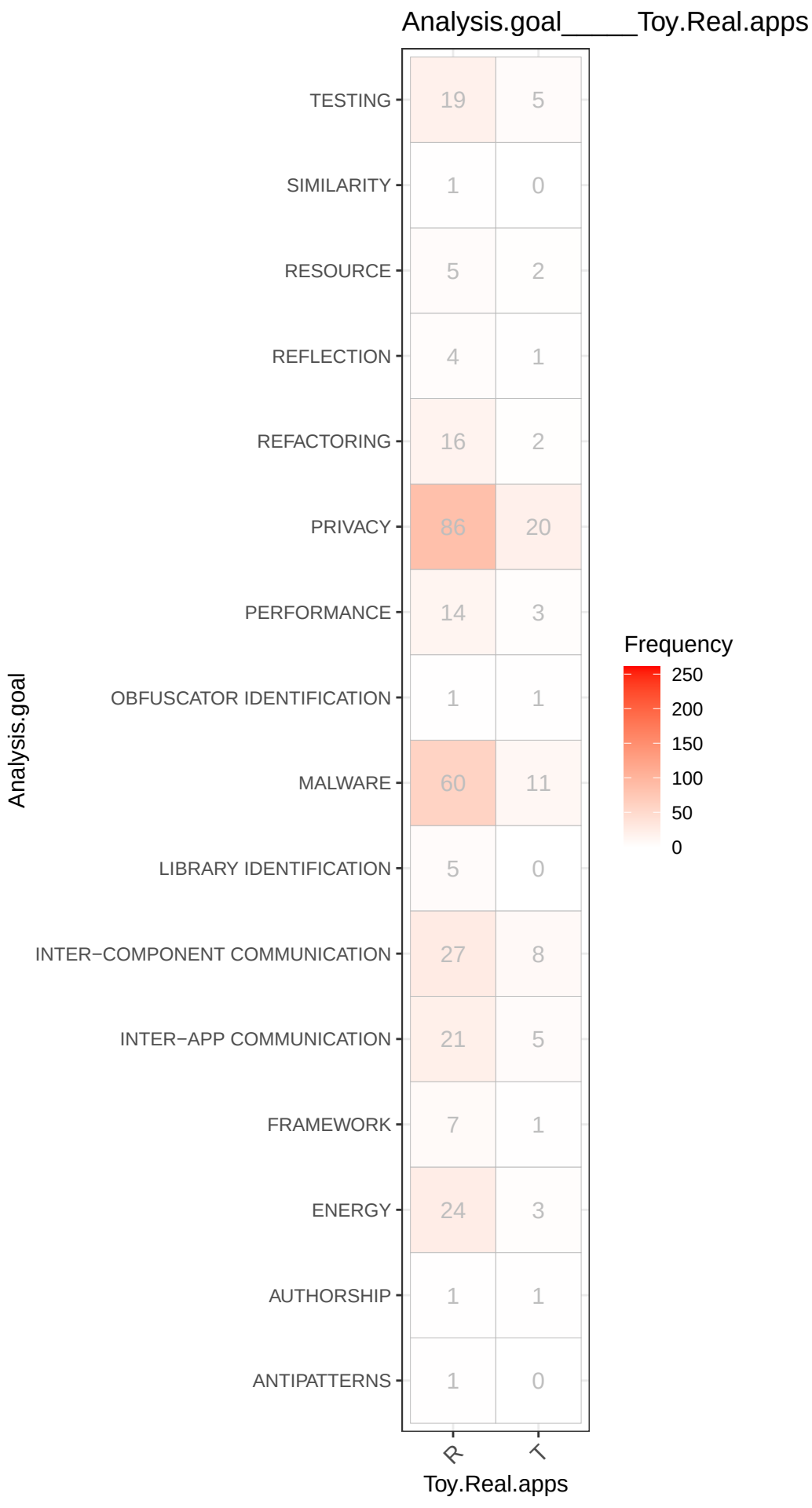
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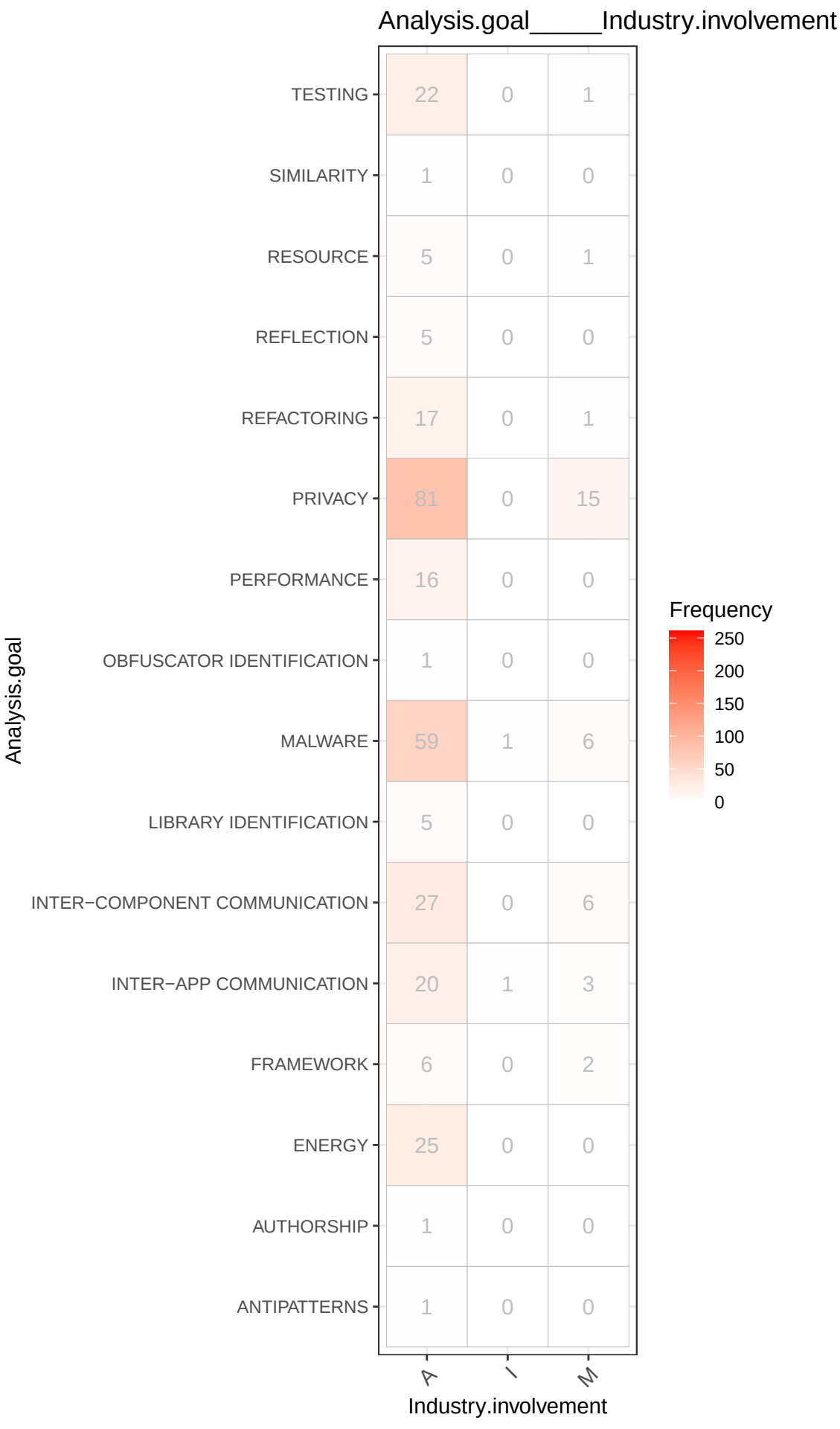
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INTER−APP COMMUNICATION
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Industry.involvement
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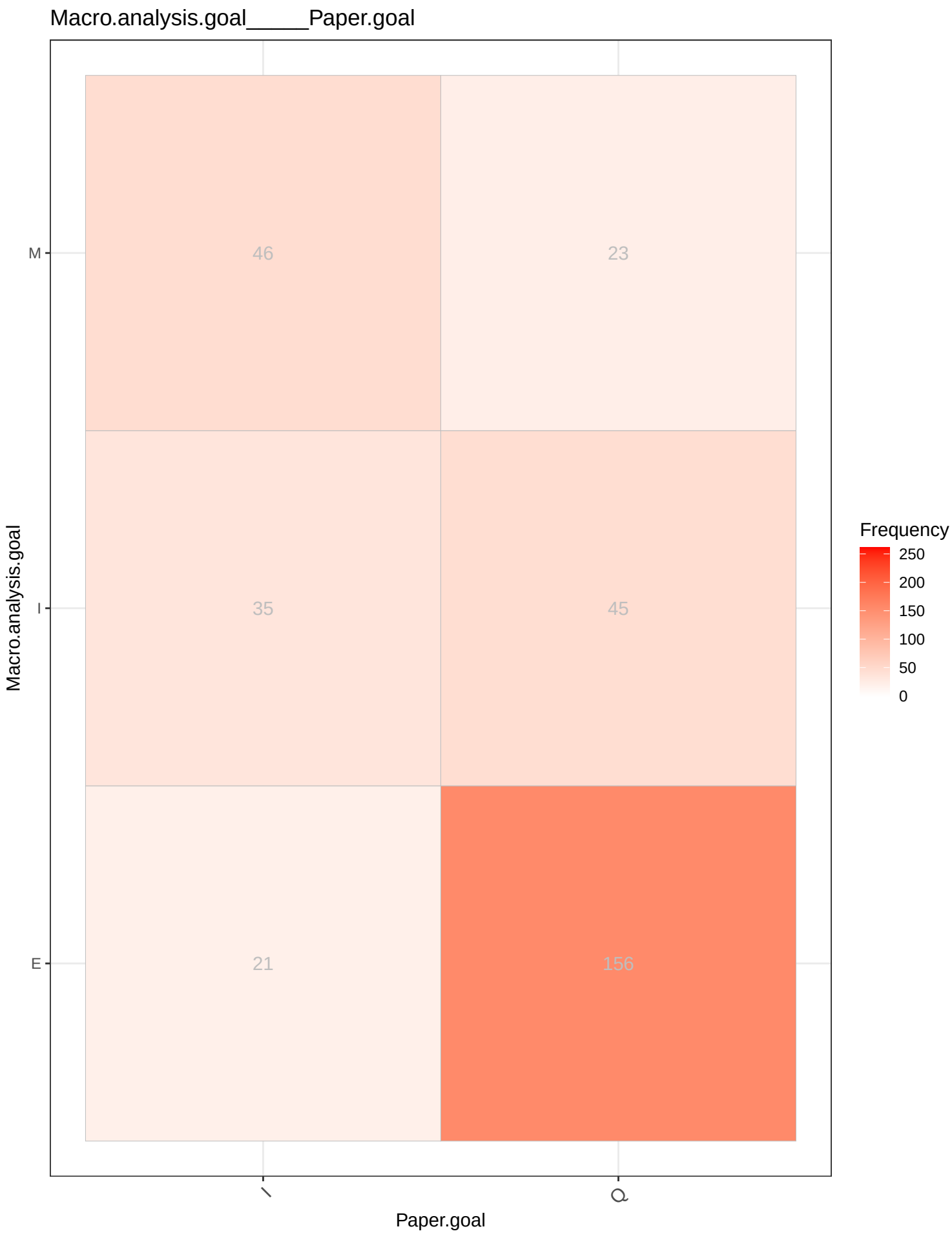
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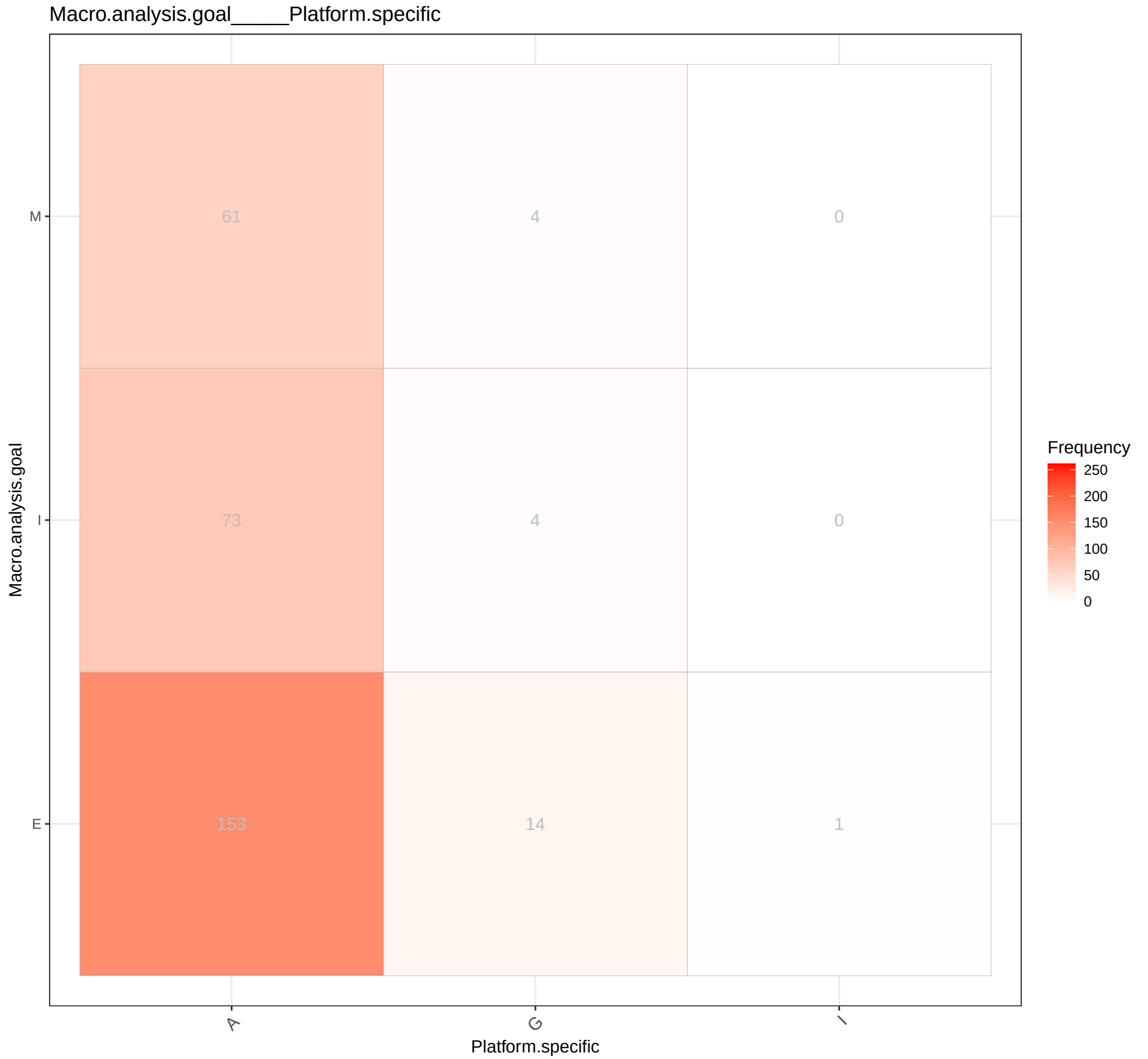
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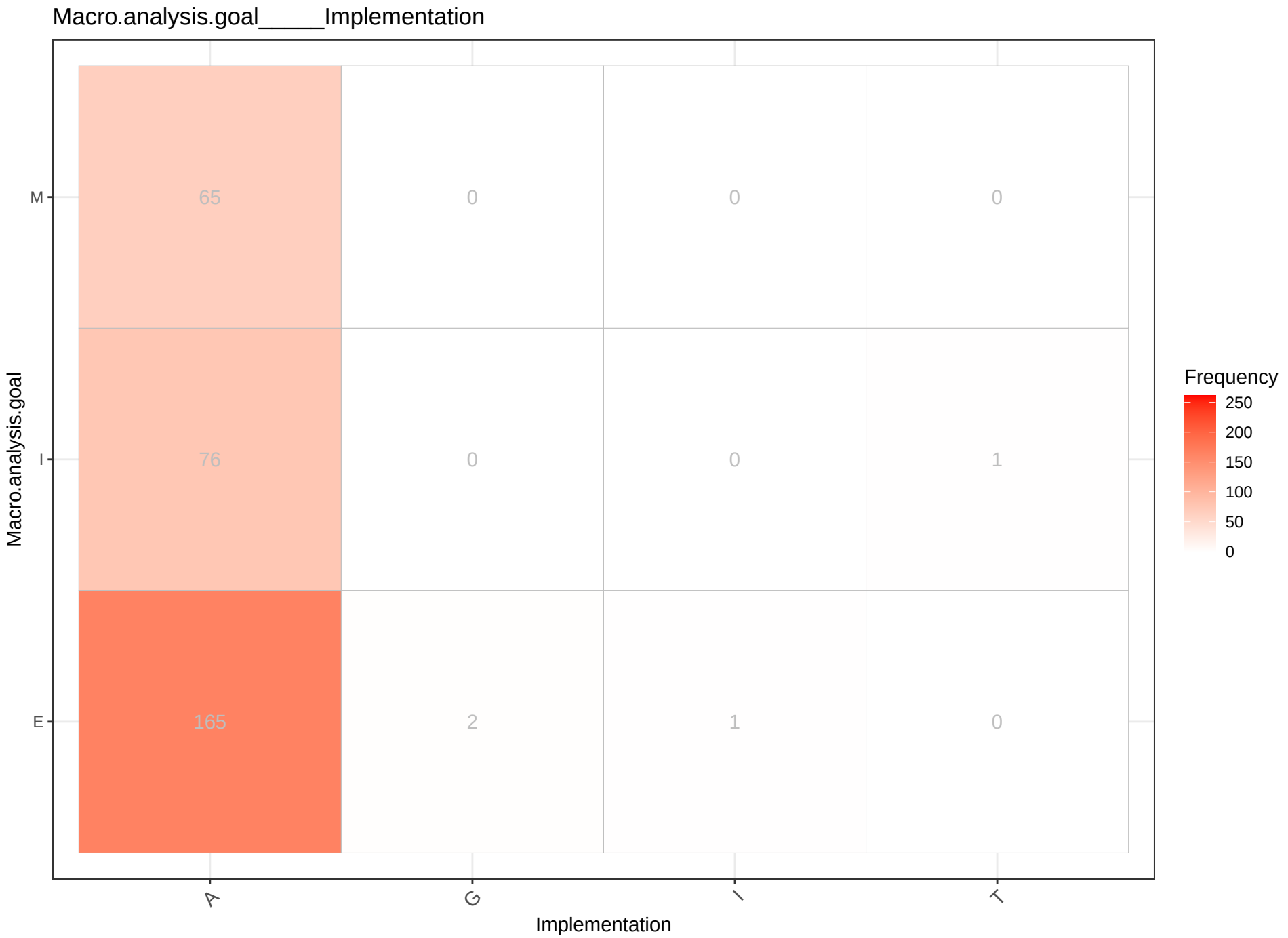
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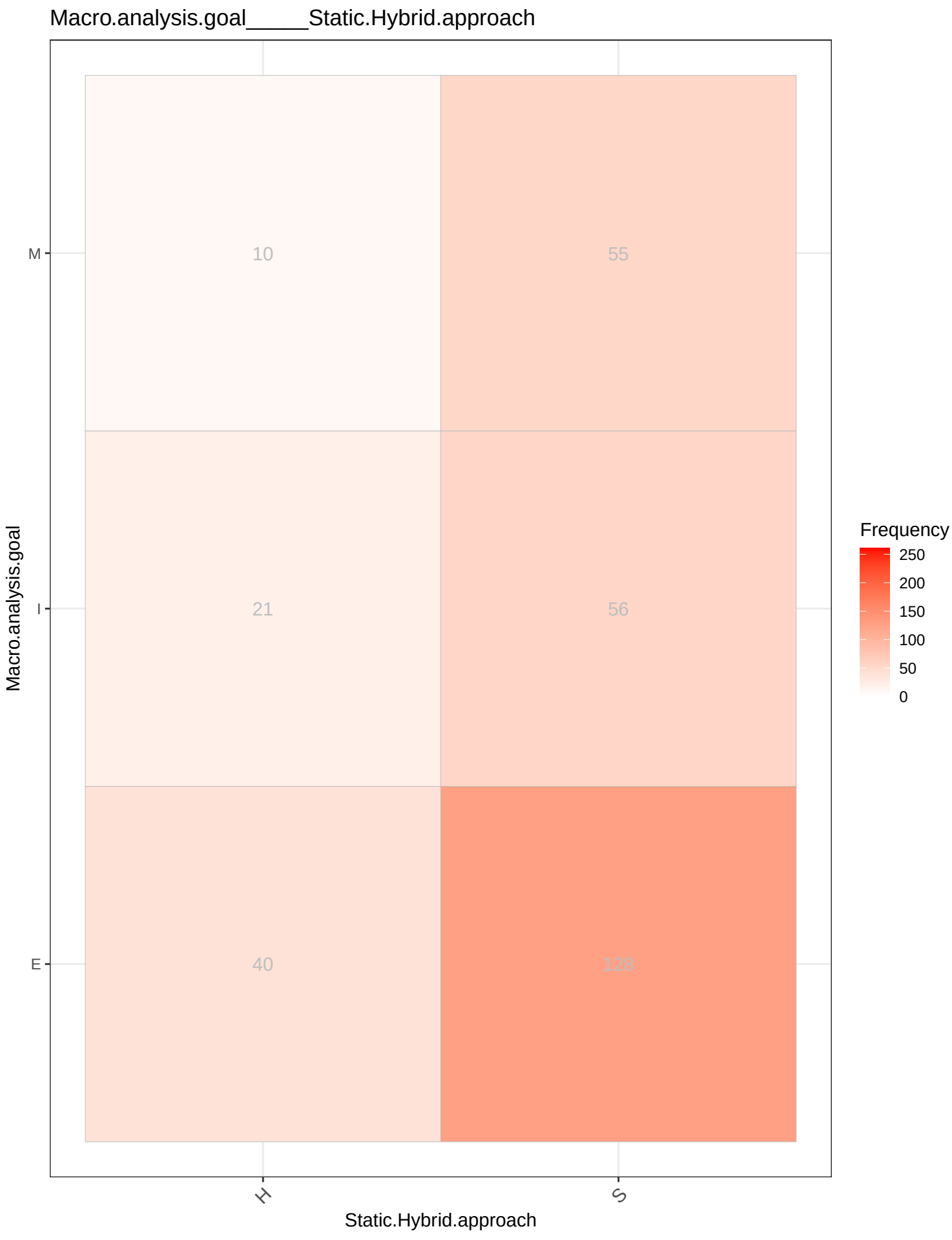
Macro.analysis.goal_____Static.Hybrid.approach
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H
S
Macro.analysis.goal
Static.Hybrid.approach
Frequency
250
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150
100
50
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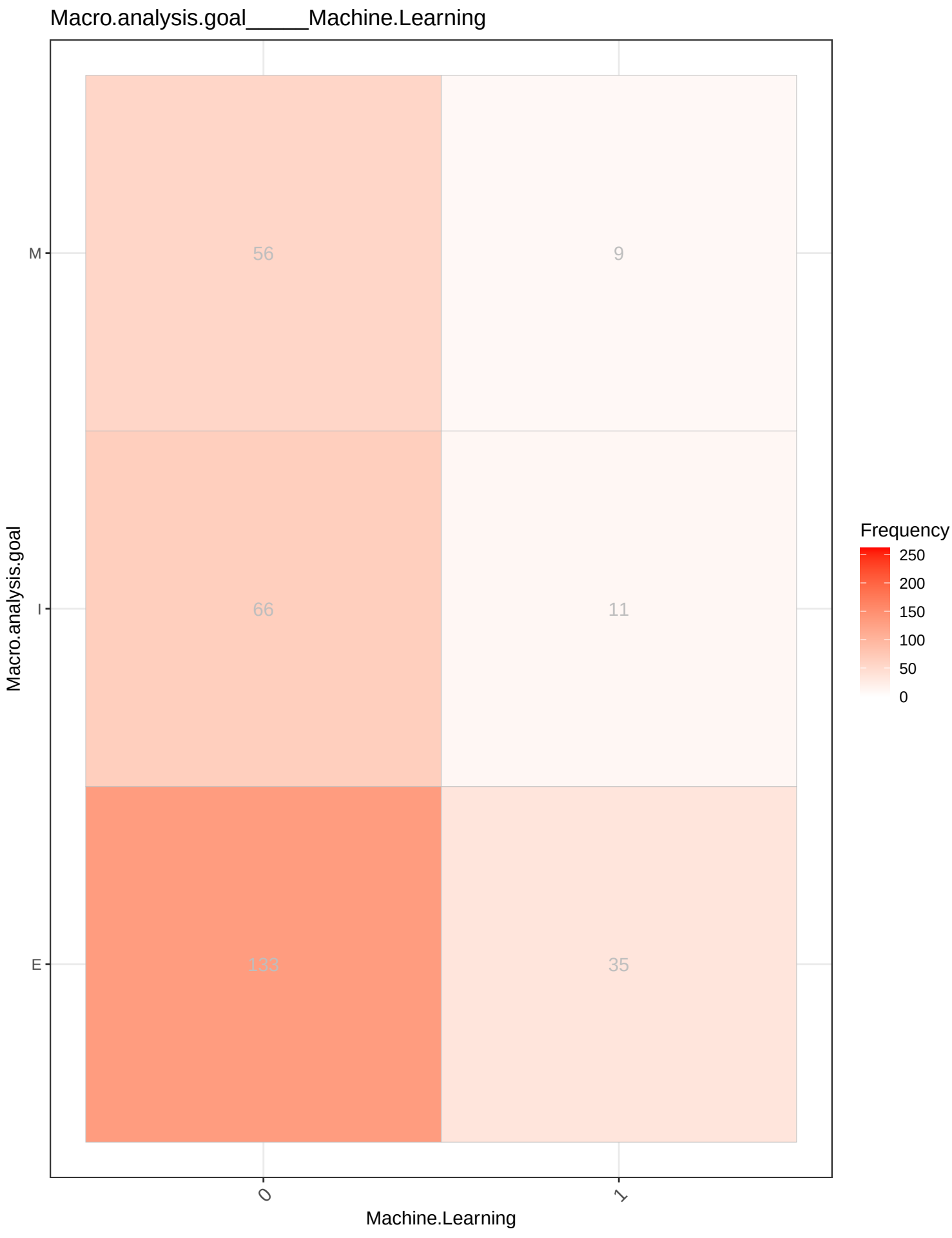
Macro.analysis.goal_____Machine.Learning
M
I
E
56
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11
133
35
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0
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Machine.Learning
Frequency
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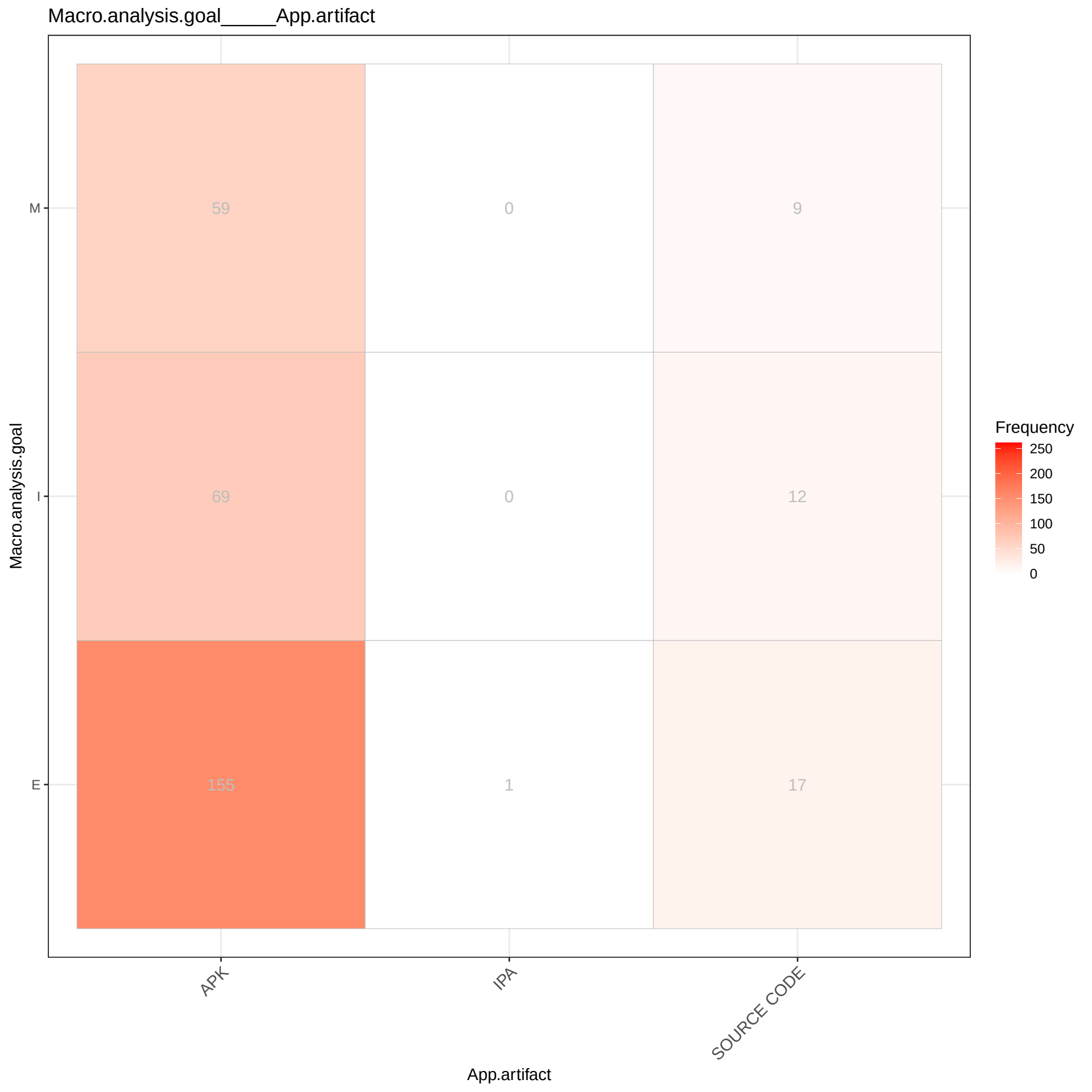
Macro.analysis.goal_____App.artifact
M
I
E
59
0
9
69
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17
APK
IPA
SOURCE CODE
App.artifact
Macro.analysis.goal
Frequency
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150
100
50
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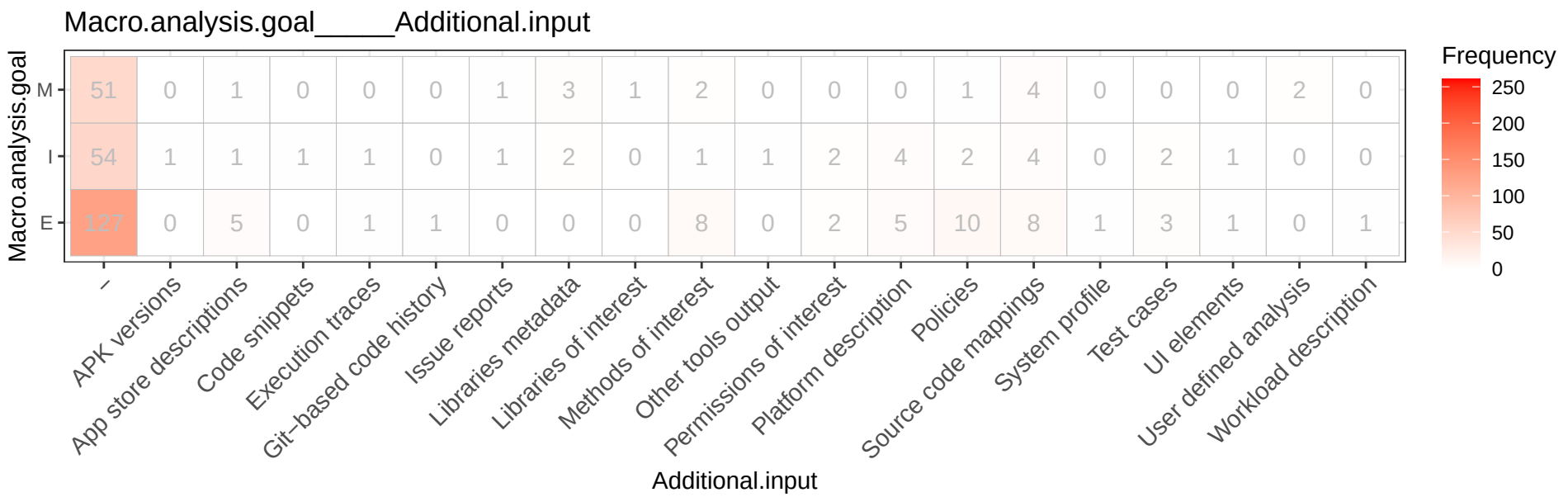
Macro.analysis.goal_____Additional.input
Macro.analysis.goal
M
I
E
51 0 1 0 0 0 1 3 1 2 0 0 0 1 4 0 0 0 2 0
54 1 1 1 1 0 1 2 0 1 1 2 4 2 4 0 2 1 0 0
127 0 5 0 1 1 0 0 0 8 0 2 5 10 8 1 3 1 0 1
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Additional.input
Frequency
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50
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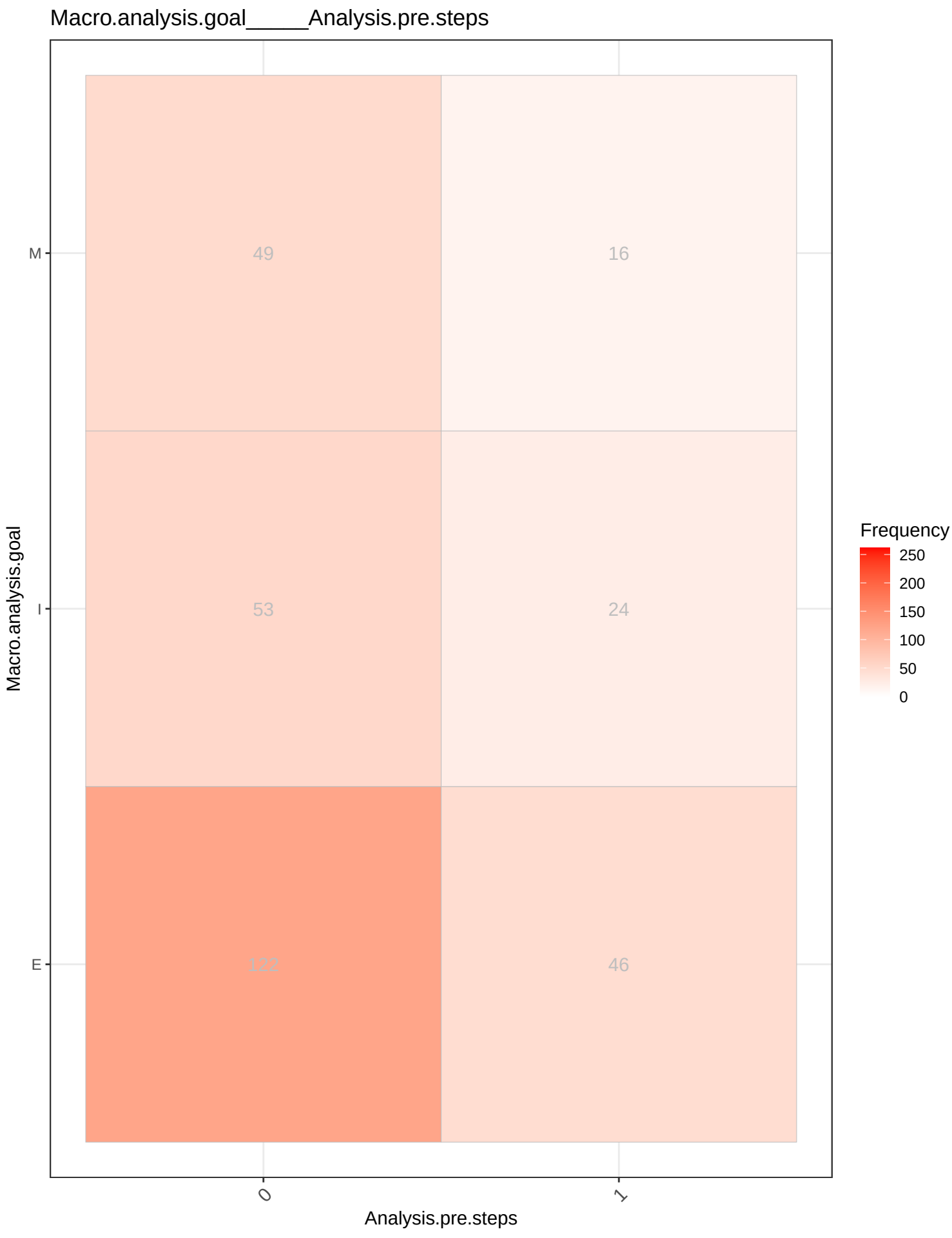
Macro.analysis.goal_____Analysis.pre.steps
M
I
E
49
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122
46
Macro.analysis.goal
0
1
Analysis.pre.steps
Frequency
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50
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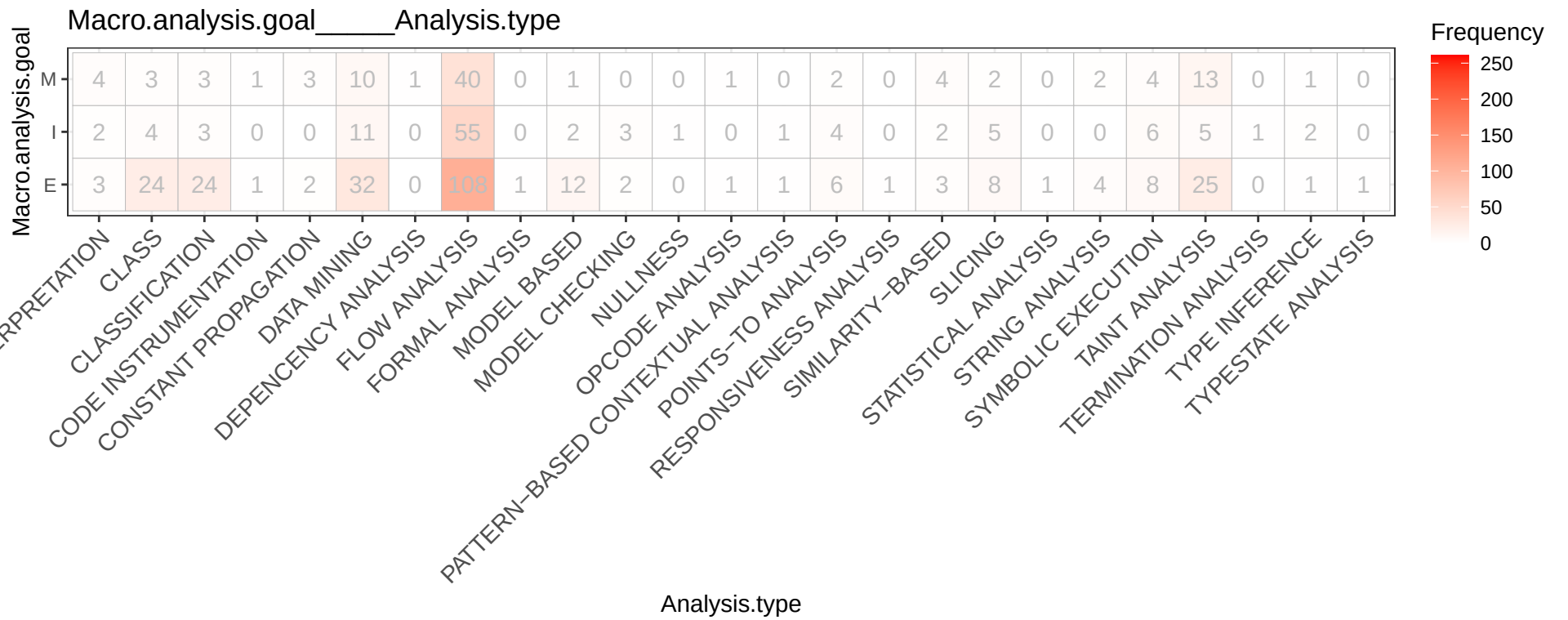
Macro.analysis.goal_____Analysis.type
Macro.analysis.goal
M
I
E
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2 4 3 0 0 11 0 55 0 2 3 1 0 1 4 0 2 5 0 0 6 5 1 2 0
3 24 24 1 2 32 0 108 1 12 2 0 1 1 6 1 3 8 1 4 8 25 0 1 1
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TYPE INFERENCE
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Frequency
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50
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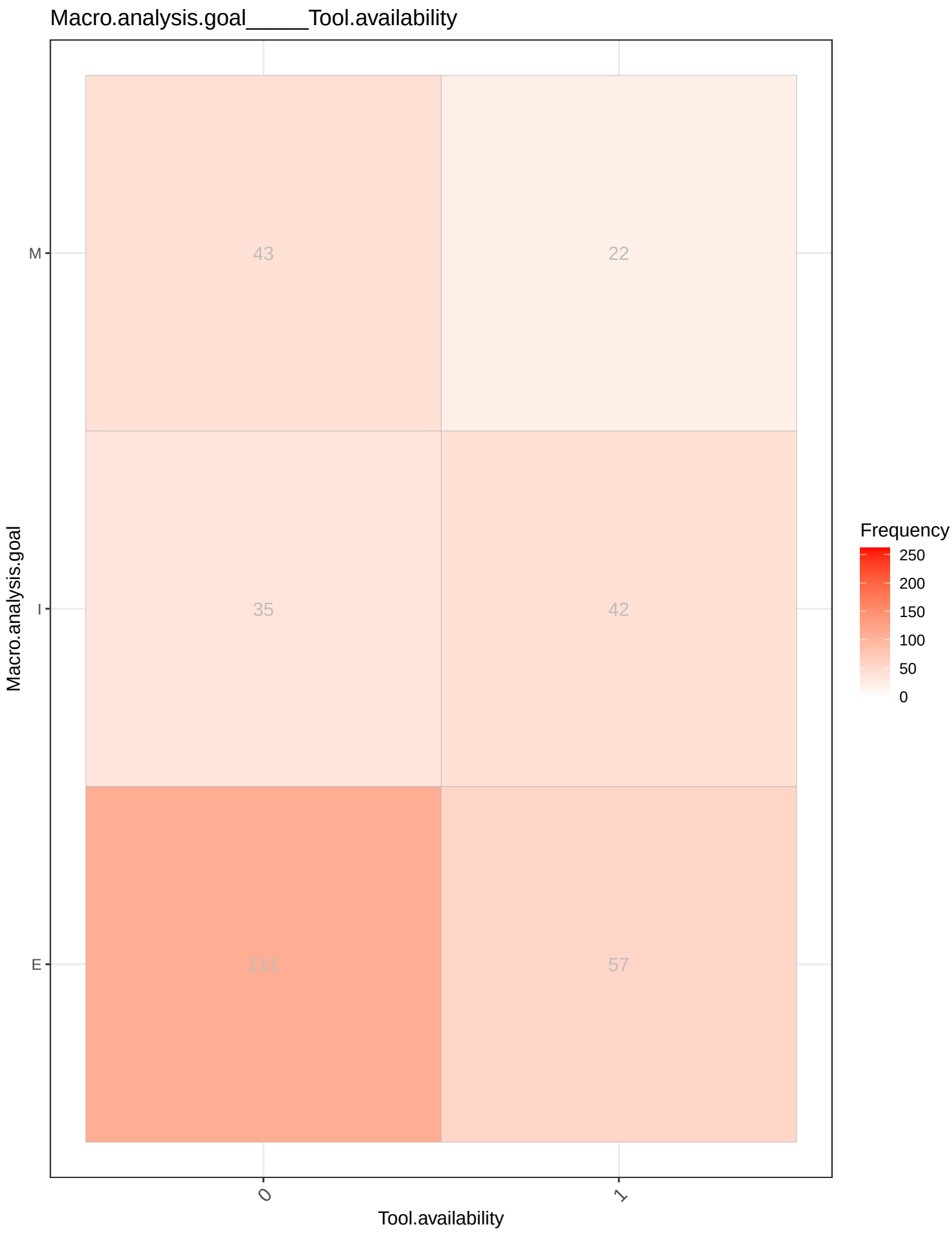
Macro.analysis.goal_____Tool.availability
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I
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Tool.availability
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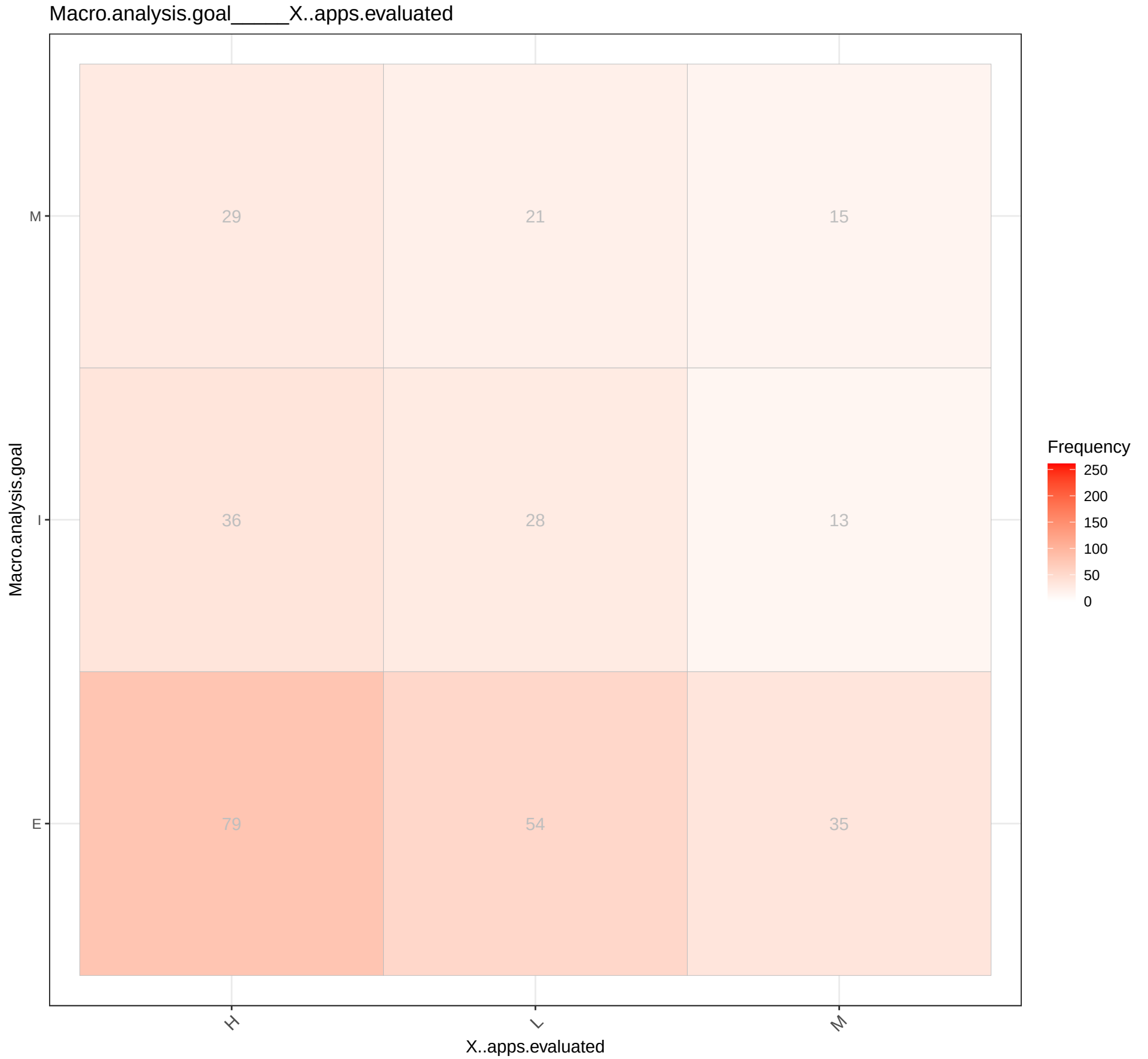
Macro.analysis.goal_____X..apps.evaluated
29
21
15
36
28
13
79
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35
M
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E
Macro.analysis.goal
H
L
M
X..apps.evaluated
Frequency
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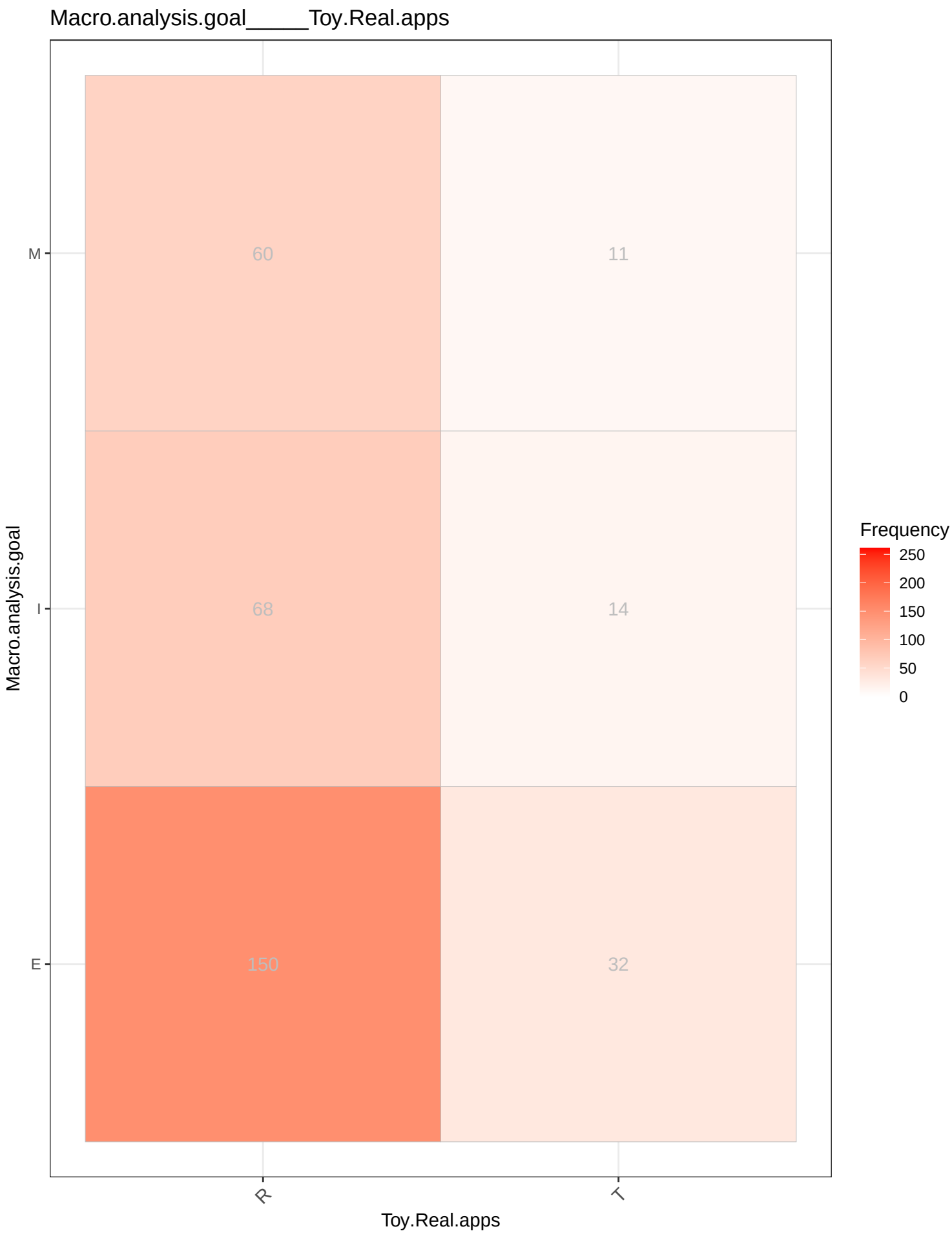
Macro.analysis.goal_____Toy.Real.apps
Macro.analysis.goal
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R
T
Toy.Real.apps
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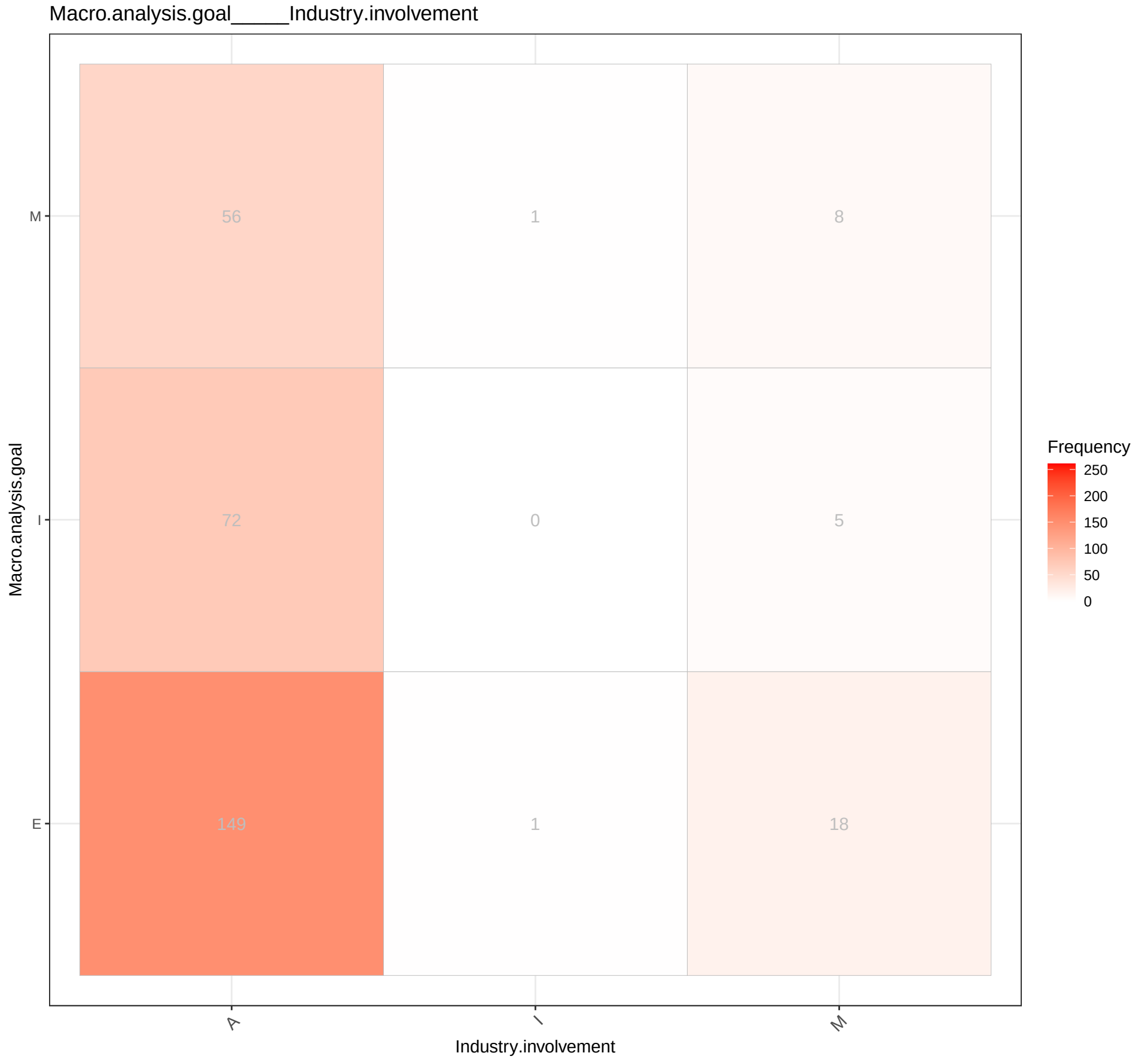
Macro.analysis.goal_____Industry.involvement
M
I
E
56
1
8
72
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18
A
I
M
Industry.involvement
Macro.analysis.goal
Frequency
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200
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100
50
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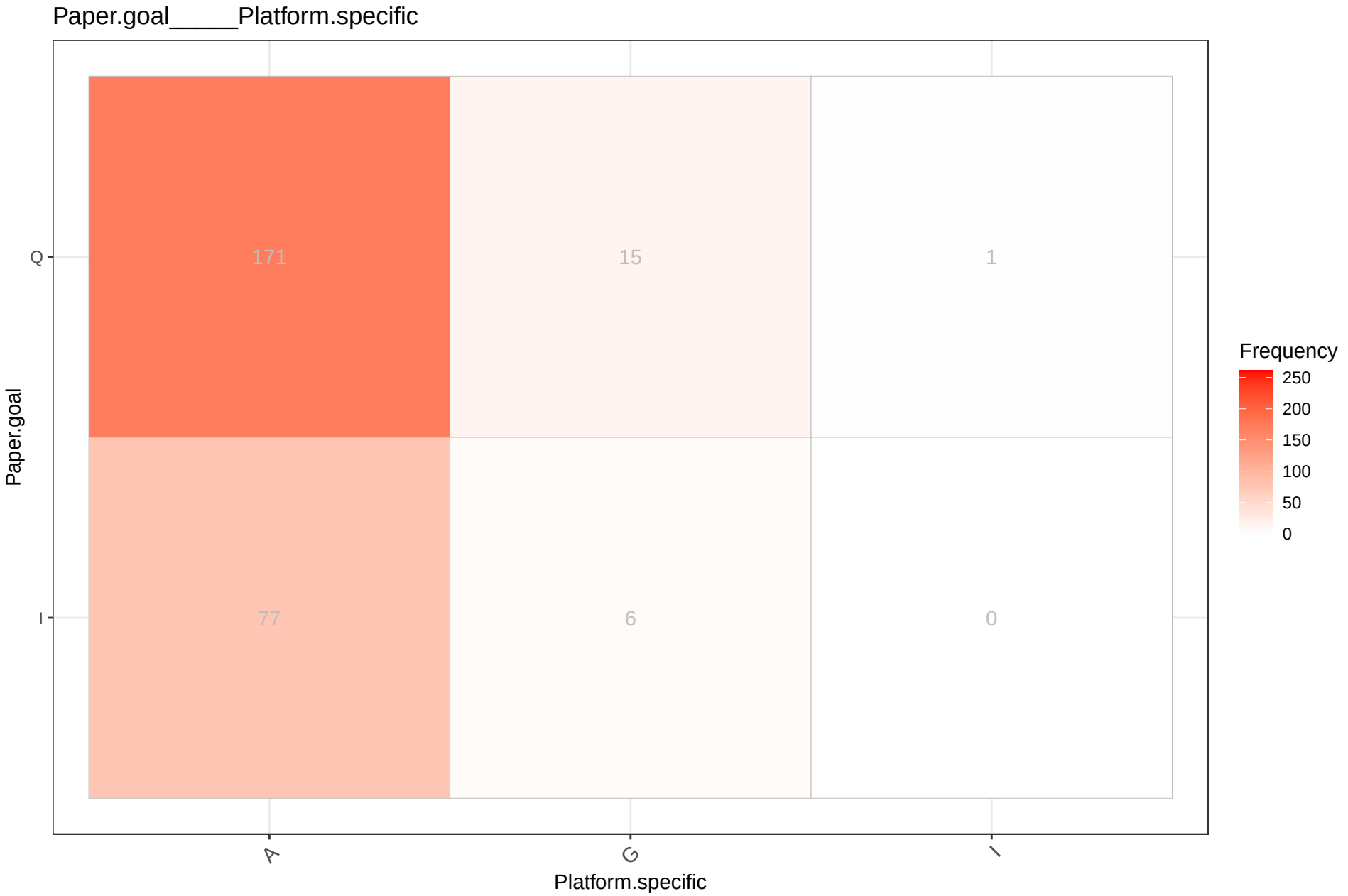
Paper.goal_____Platform.specific
Q
I
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77
6
0
Paper.goal
A
G
I
Platform.specific
Frequency
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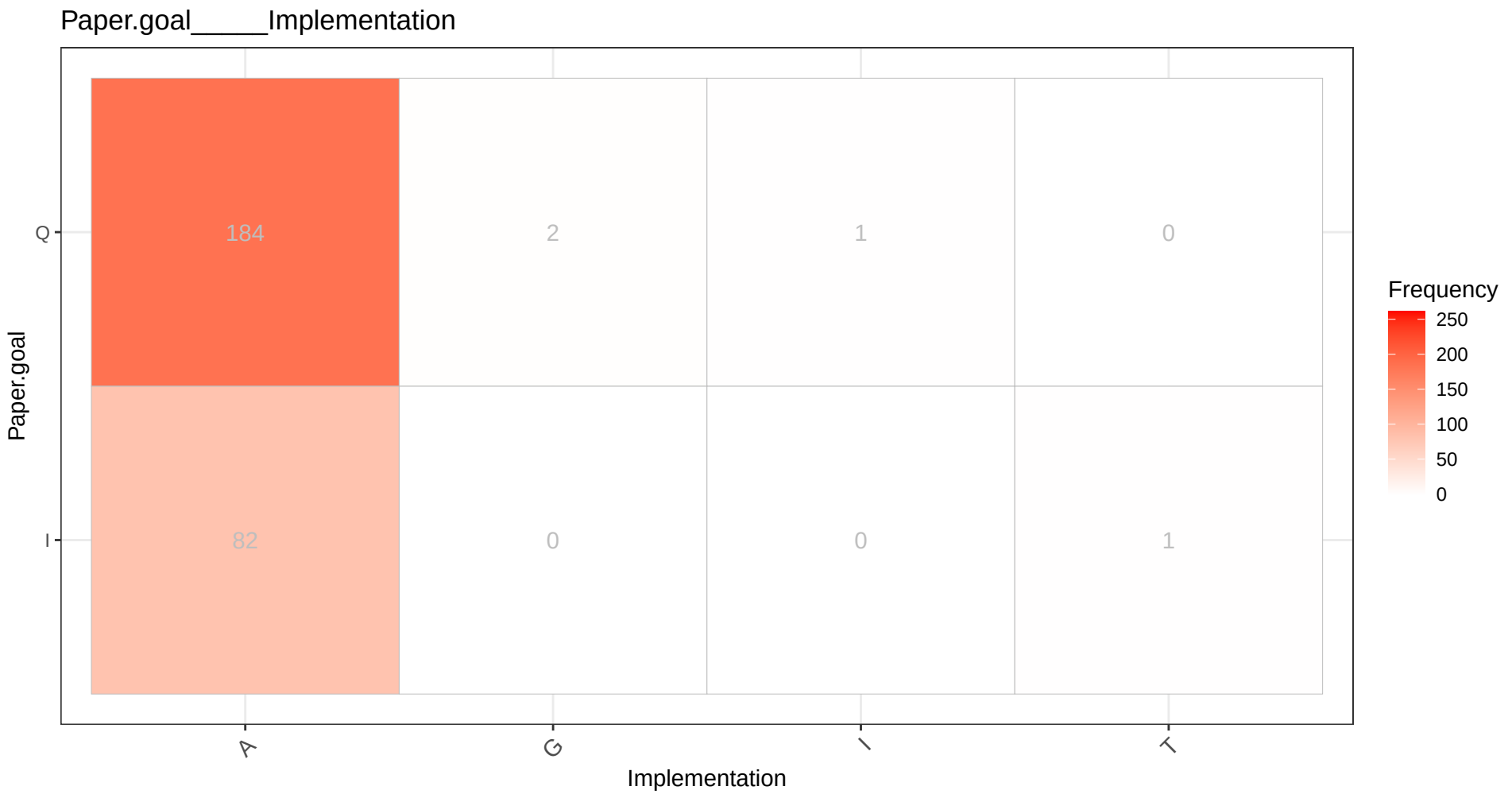
150
100
50
0


Paper.goal_____Implementation
Paper.goal
Q
I
184
2
1
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82
0
0
1
A
G
I
T
Implementation
Frequency
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50
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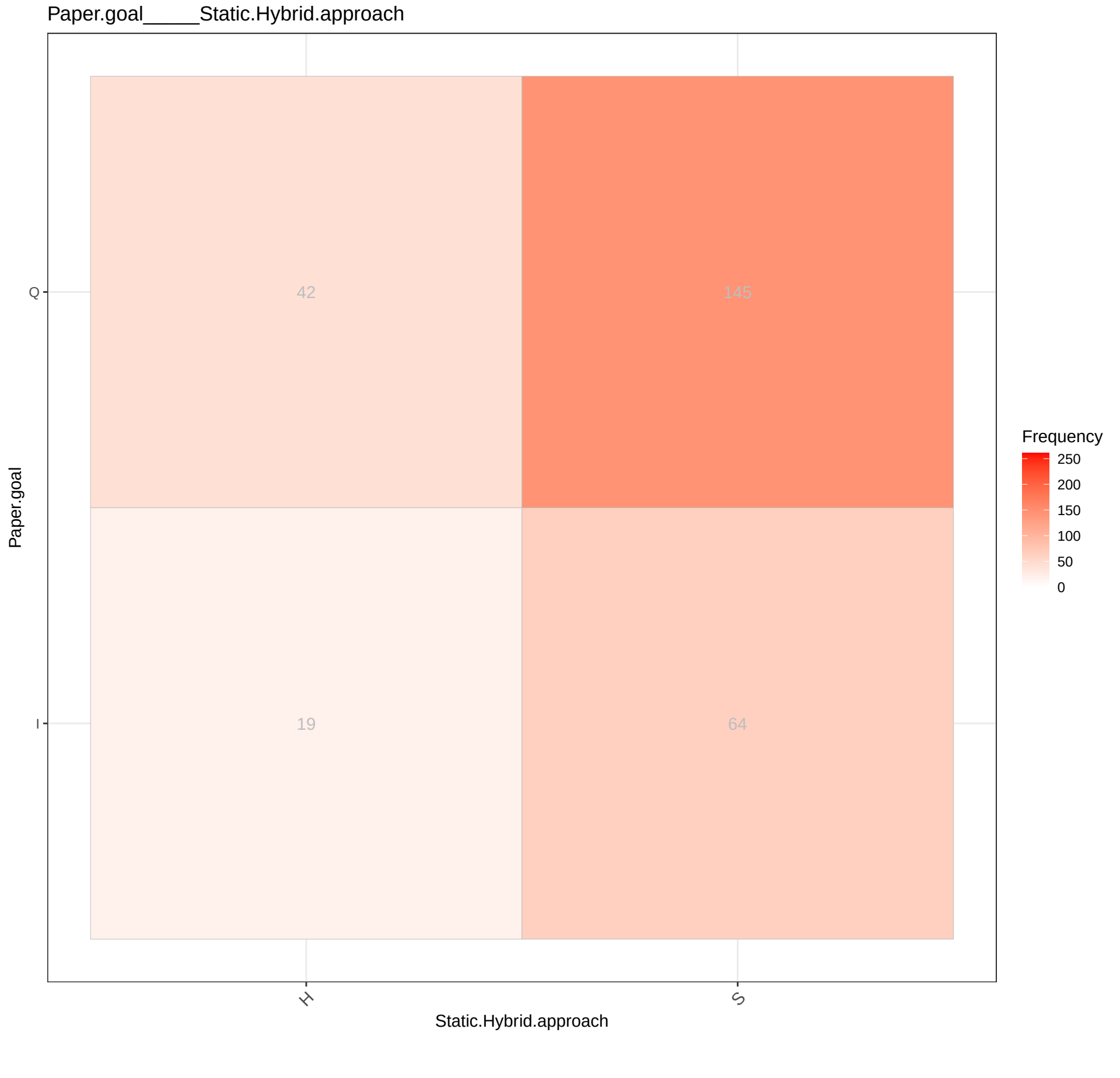
Paper.goal_____Static.Hybrid.approach
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I
42
145
19
64
Paper.goal
H
S
Static.Hybrid.approach
Frequency
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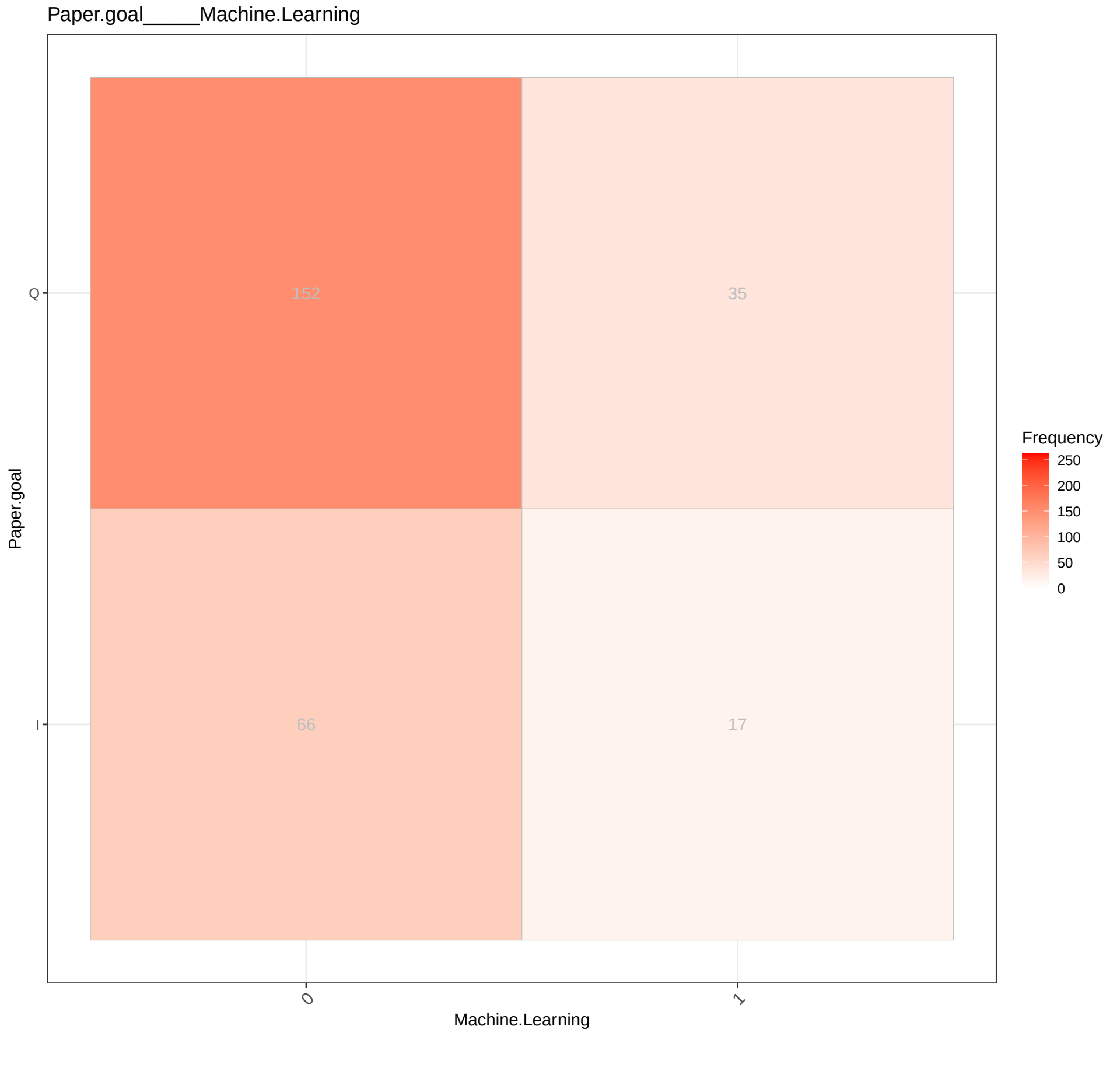
200
150
100
50
0


Paper.goal_____Machine.Learning
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152
35
66
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Paper.goal
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1
Machine.Learning
Frequency
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150
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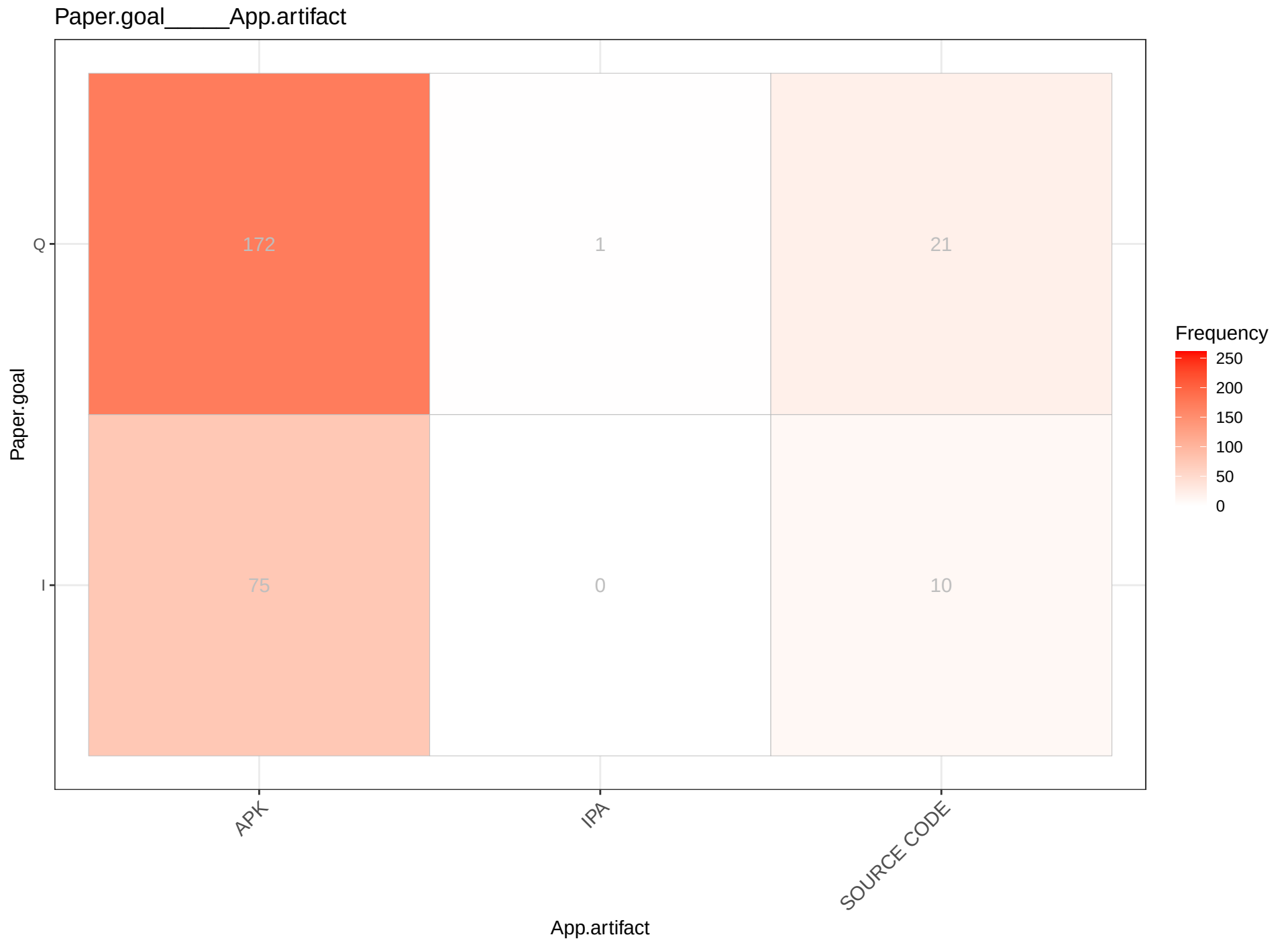
50
0


Paper.goal_____App.artifact
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I
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10
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APK
IPA
SOURCE CODE
App.artifact
Frequency
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50
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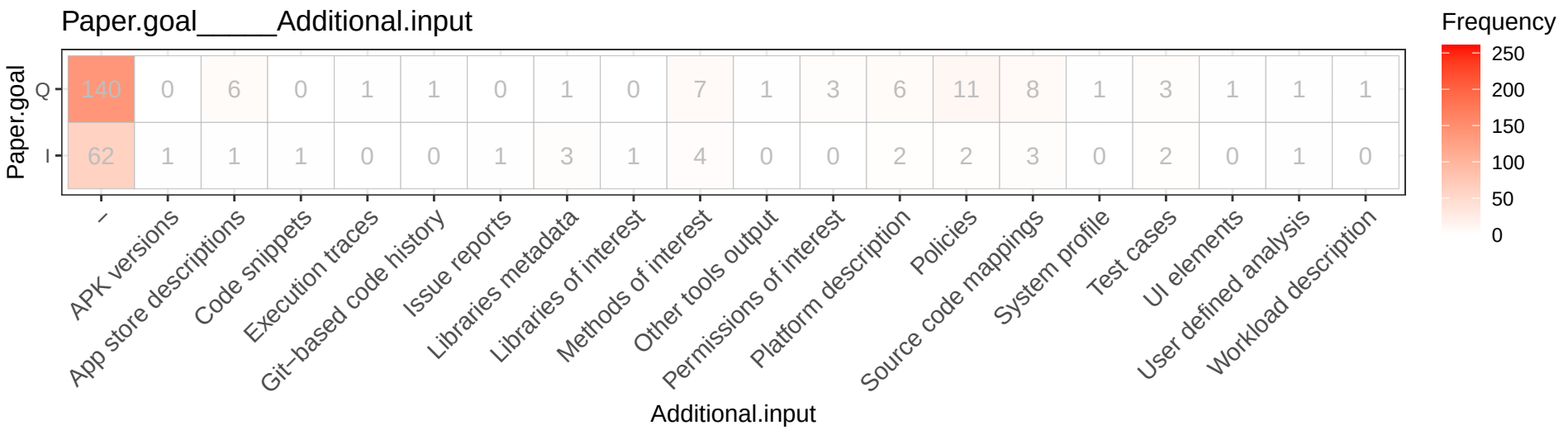
Paper.goal_____Additional.input
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150
100
50
0
Paper.goal
Q
I
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62 1 1 1 0 0 1 3 1 4 0 0 2 2 3 0 2 0 1 0
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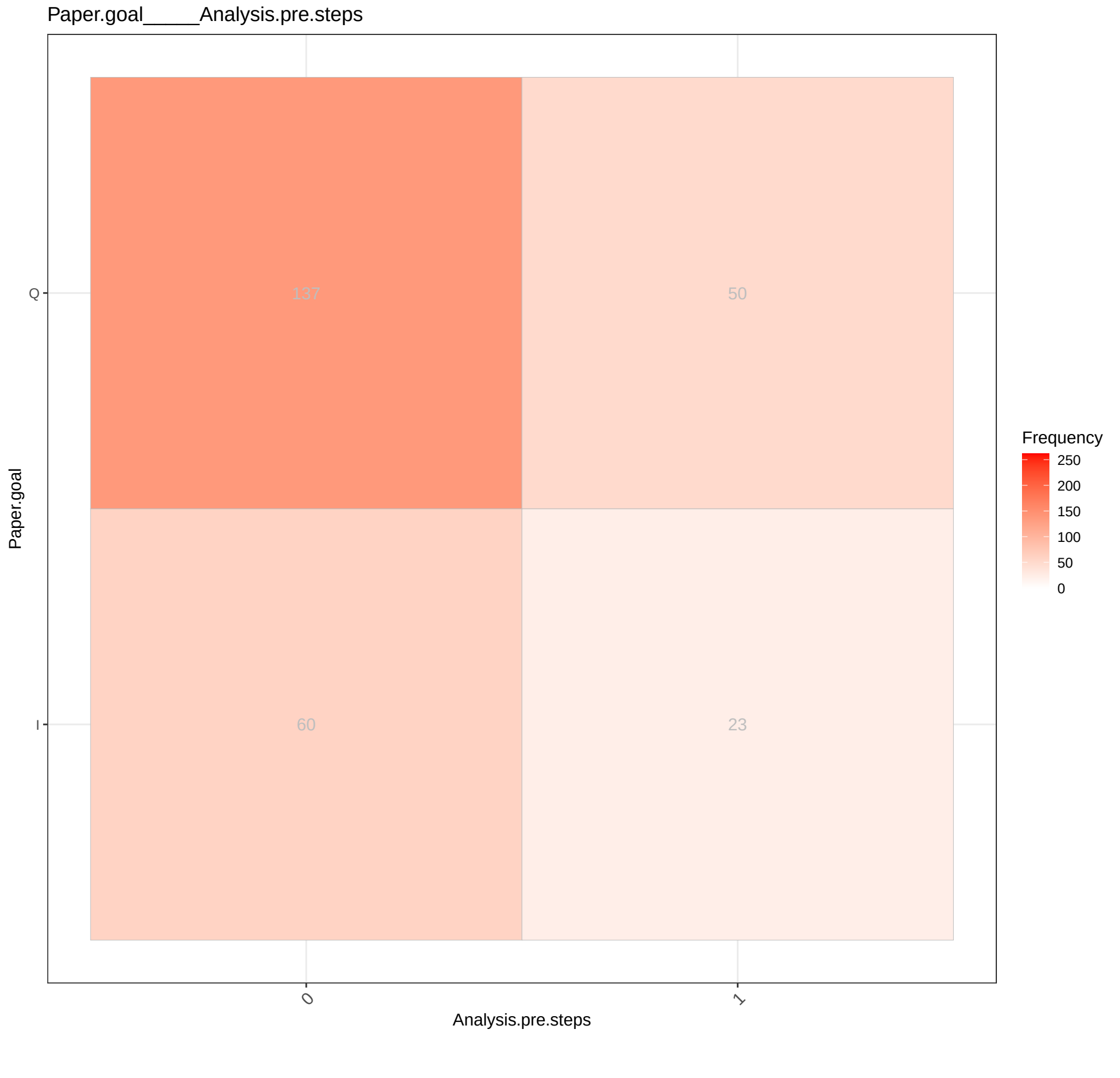
Paper.goal_____Analysis.pre.steps
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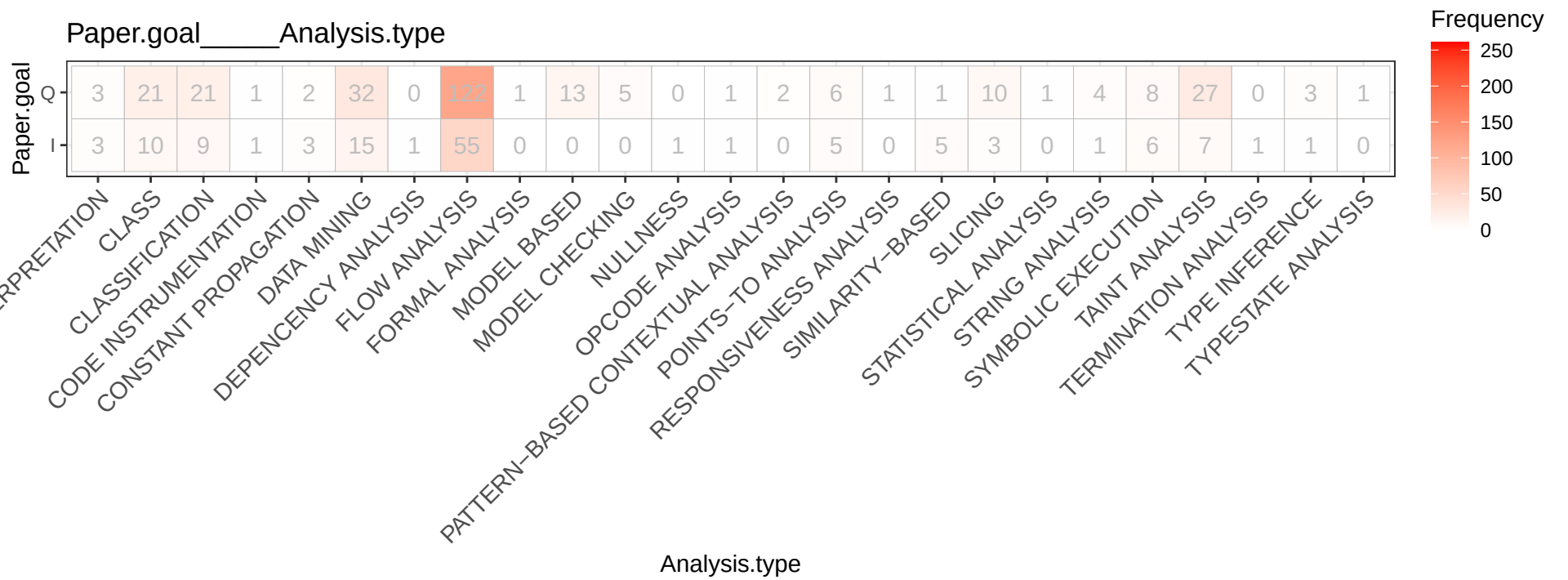
I
137
50
60
23
Paper.goal
0
1
Analysis.pre.steps
Frequency
250
200
150
100
50
0


Paper.goal_____Analysis.type
Paper.goal
Q
I
3 21 21 1 2 32 0 122 1 13 5 0 1 2 6 1 1 10 1 4 8 27 0 3 1
3 10 9 1 3 15 1 55 0 0 0 1 1 0 5 0 5 3 0 1 6 7 1 1 0
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TYPE INFERENCE
TYPESTATE ANALYSIS
Analysis.type
Frequency
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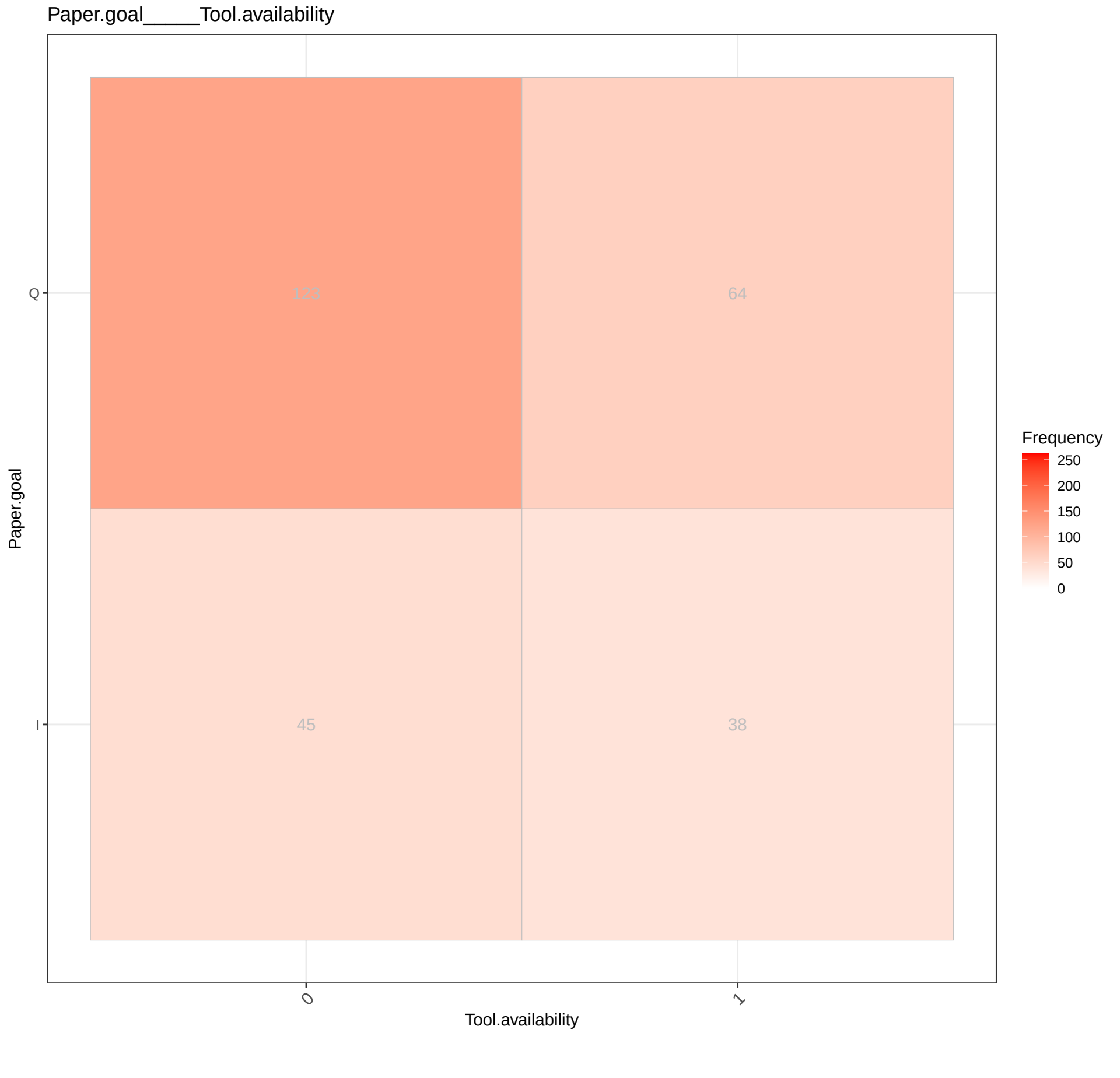
150
100
50
0


Paper.goal_____Tool.availability
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123
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Paper.goal
0
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Tool.availability
Frequency
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50
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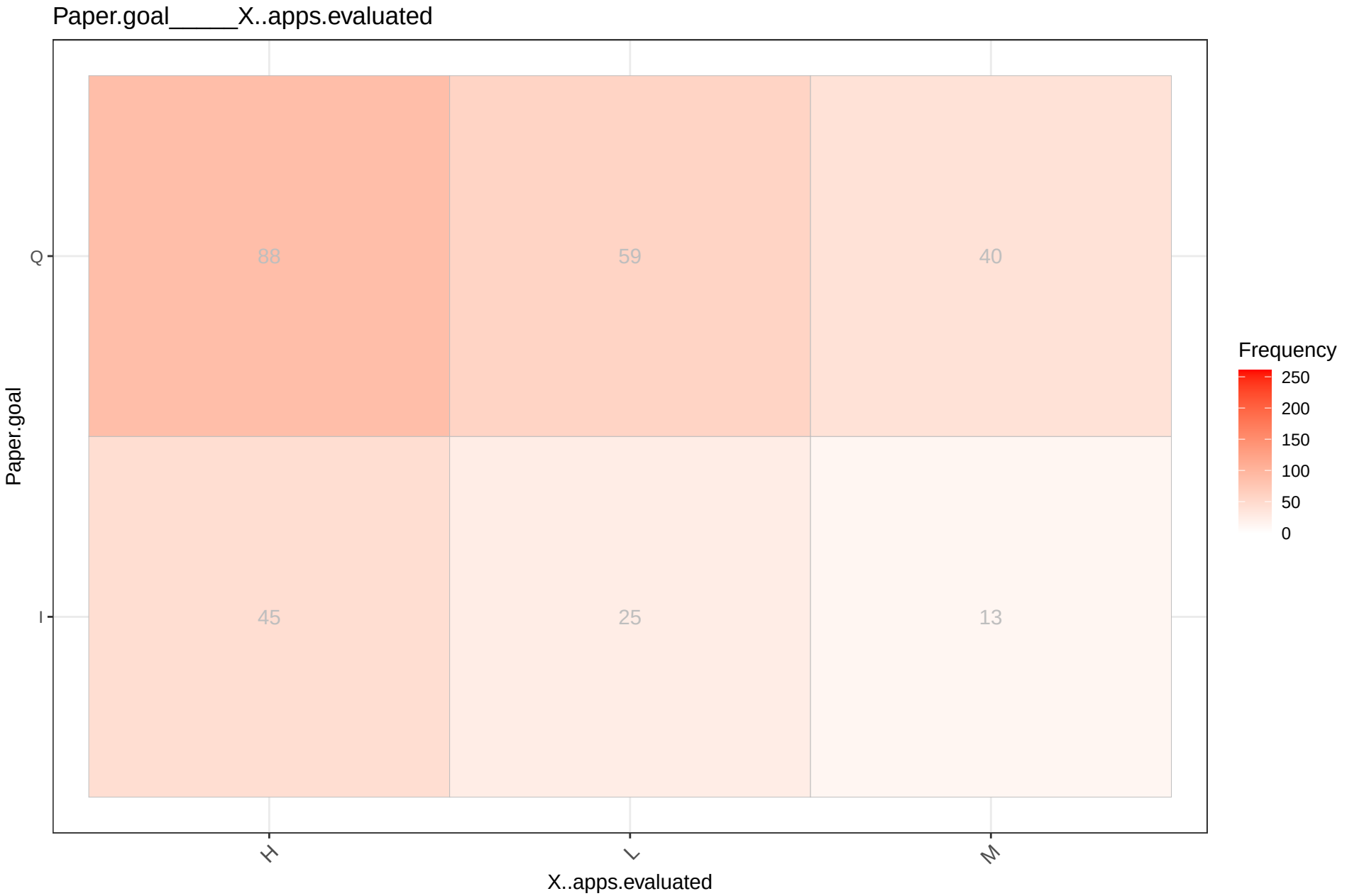
Paper.goal_____X..apps.evaluated
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I
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Paper.goal
H
L
M
X..apps.evaluated
Frequency
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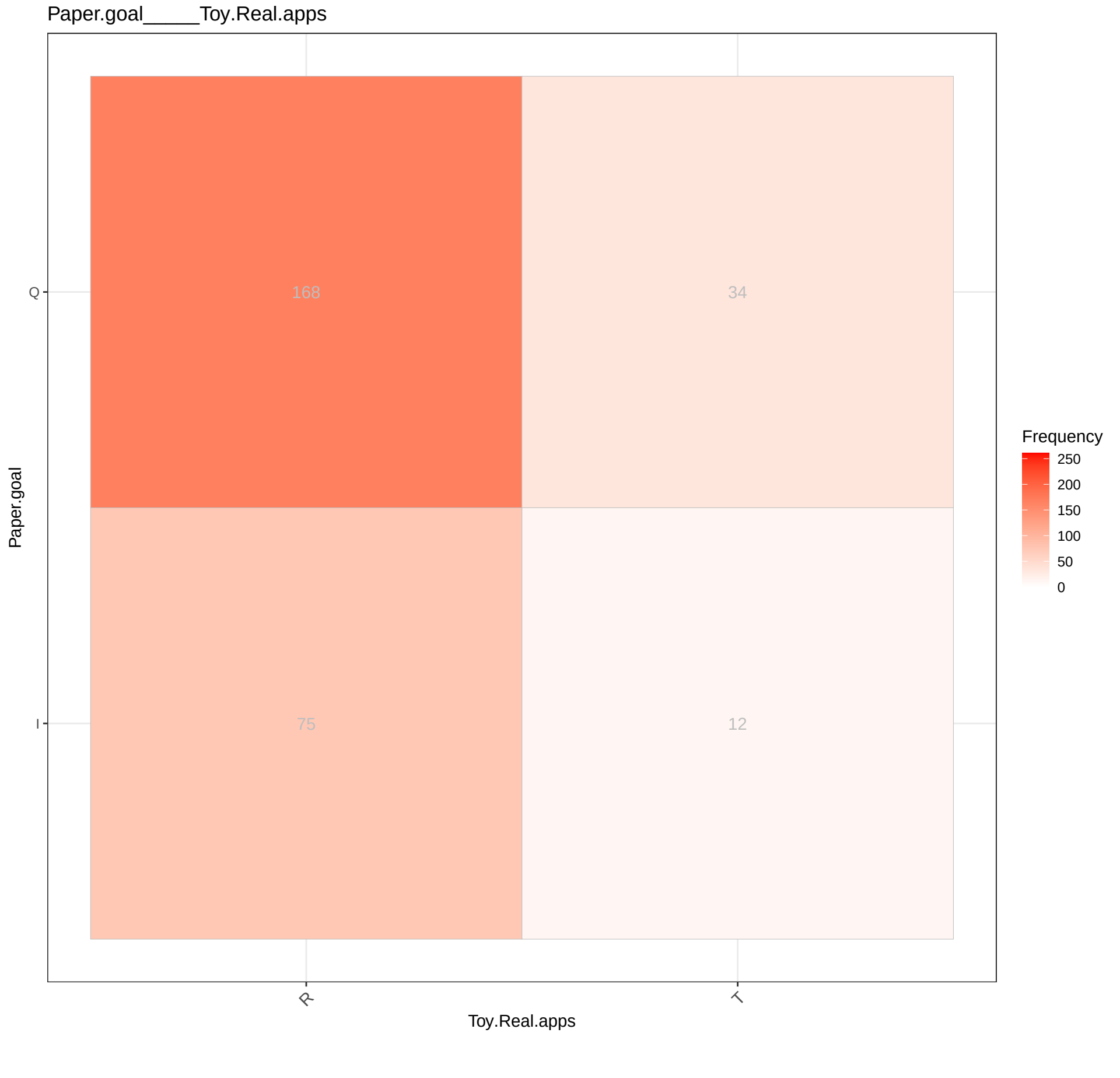
Paper.goal_____Toy.Real.apps
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T
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Toy.Real.apps
Frequency
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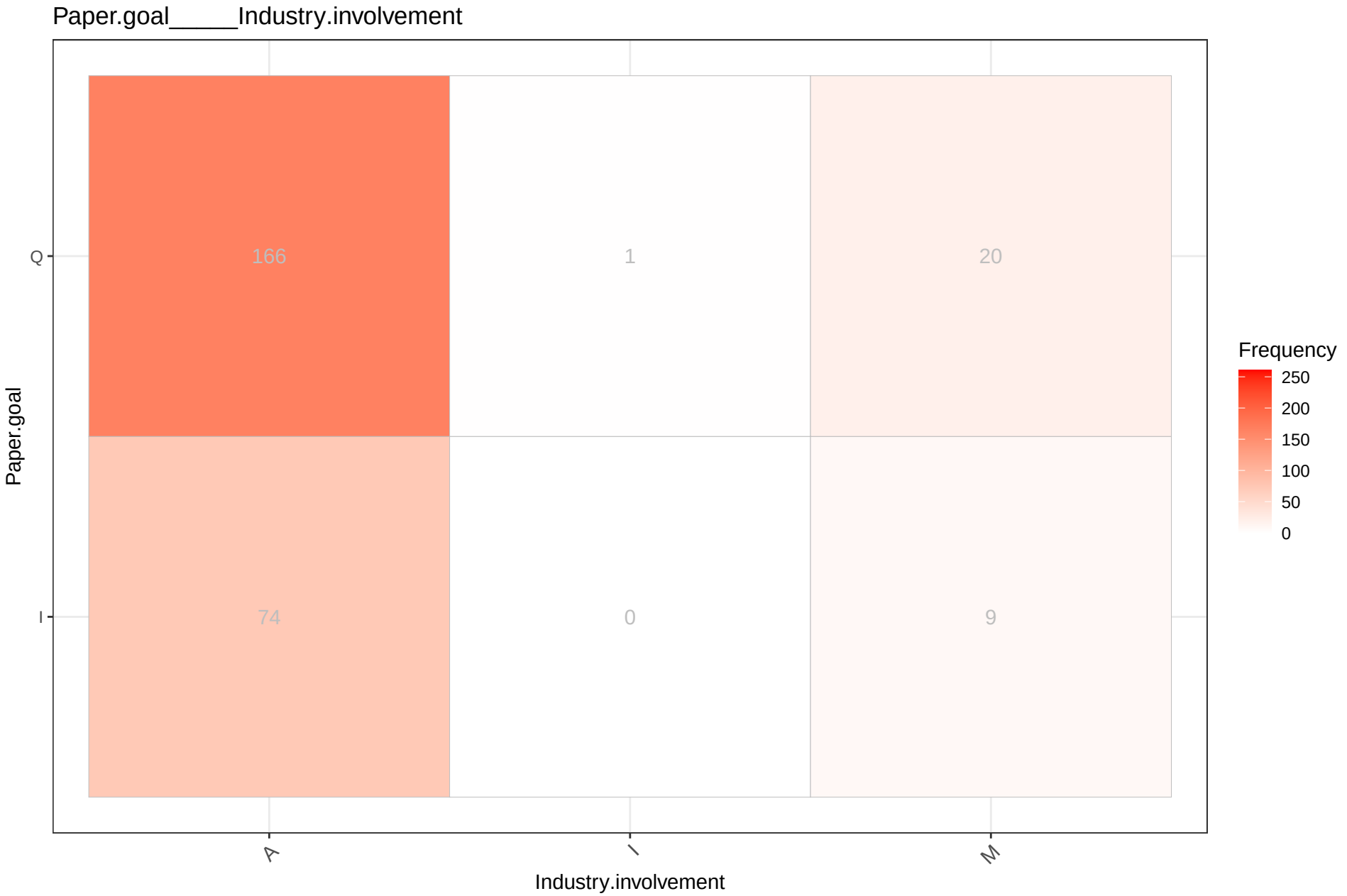
Paper.goal_____Industry.involvement
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I
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Paper.goal
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I
M
Industry.involvement
Frequency
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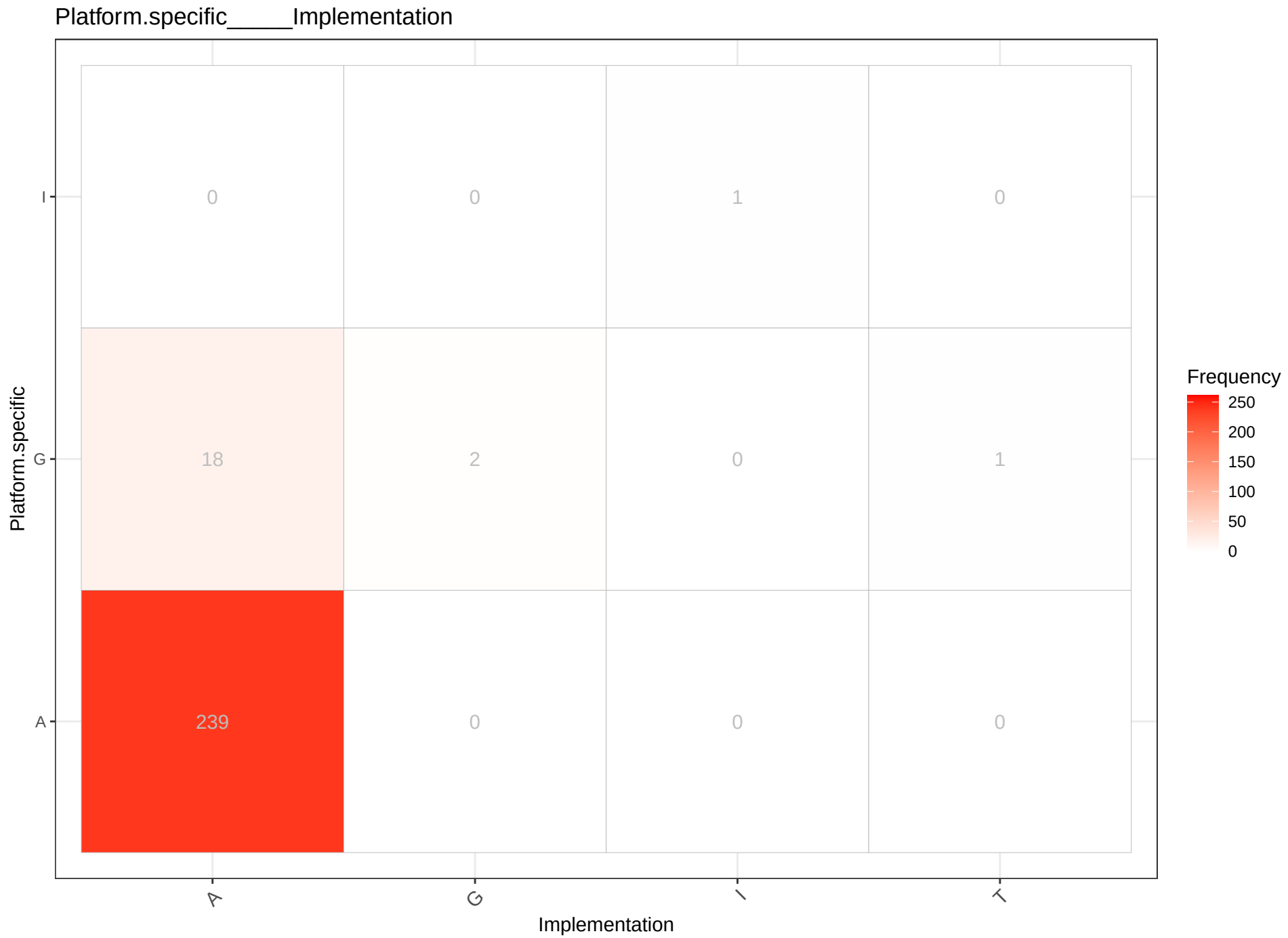
Platform.specific_____Implementation
Platform.specific
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A
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A
G
I
T
Implementation
Frequency
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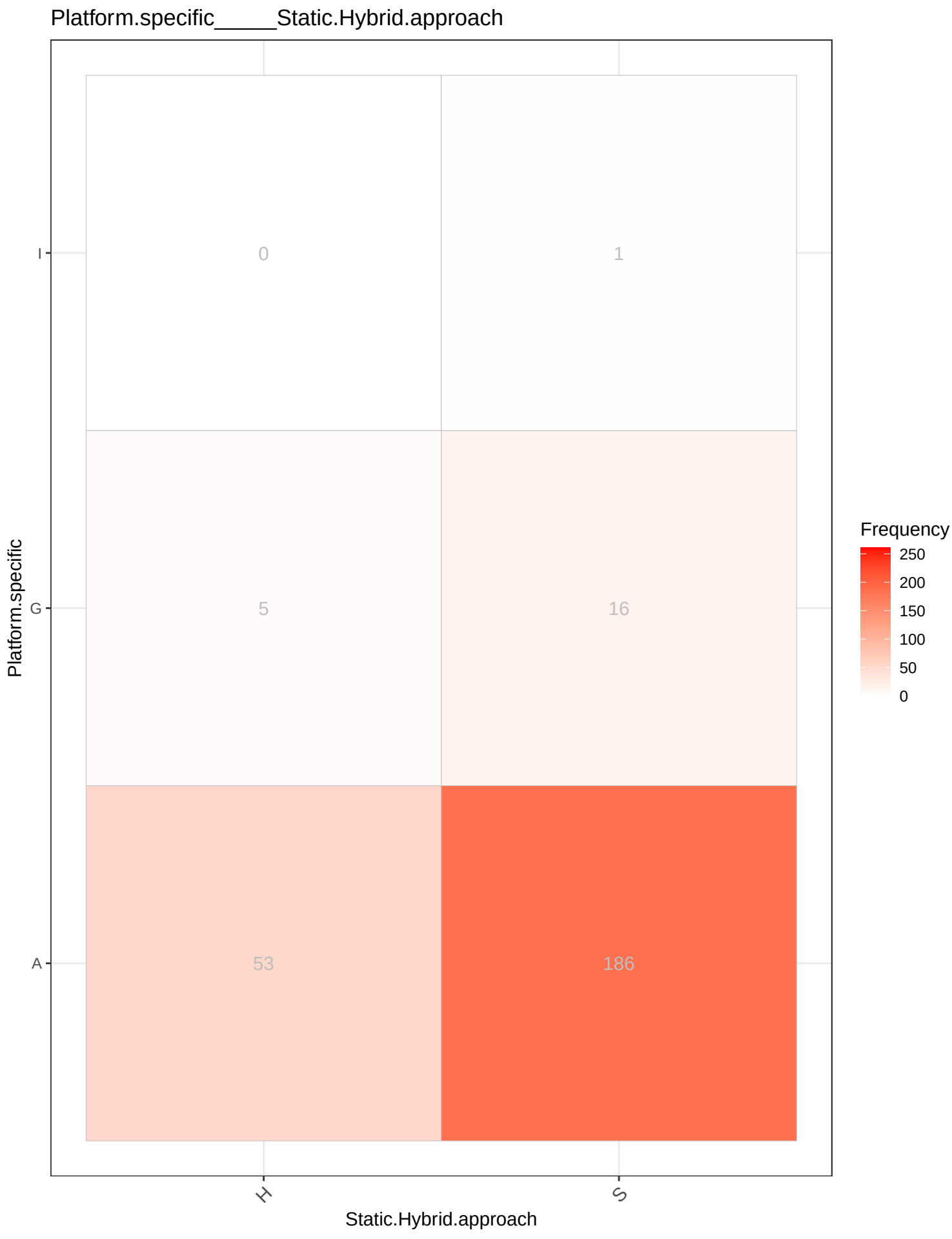
Platform.specific_____Static.Hybrid.approach
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G
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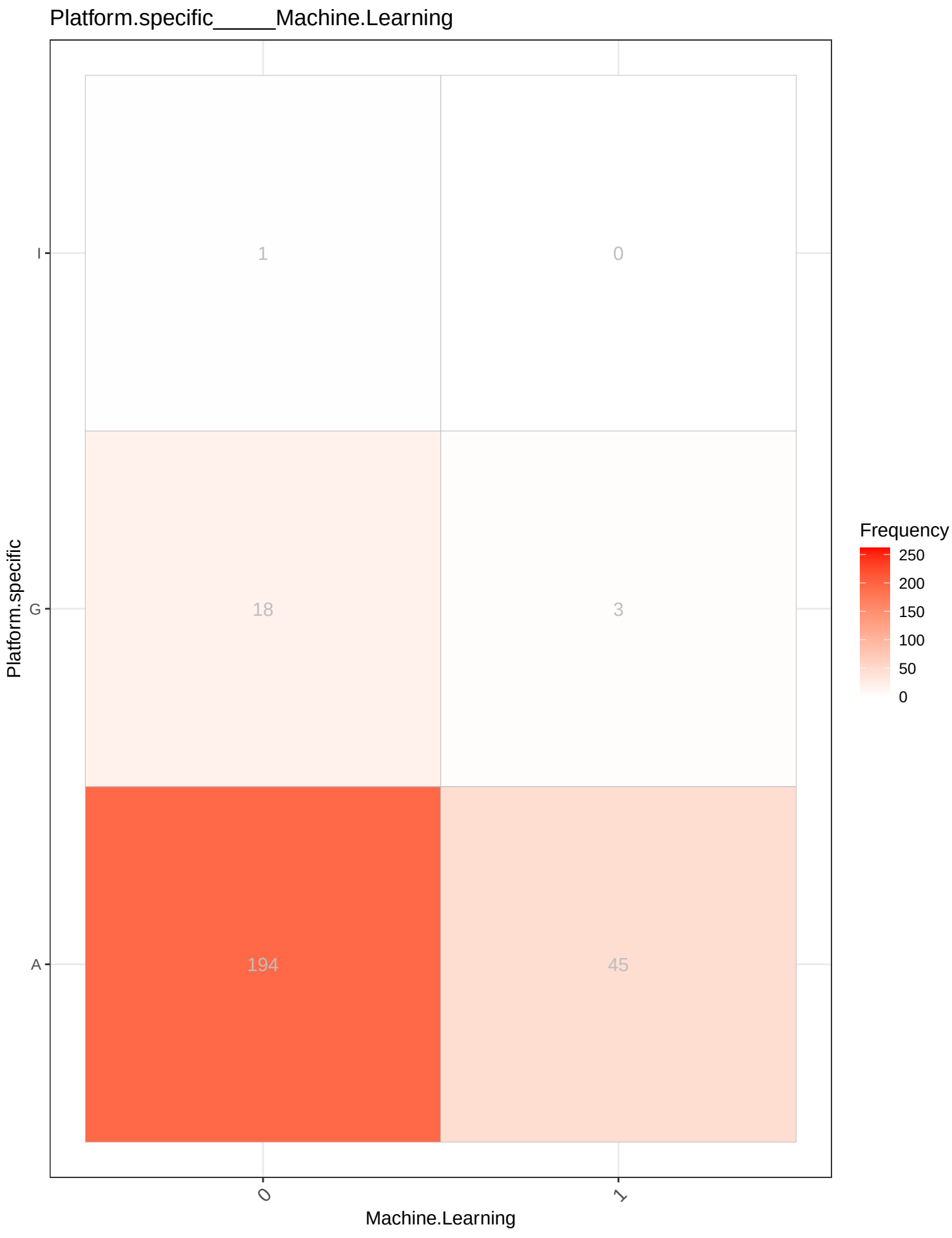
Platform.specific_____Machine.Learning
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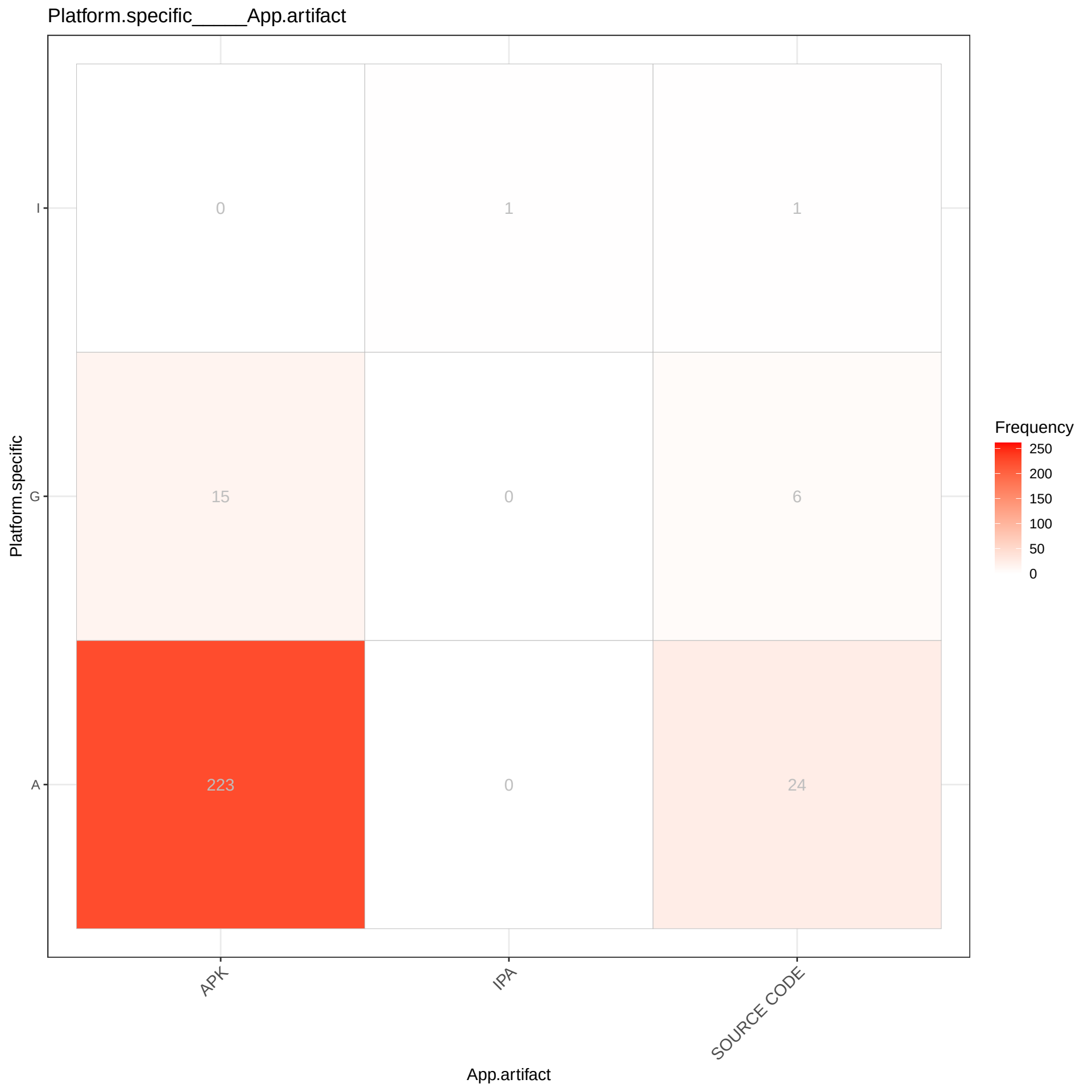
Platform.specific_____App.artifact
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G
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IPA
SOURCE CODE
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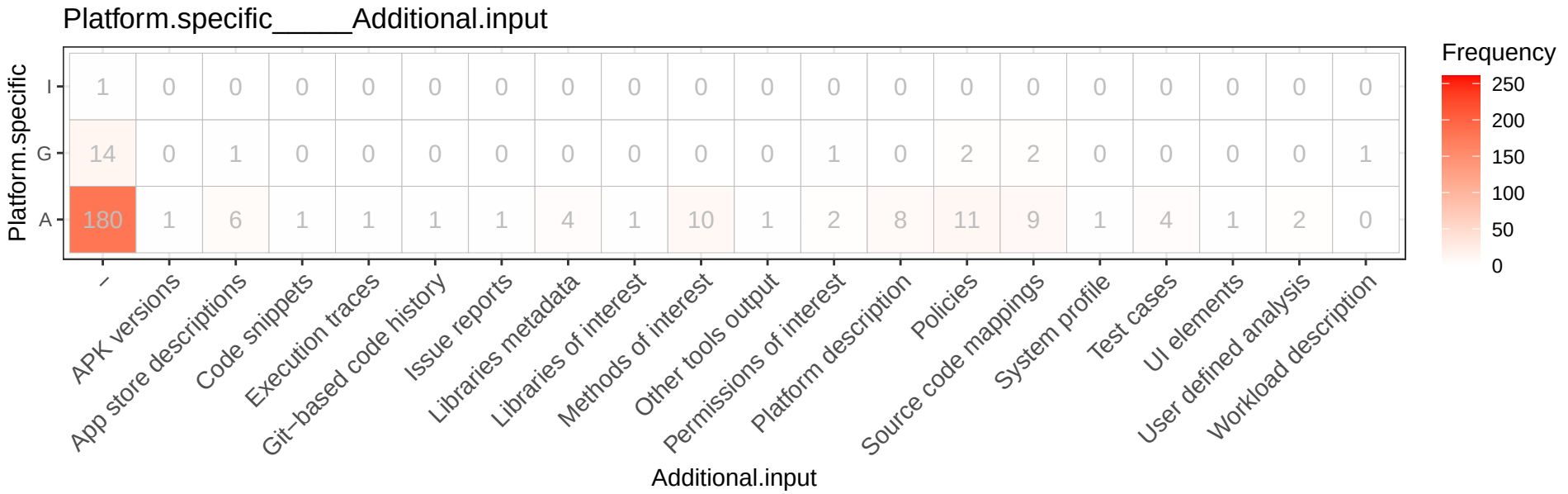
Platform.specific_____Additional.input
Platform.specific
I
G
A
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14 0 1 0 0 0 0 0 0 0 0 1 0 2 2 0 0 0 0 1
180 1 6 1 1 1 1 4 1 10 1 2 8 11 9 1 4 1 2 0
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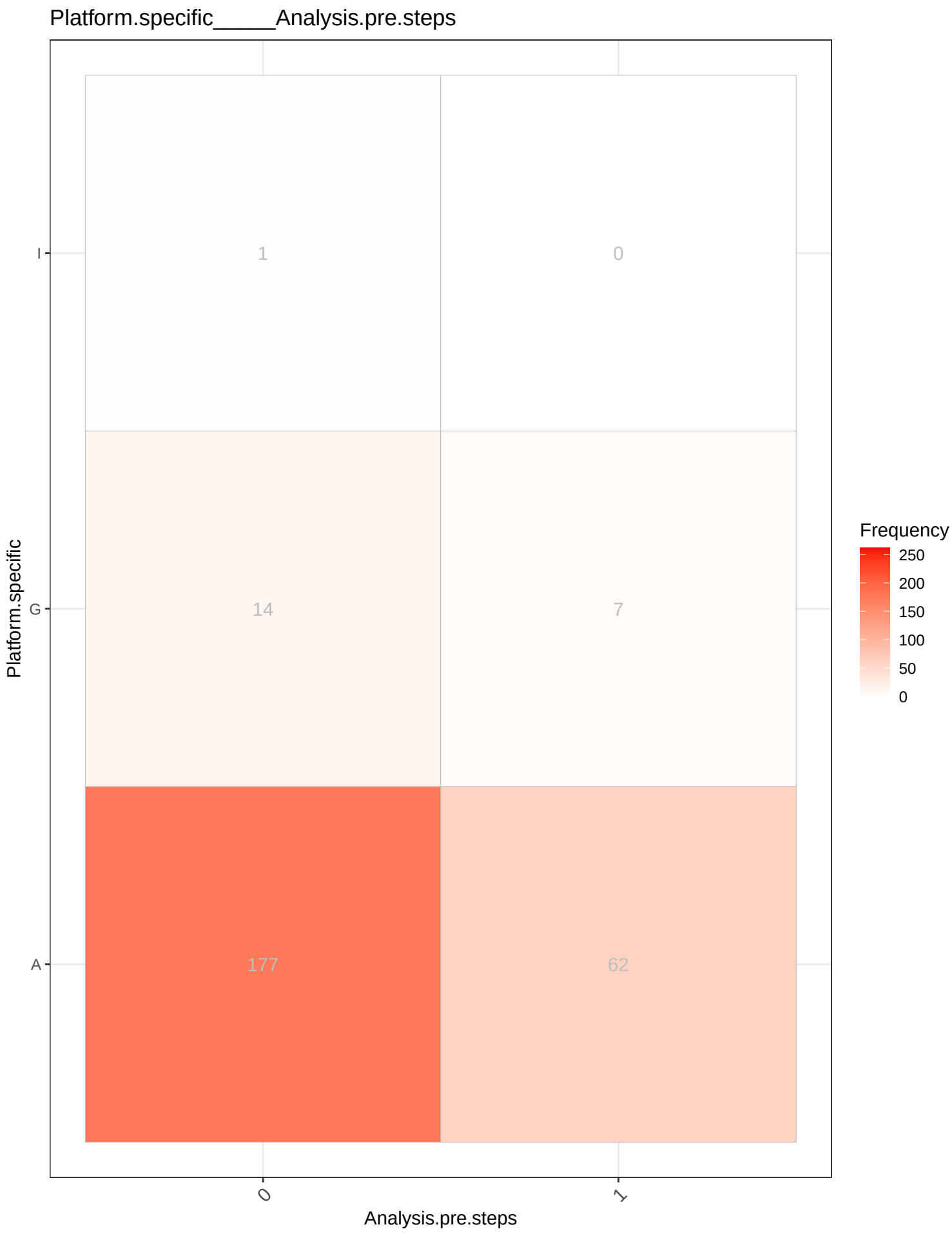
Platform.specific_____Analysis.pre.steps
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G
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Frequency
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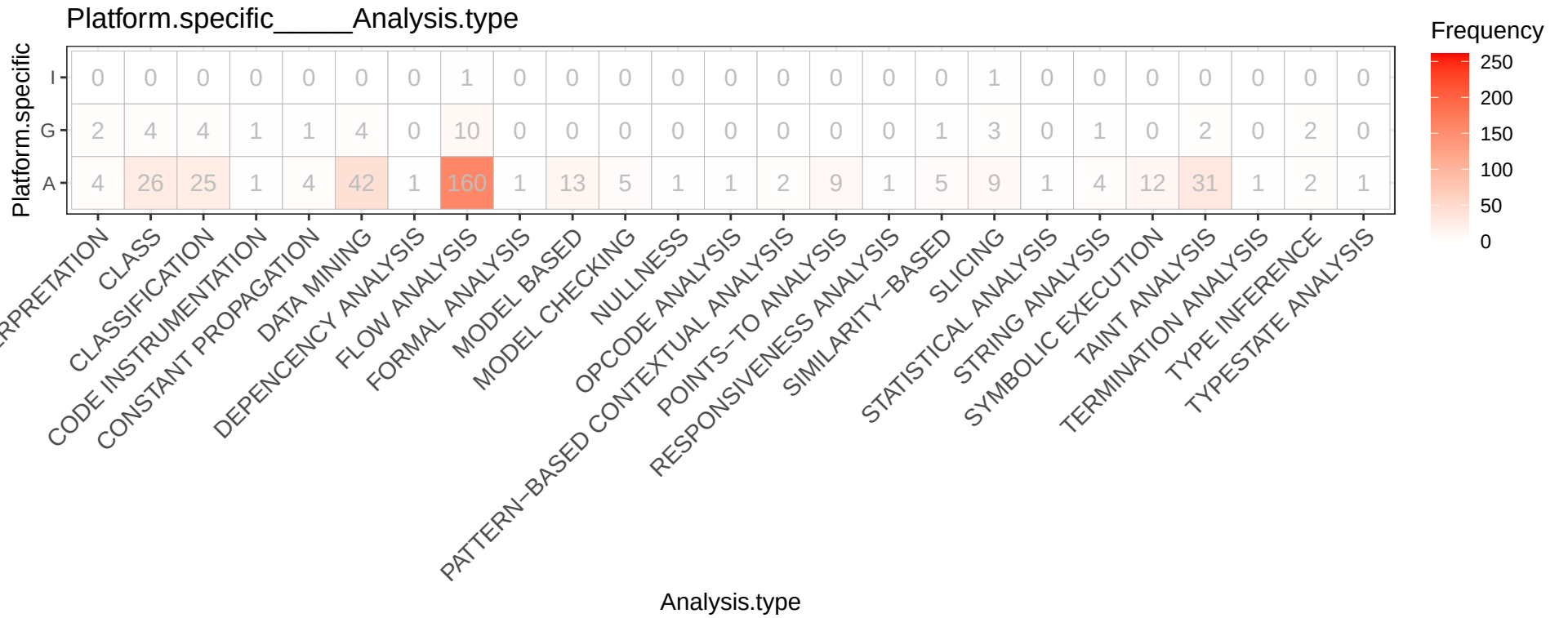
Platform.specific_____Analysis.type
Platform.specific
I
G
A
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STRING ANALYSIS
SYMBOLIC EXECUTION
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TYPE INFERENCE
TYPESTATE ANALYSIS
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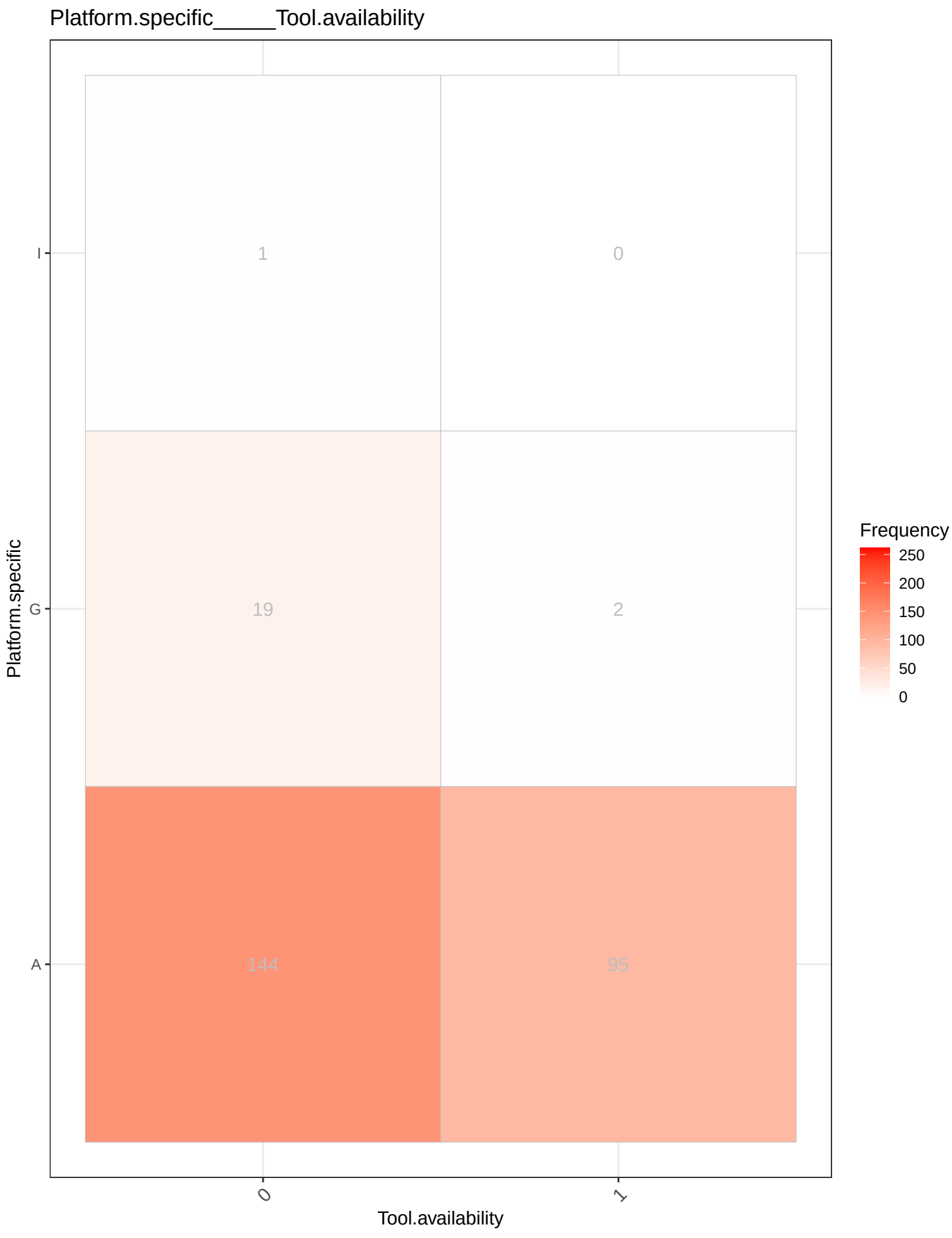
Platform.specific_____Tool.availability
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Platform.specific
0
1
Tool.availability
Frequency
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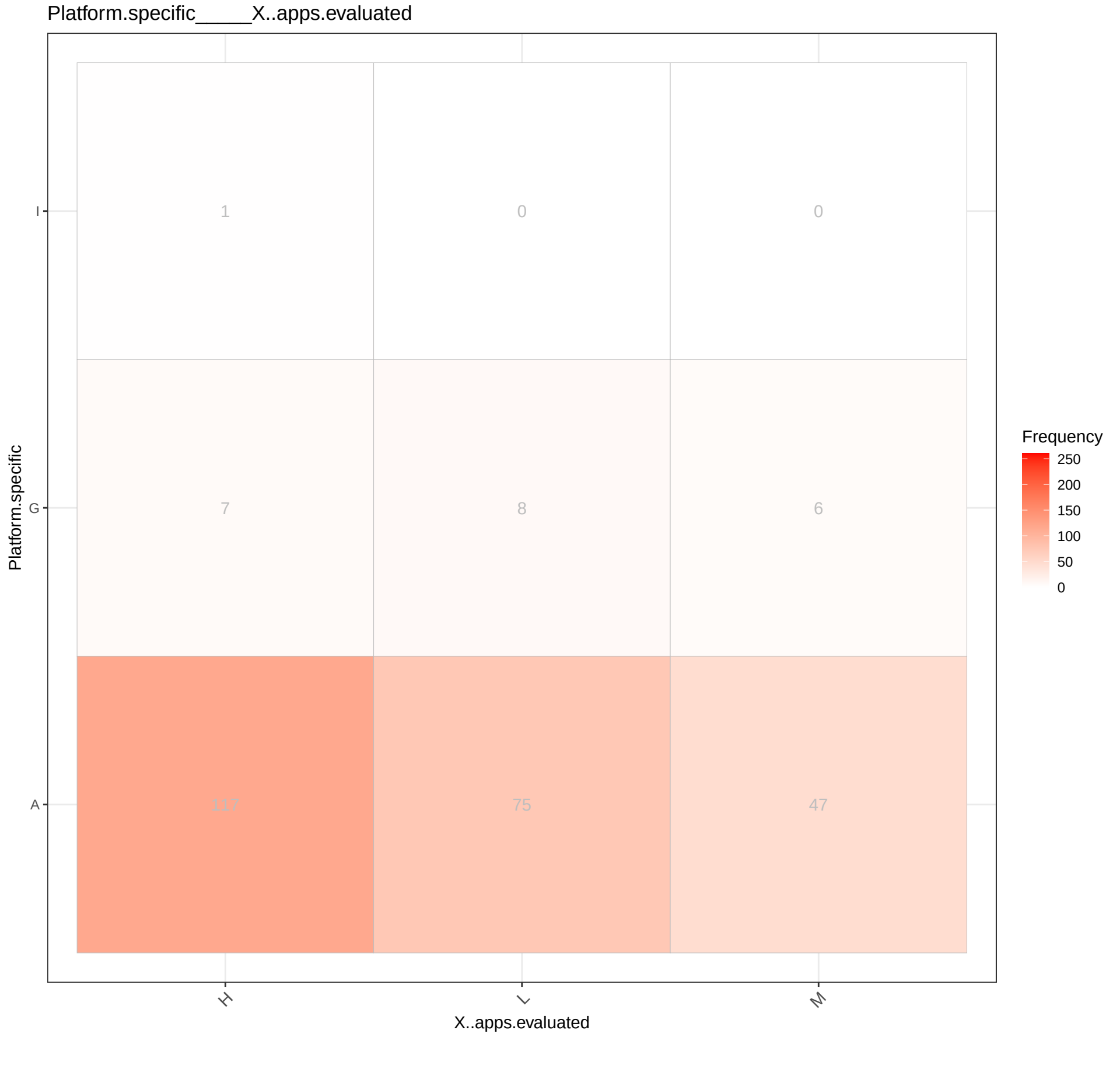
100
50
0


Platform.specific_____X..apps.evaluated
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0
7
8
6
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I
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Platform.specific
H
L
M
X..apps.evaluated
Frequency
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150
100
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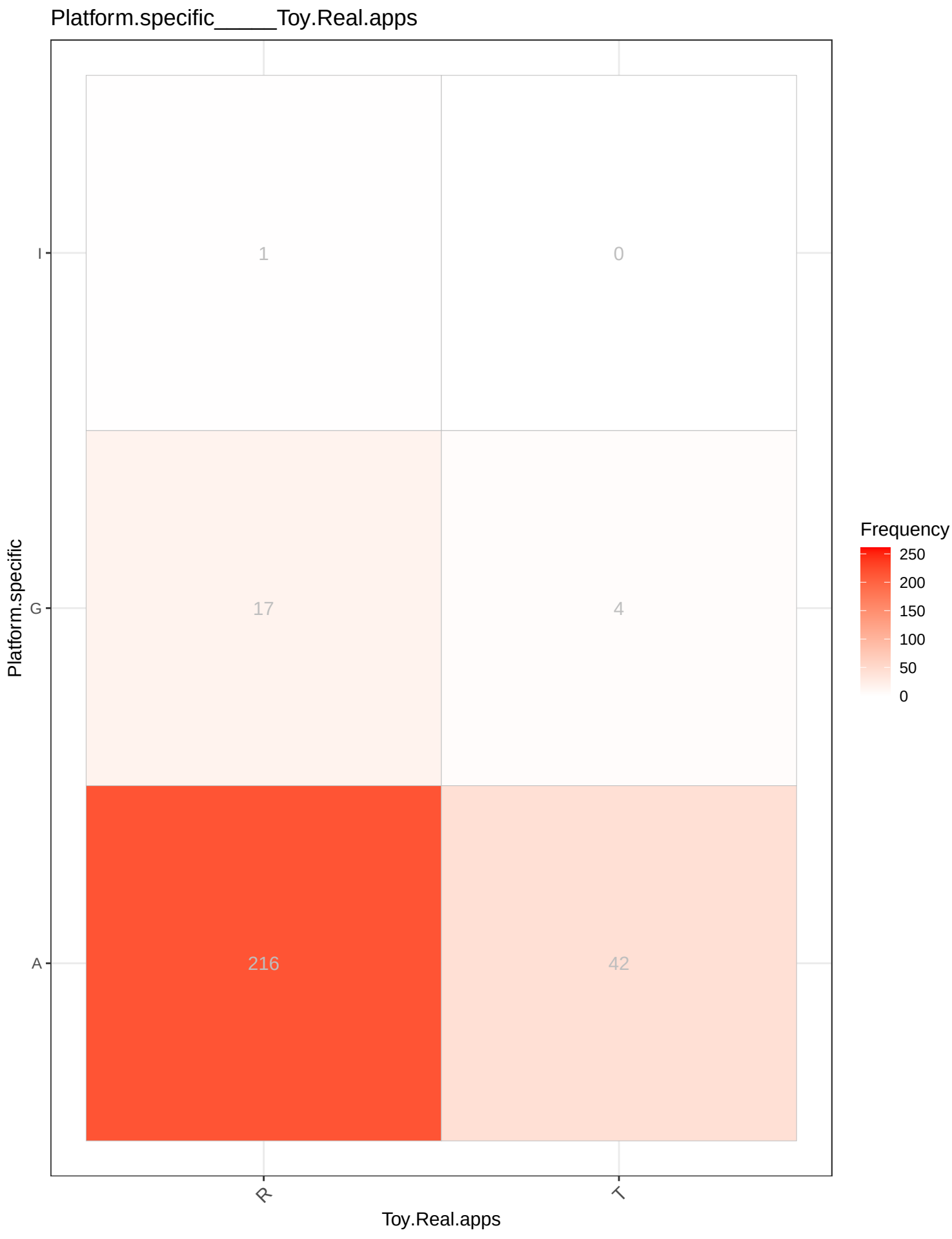
Platform.specific_____Toy.Real.apps
I
G
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R
T
Toy.Real.apps
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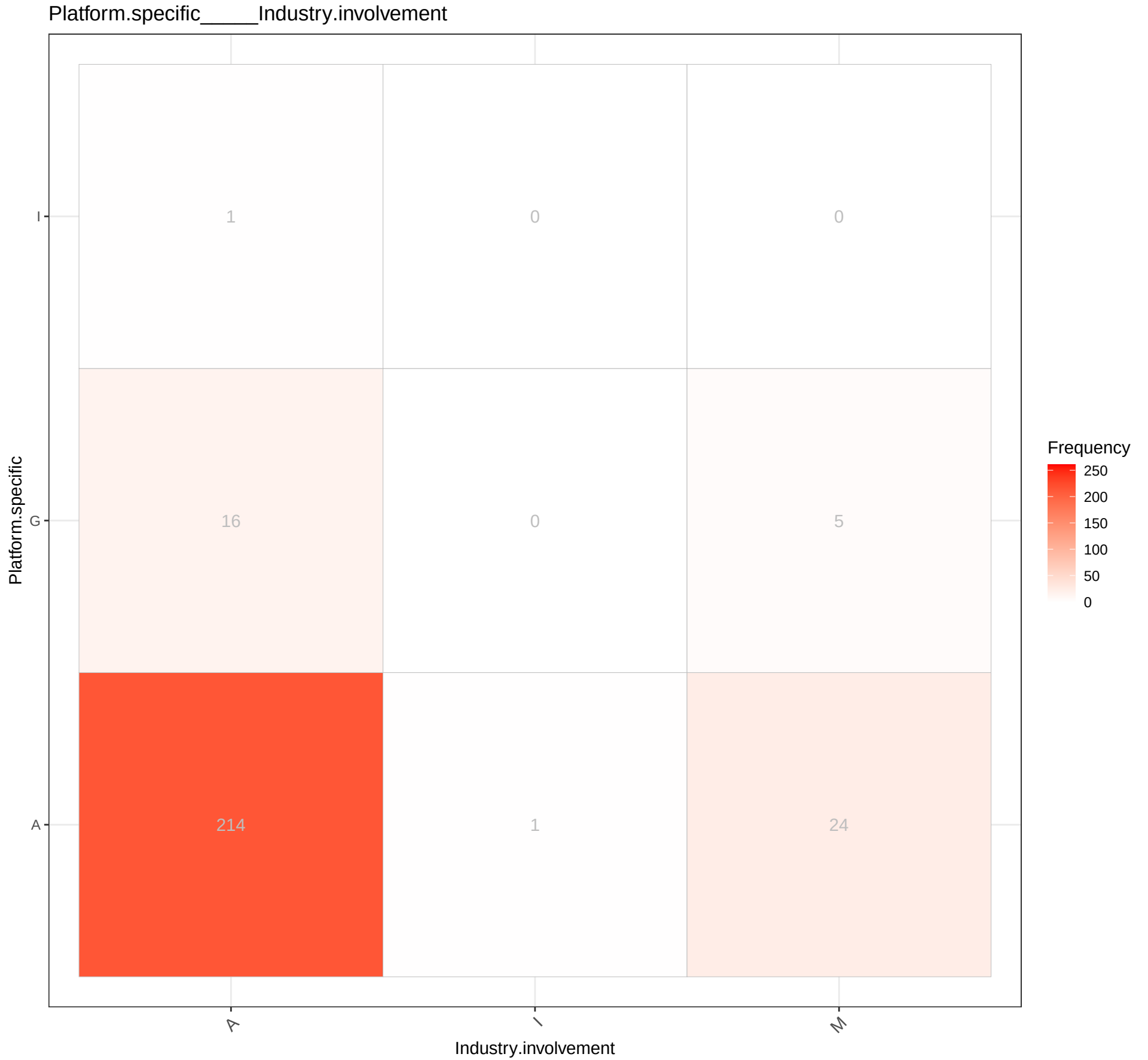
Platform.specific_____Industry.involvement
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16
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24
I
G
A
Platform.specific
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
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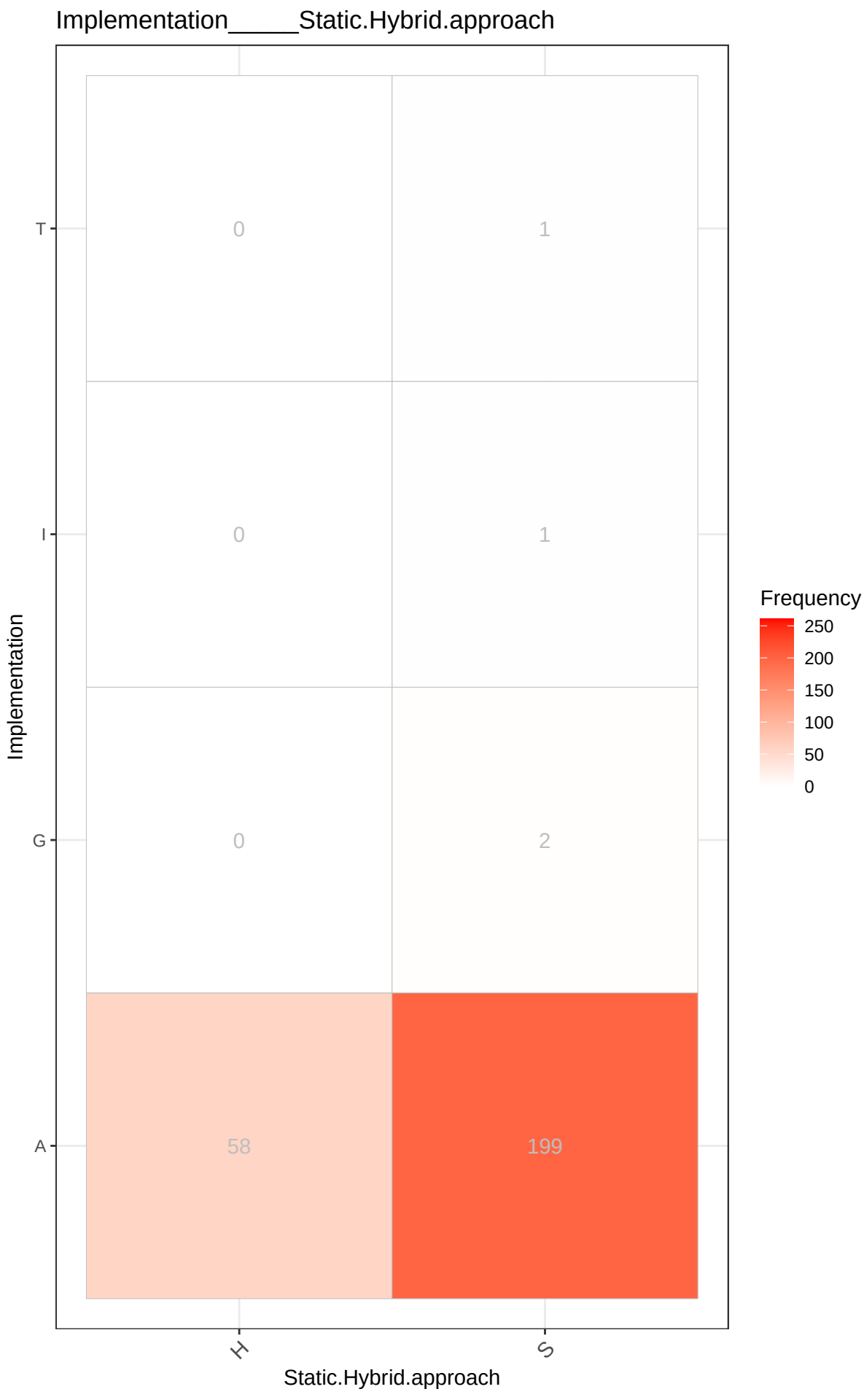
Implementation_____Static.Hybrid.approach
T
I
G
A
0
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2
58
199
Implementation
H
S
Static.Hybrid.approach
Frequency
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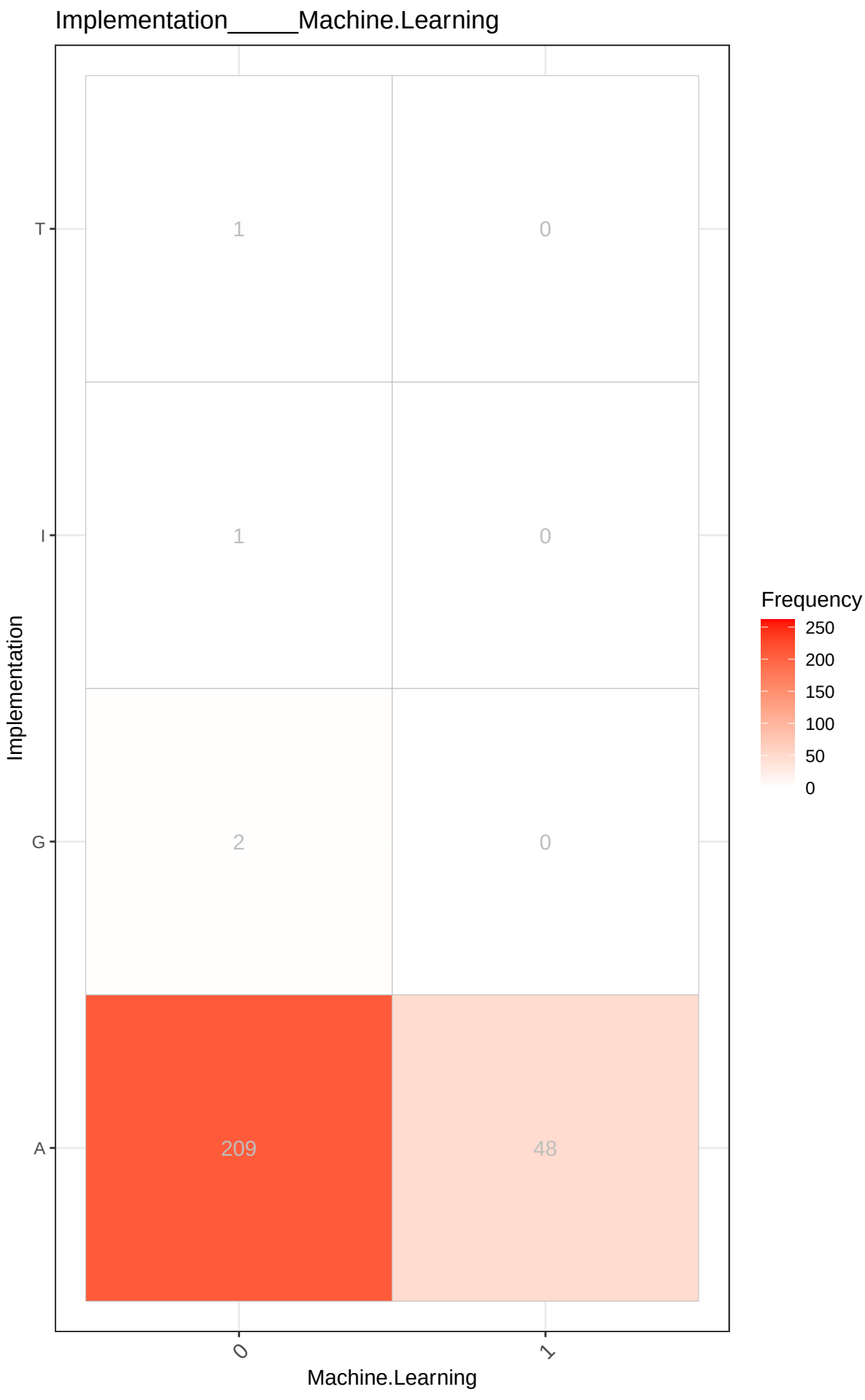
200
150
100
50
0


Implementation_____Machine.Learning
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I
G
A
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Implementation
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Machine.Learning
Frequency
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100
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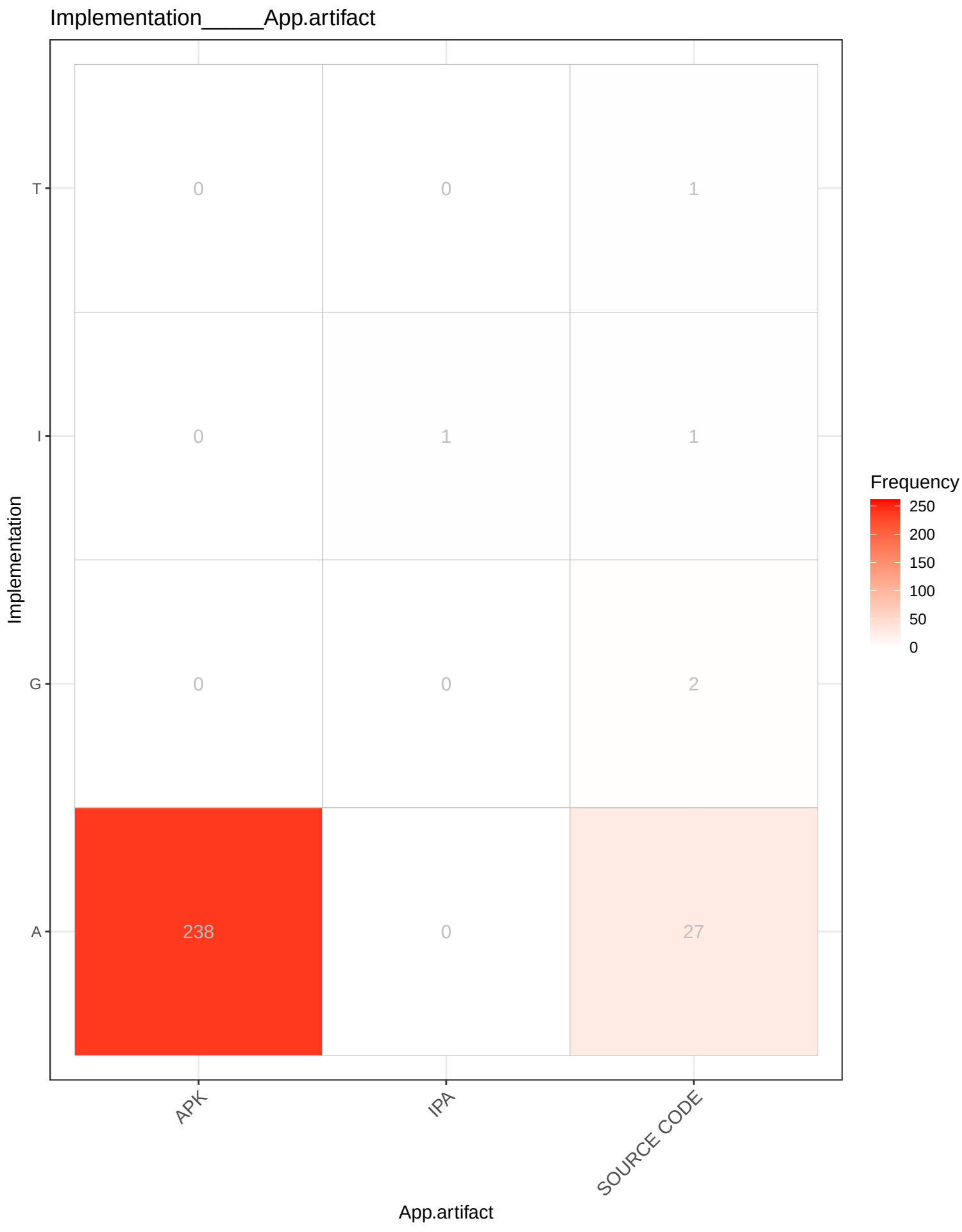
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I
G
A
0
0
1
0
1
1
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2
238
0
27
Implementation
APK
IPA
SOURCE CODE
App.artifact
Frequency
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200
150
100
50
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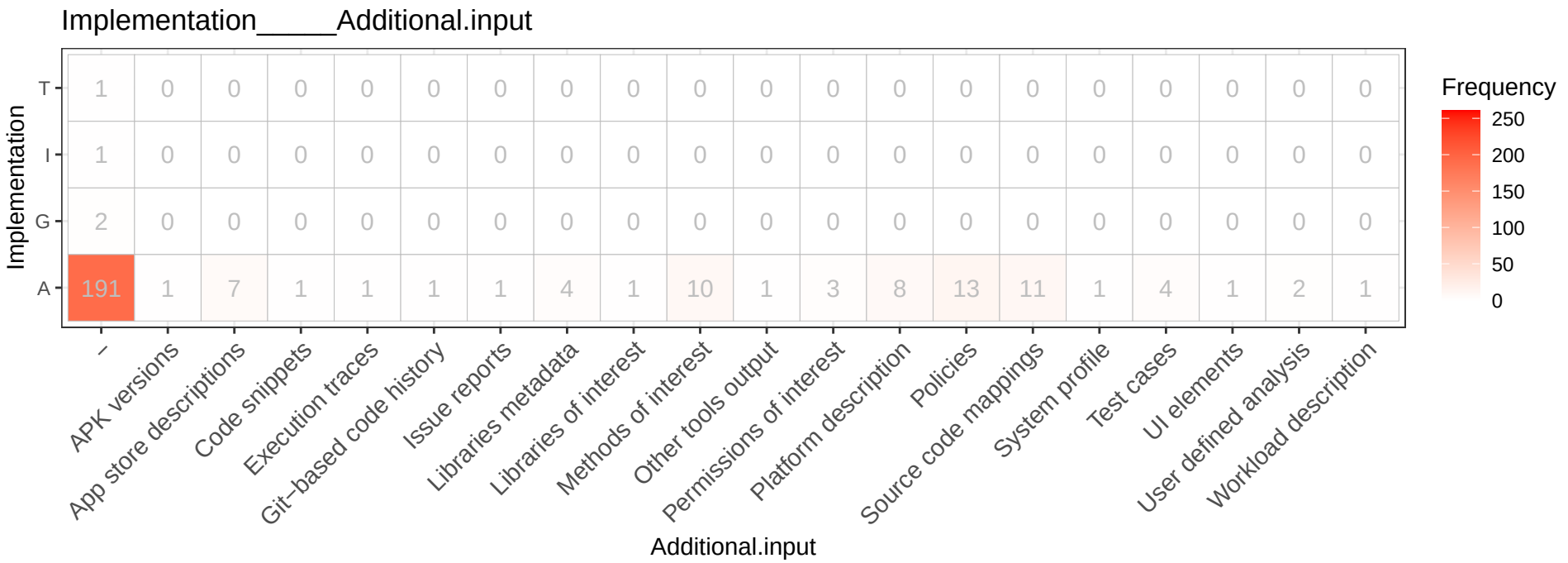
Implementation_____Additional.input
Implementation
T
I
G
A
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191 1 7 1 1 1 1 4 1 10 1 3 8 13 11 1 4 1 2 1
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Additional.input
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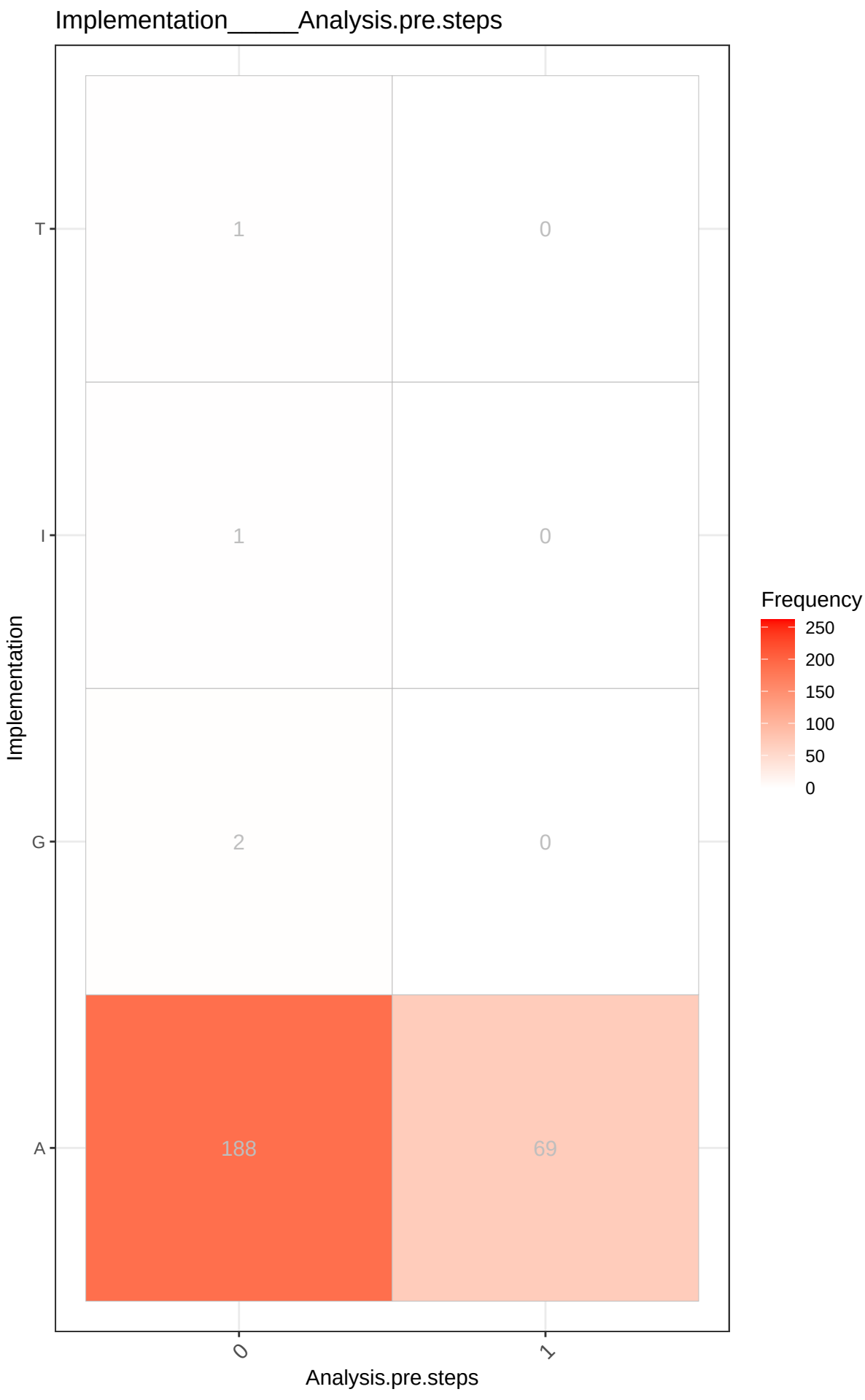
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I
G
A
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1
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2
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69
Implementation
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1
Analysis.pre.steps
Frequency
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50
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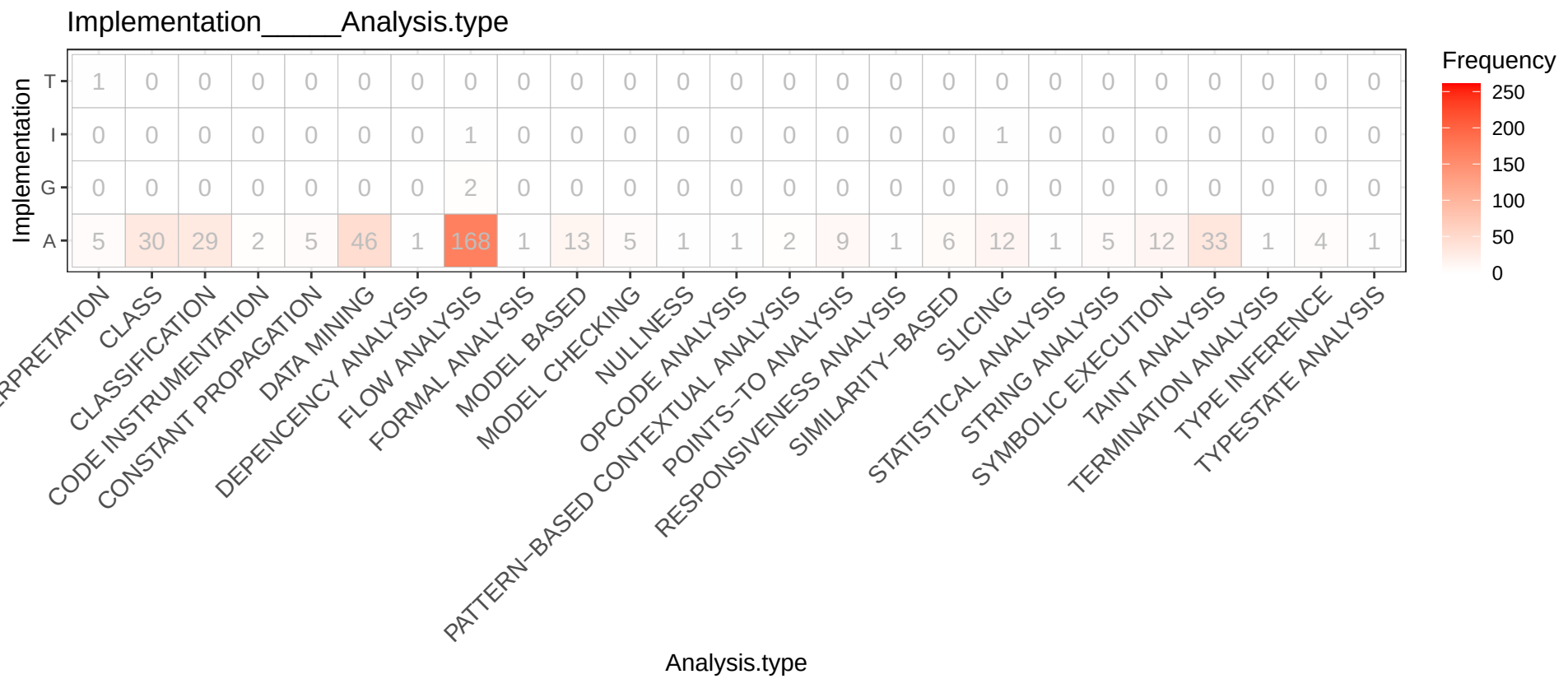
Implementation_____Analysis.type
Implementation
T
I
G
A
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0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 30 29 2 5 46 1 168 1 13 5 1 1 2 9 1 6 12 1 5 12 33 1 4 1
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TERMINATION ANALYSIS
TYPE INFERENCE
TYPESTATE ANALYSIS
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Frequency
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100
50
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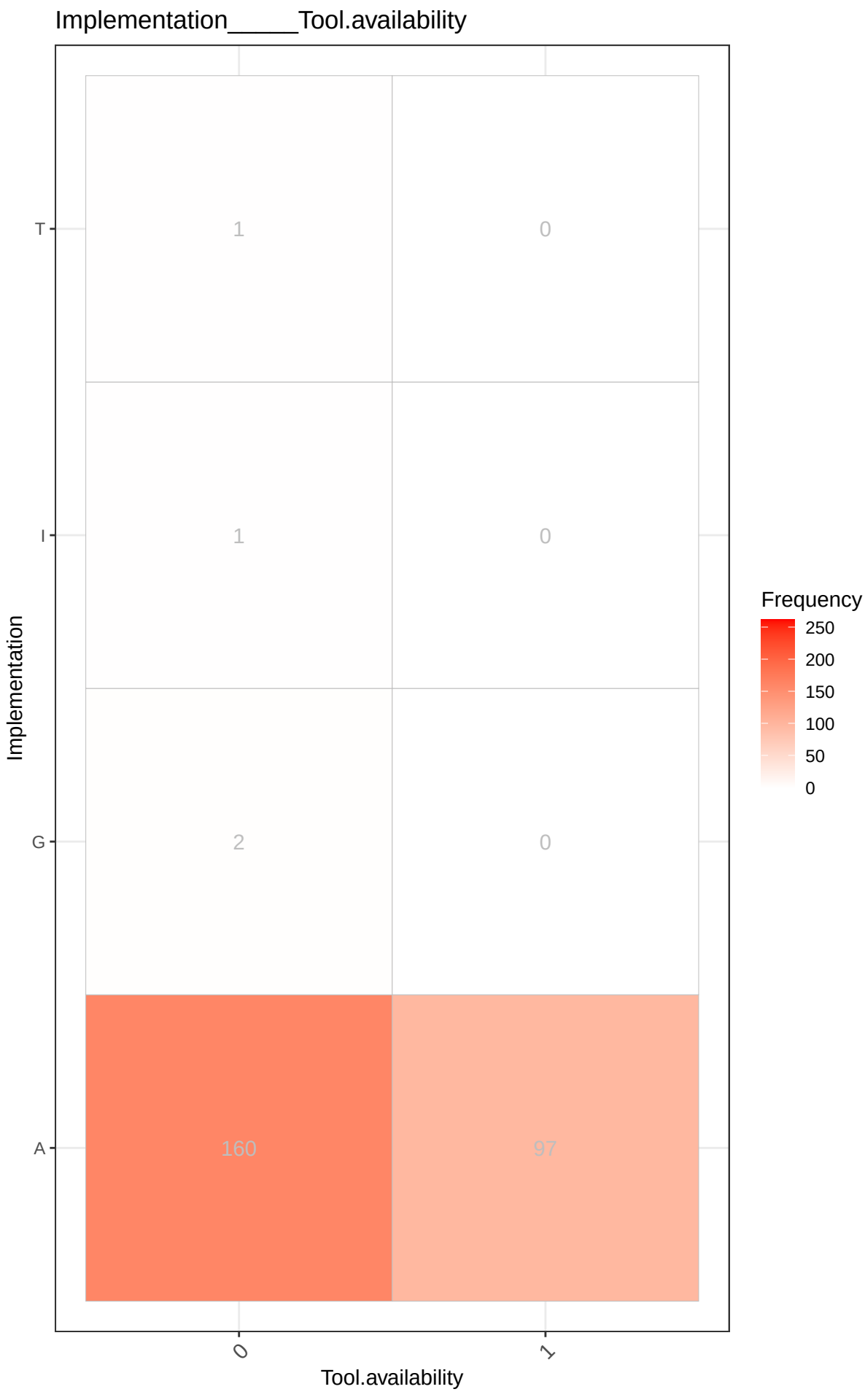
Implementation_____Tool.availability
T
I
G
A
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2
0
160
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Implementation
0
1
Tool.availability
Frequency
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100
50
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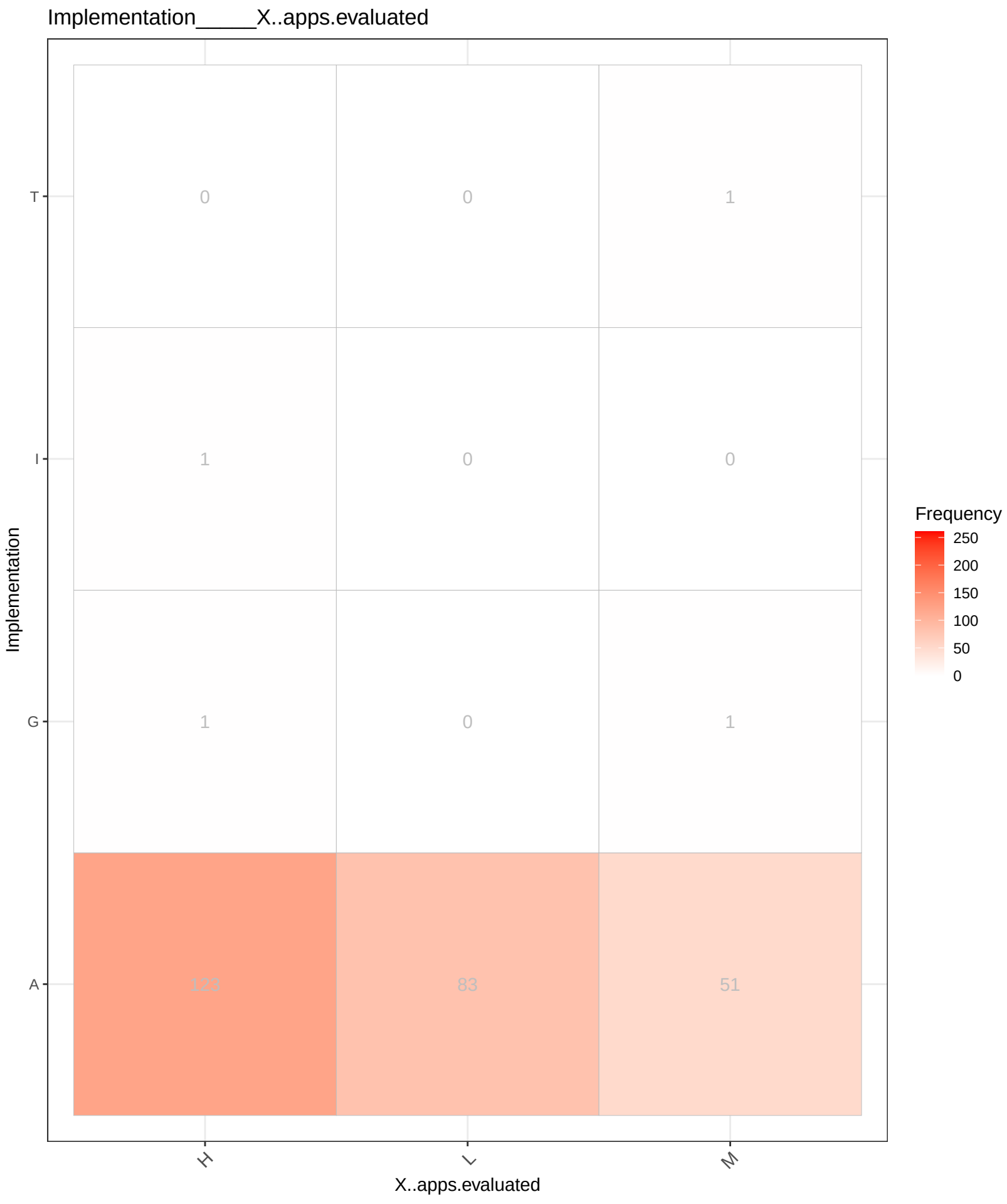
Implementation_____X..apps.evaluated
T
I
G
A
0
0
1
1
0
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123
83
51
Implementation
H
L
M
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Frequency
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150
100
50
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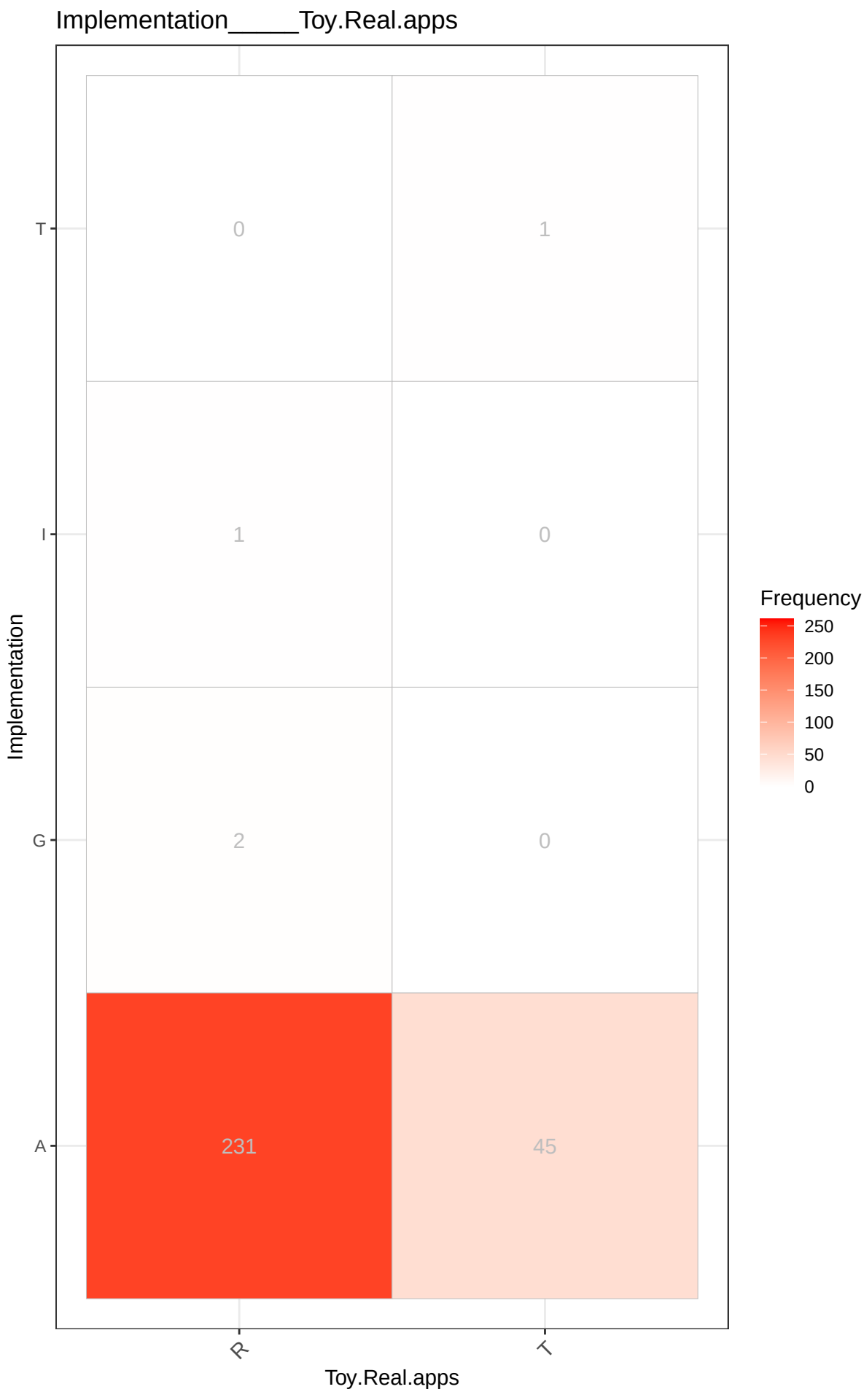
Implementation_____Toy.Real.apps
T
I
G
A
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0
231
45
Implementation
R
T
Toy.Real.apps
Frequency
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150
100
50
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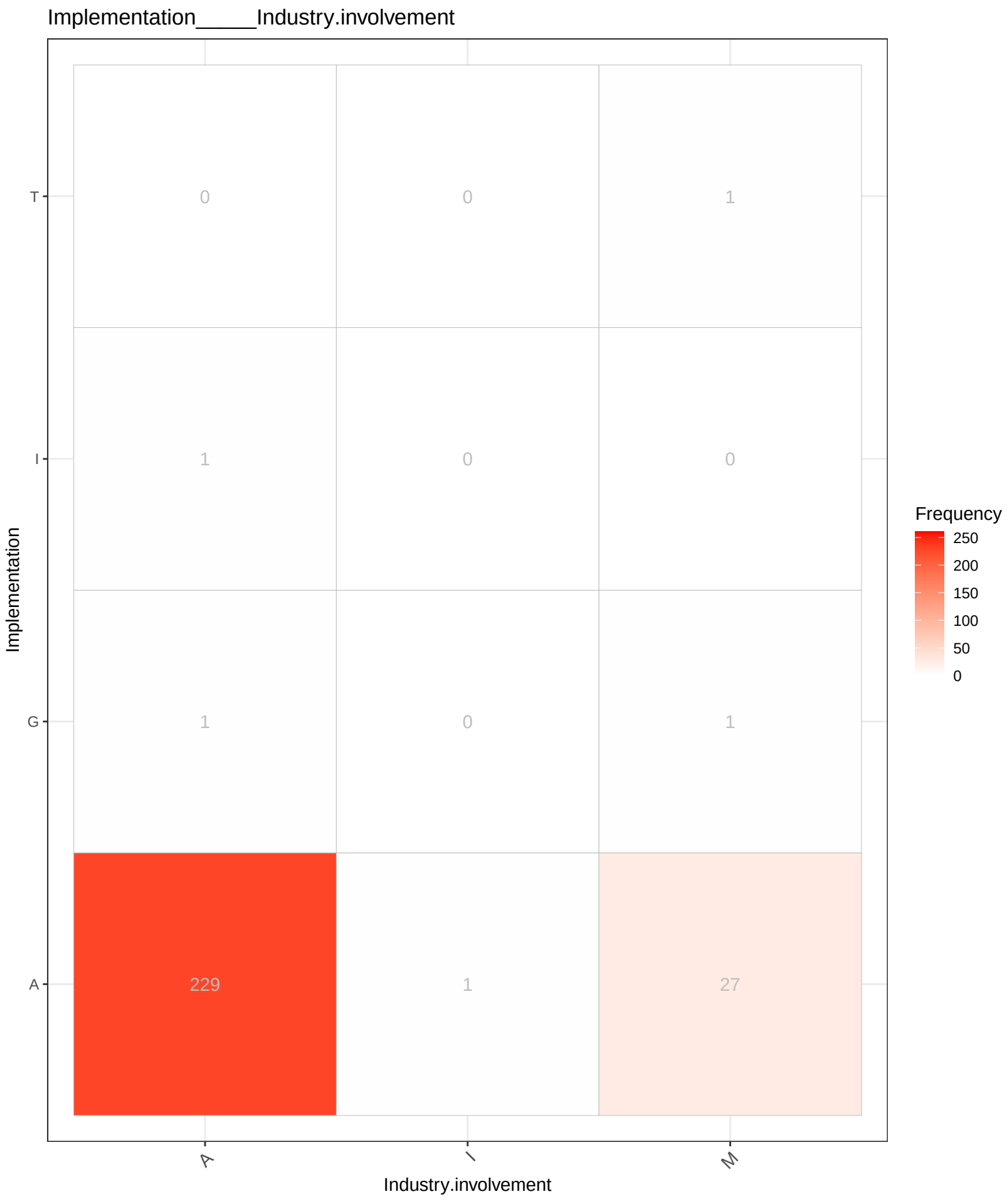
Implementation_____Industry.involvement
T
I
G
A
Implementation
0
0
1
1
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1
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1
229
1
27
A
I
M
Industry.involvement
Frequency
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100
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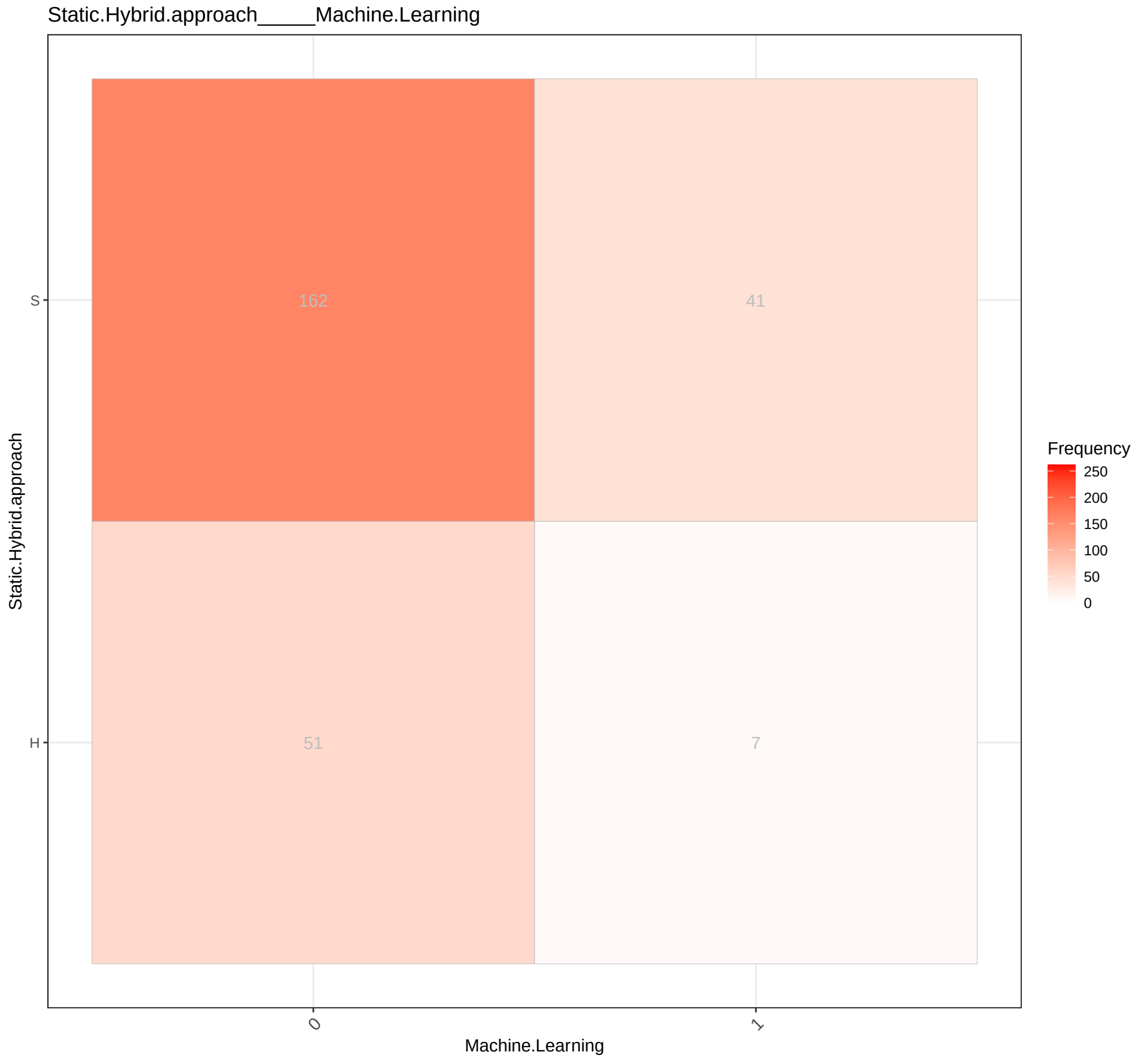
Static.Hybrid.approach_____Machine.Learning
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H
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41
51
7
Static.Hybrid.approach
0
1
Machine.Learning
Frequency
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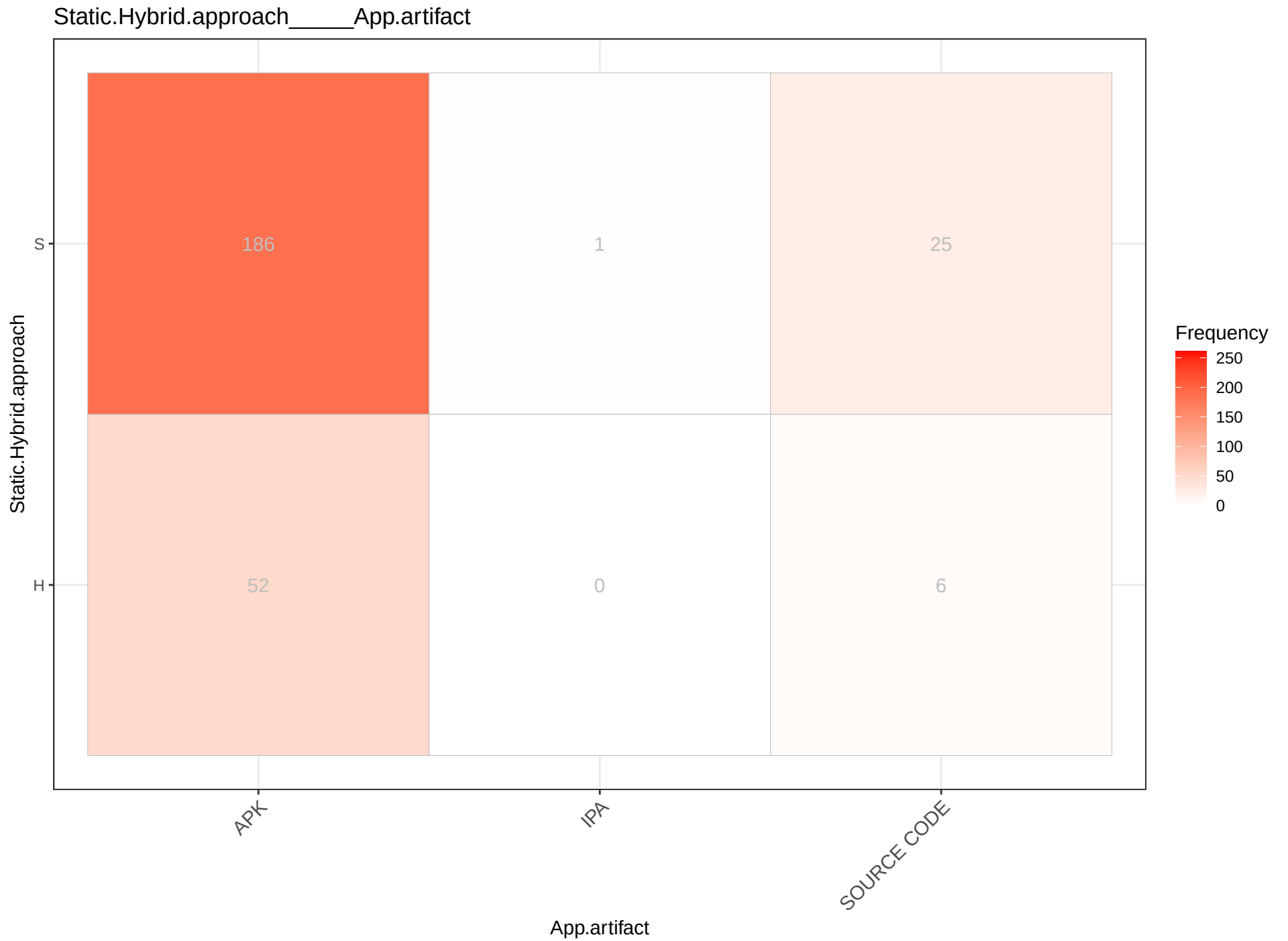
Static.Hybrid.approach_____App.artifact
Static.Hybrid.approach
S
H
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25
52
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6
APK
IPA
SOURCE CODE
App.artifact
Frequency
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150
100
50
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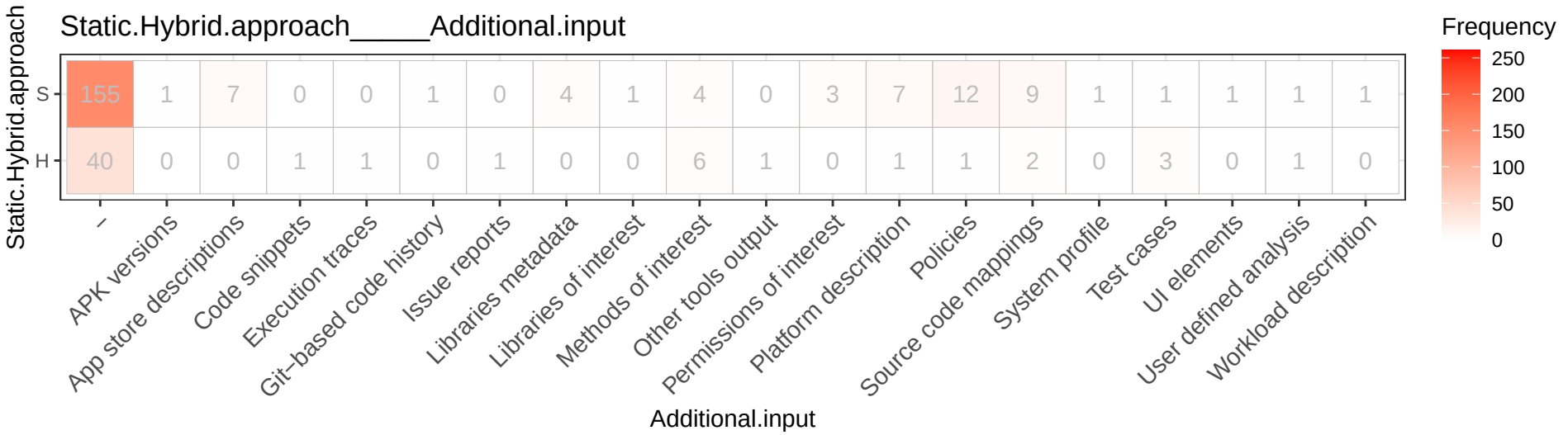
Static.Hybrid.approach_____Additional.input
Static.Hybrid.approach
S
H
155 1 7 0 0 1 0 4 1 4 0 3 7 12 9 1 1 1 1 1
40 0 0 1 1 0 1 0 0 6 1 0 1 1 2 0 3 0 1 0
–
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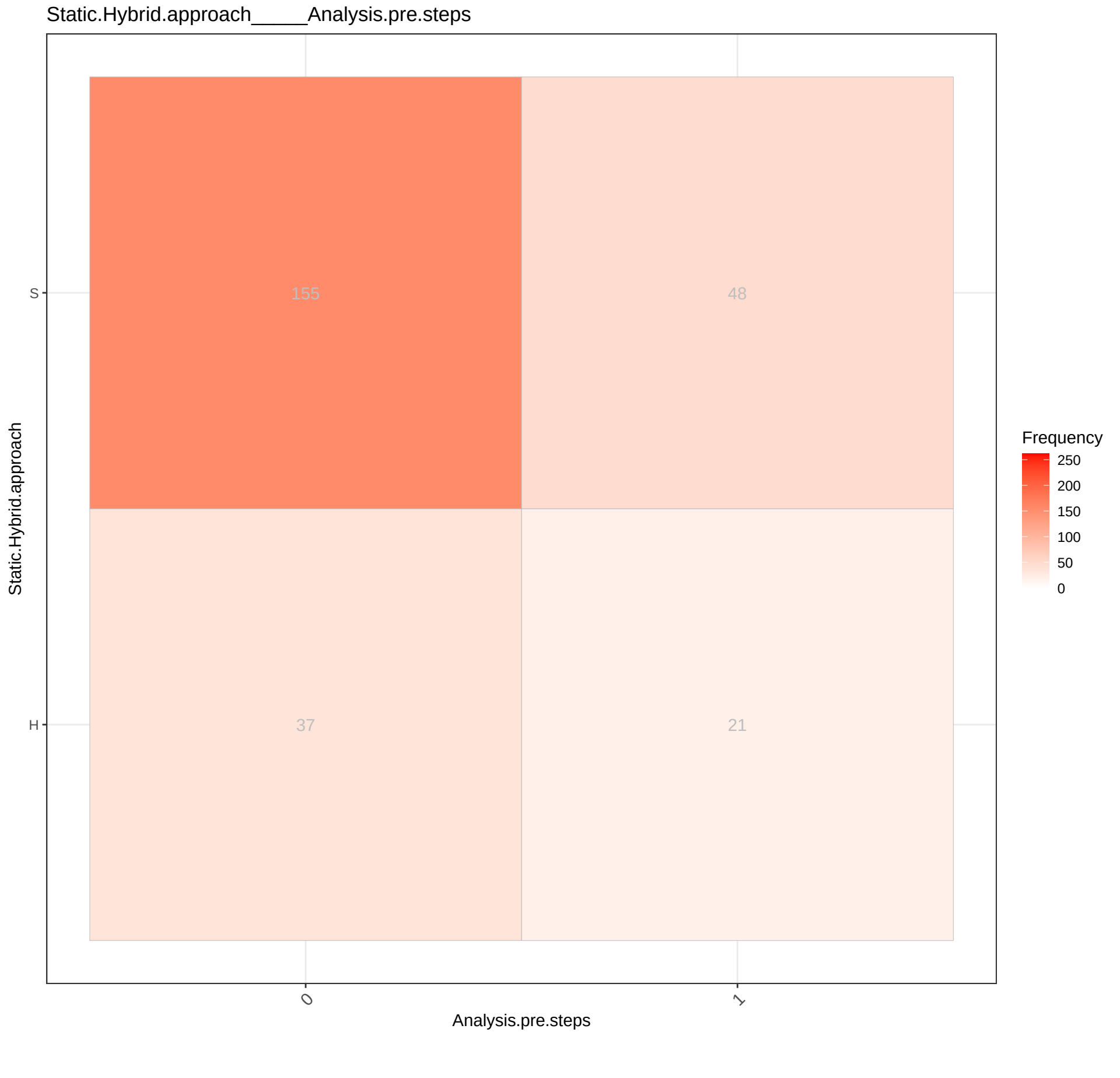
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S
H
Static.Hybrid.approach
0
1
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Frequency
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150
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50
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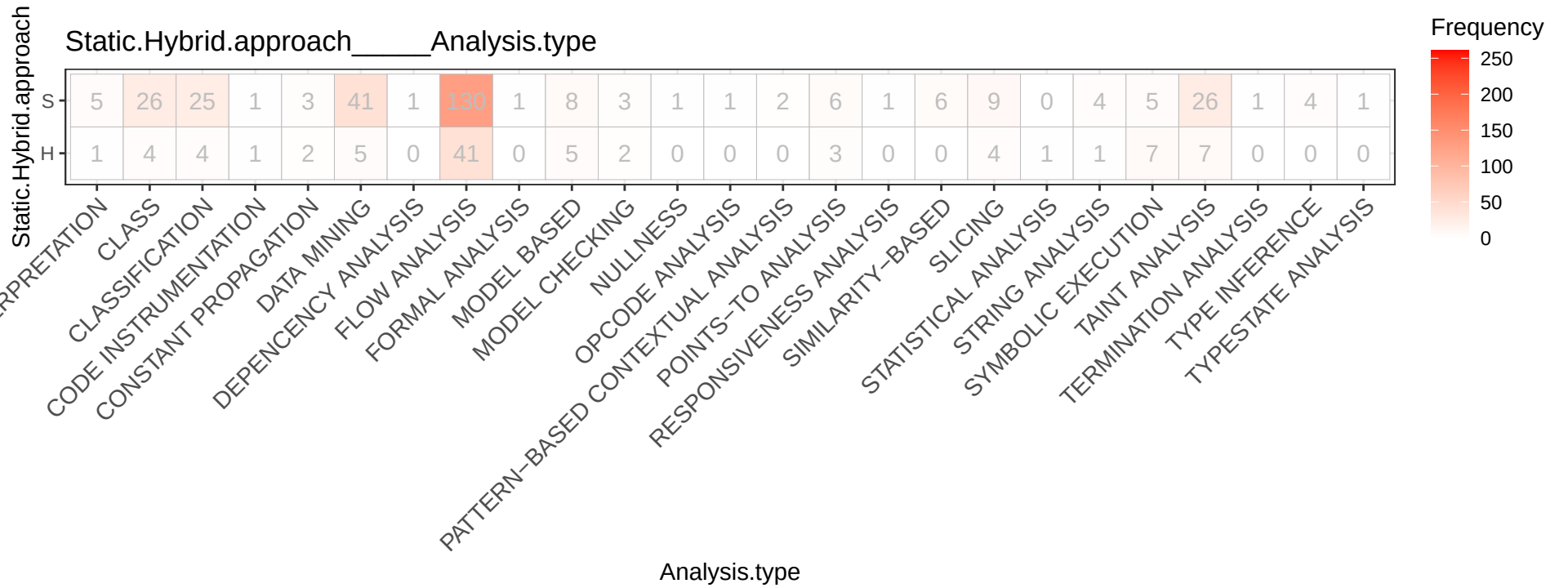
Static.Hybrid.approach_____Analysis.type
Static.Hybrid.approach
S
H
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1 4 4 1 2 5 0 41 0 5 2 0 0 0 3 0 0 4 1 1 7 7 0 0 0
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TERMINATION ANALYSIS
TYPE INFERENCE
TYPESTATE ANALYSIS
Analysis.type
Frequency
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50
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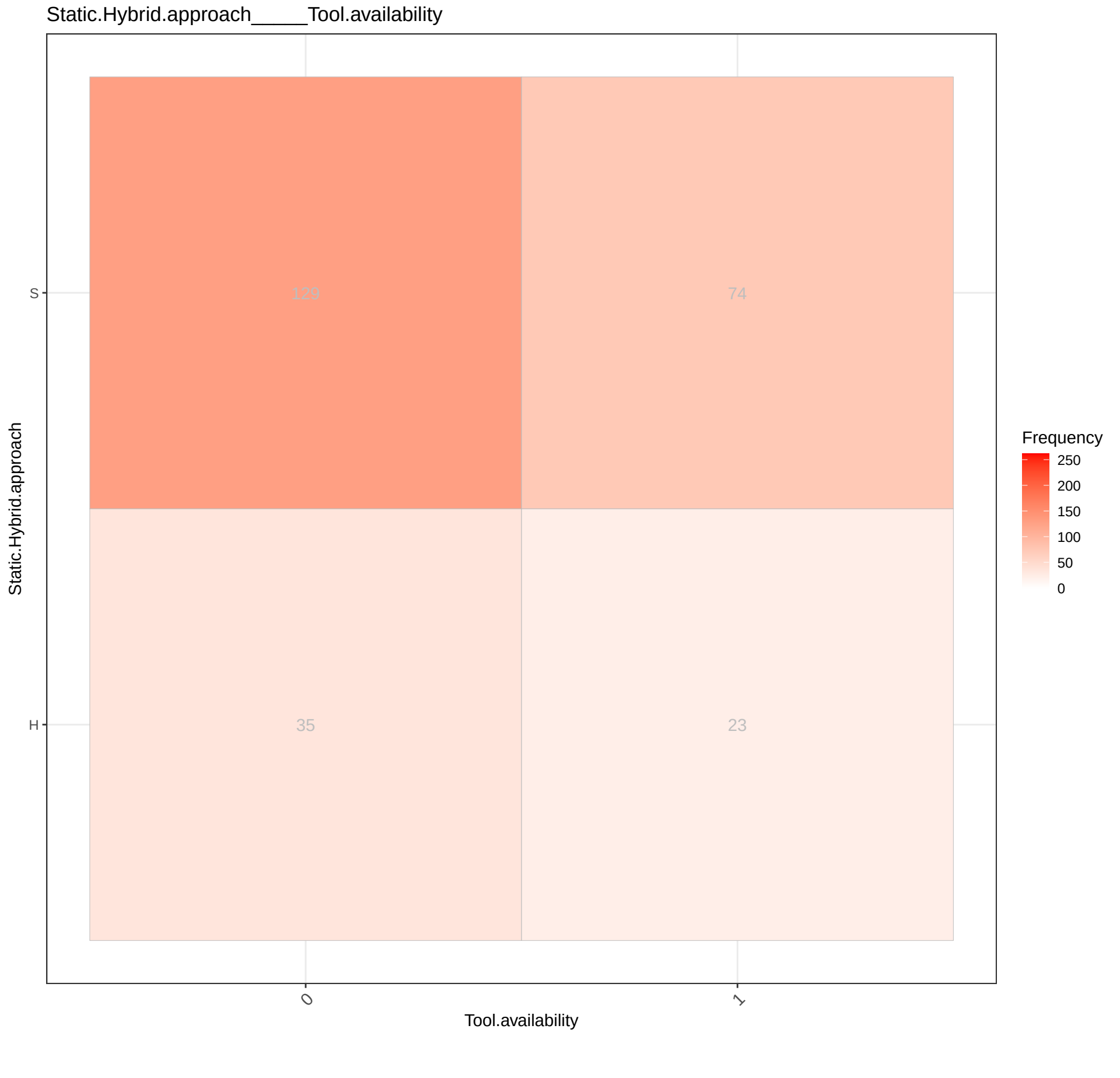
Static.Hybrid.approach_____Tool.availability
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74
35
23
S
H
Static.Hybrid.approach
0
1
Tool.availability
Frequency
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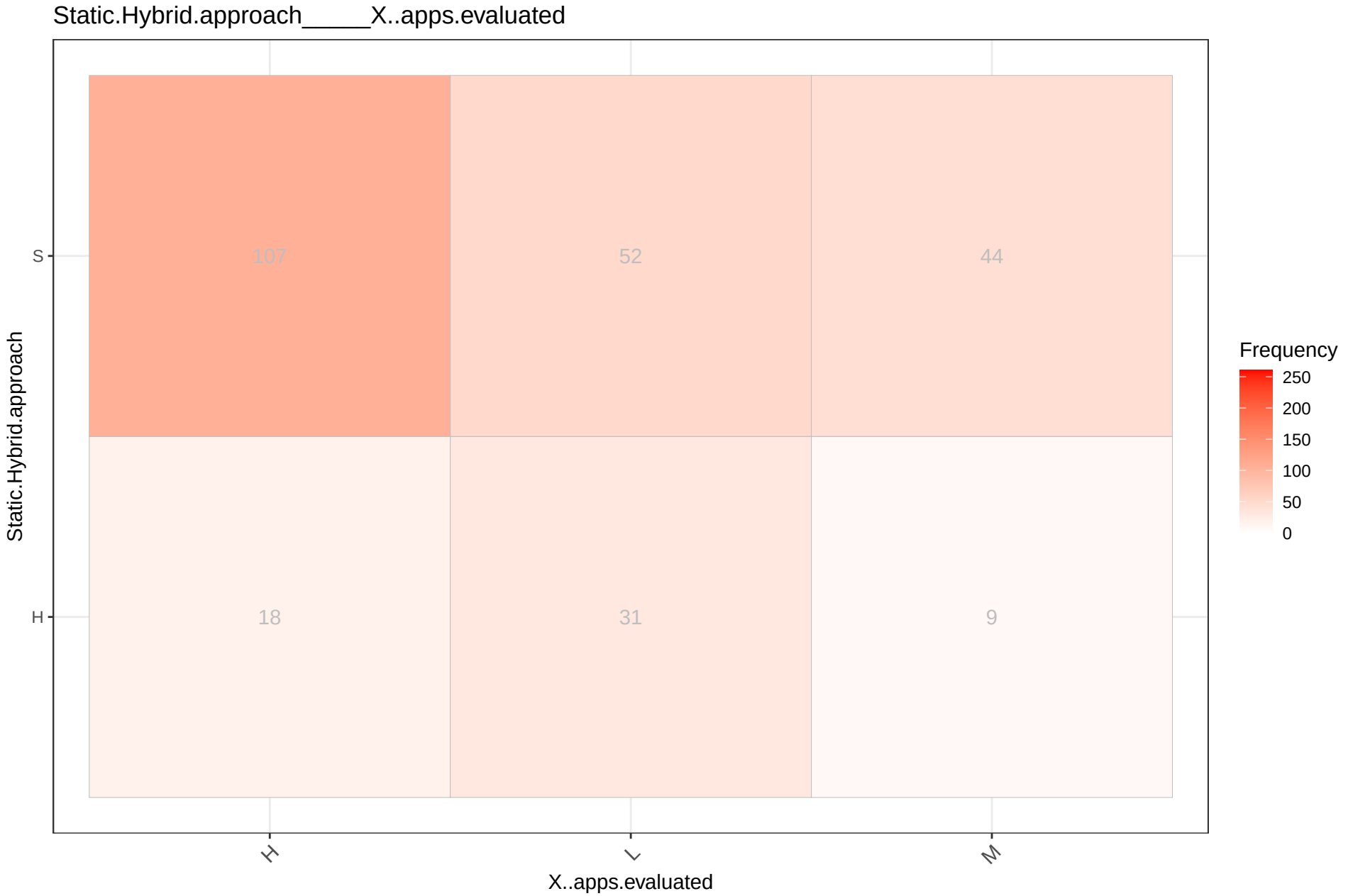
150
100
50
0


Static.Hybrid.approach_____X..apps.evaluated
107
52
44
18
31
9
S
H
Static.Hybrid.approach
H
L
M
X..apps.evaluated
Frequency
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150
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50
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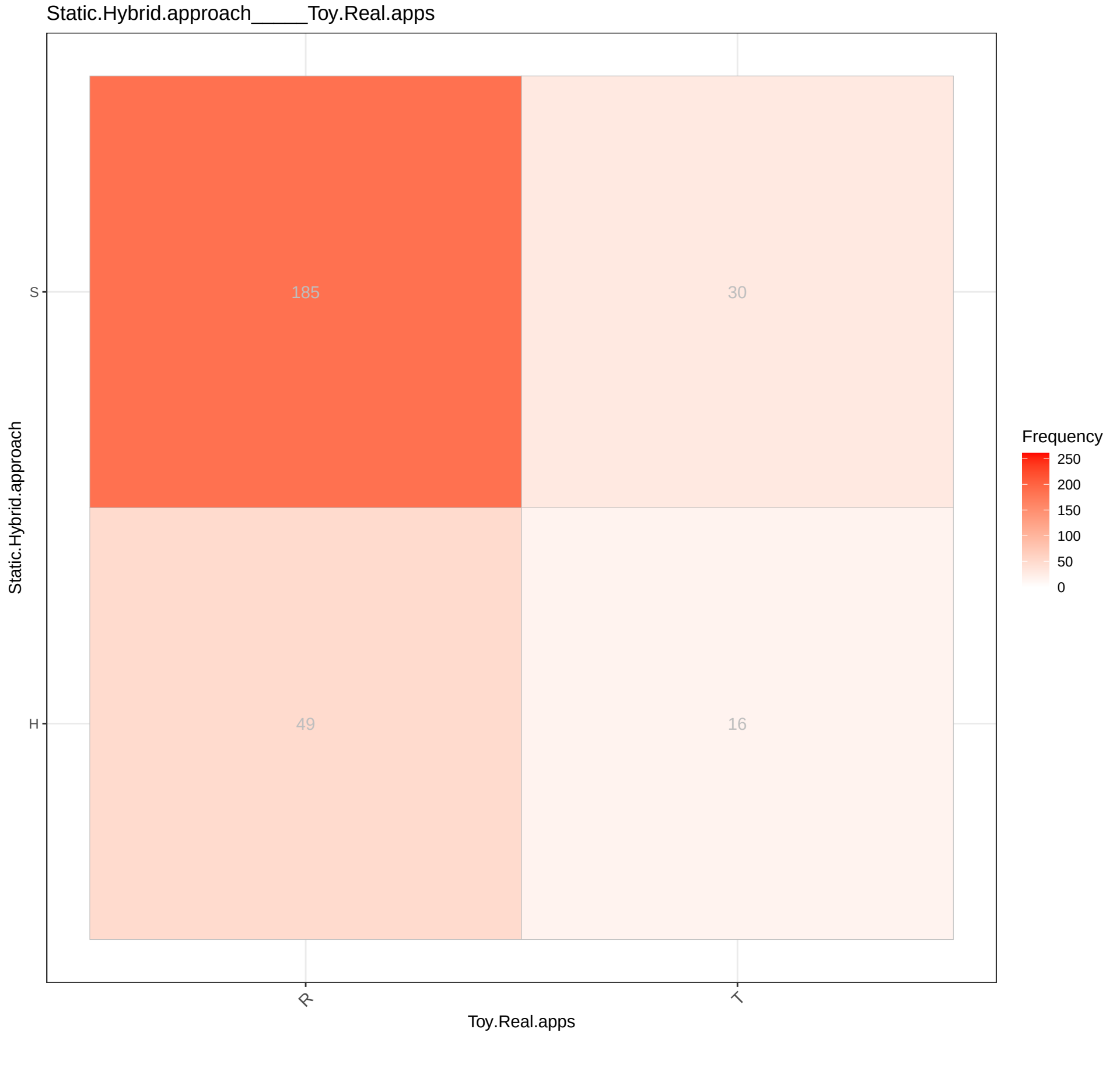
Static.Hybrid.approach_____Toy.Real.apps
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49
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Static.Hybrid.approach
R
T
Toy.Real.apps
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100
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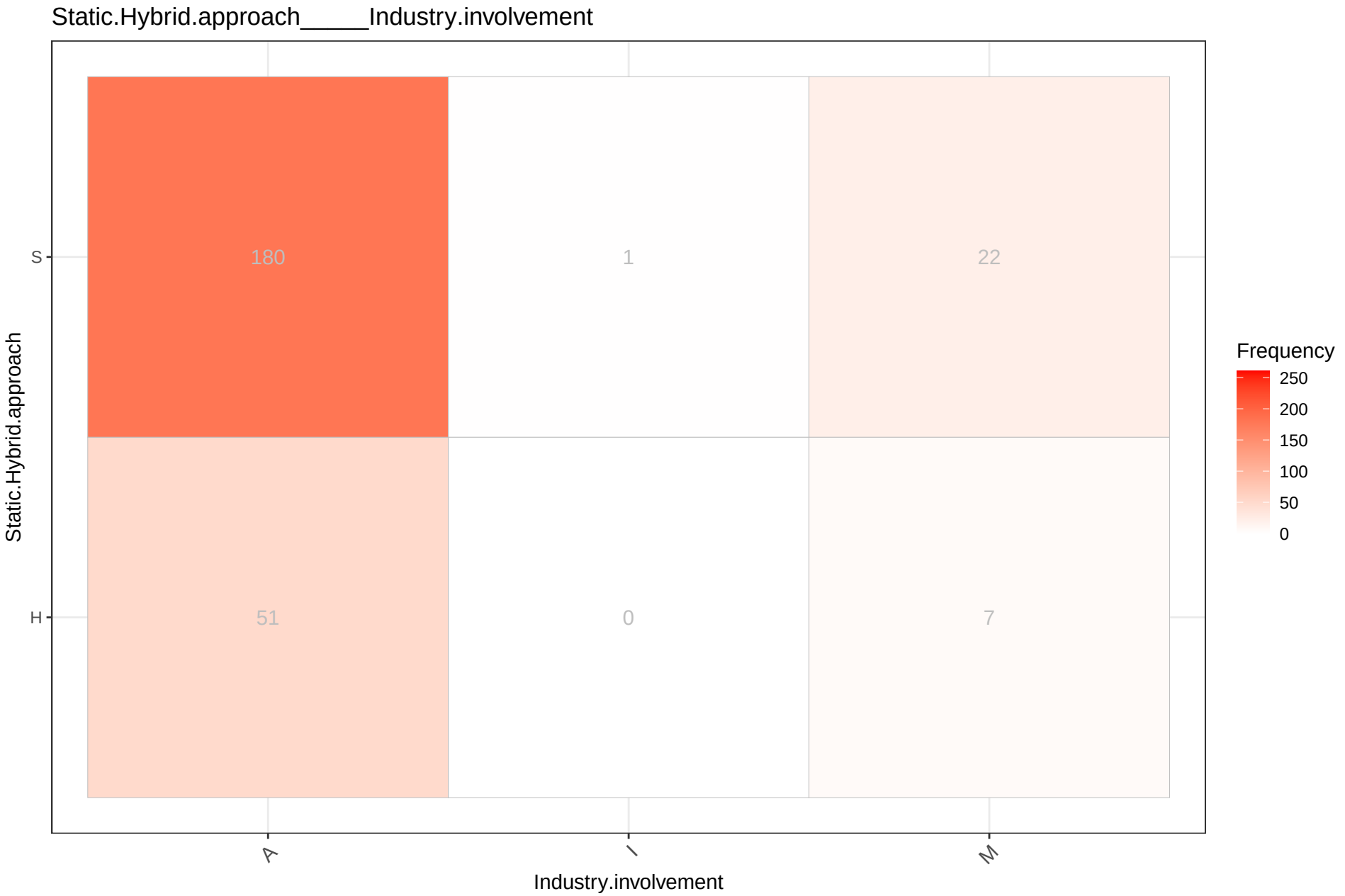
Static.Hybrid.approach_____Industry.involvement
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22
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A
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M
Industry.involvement
Frequency
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150
100
50
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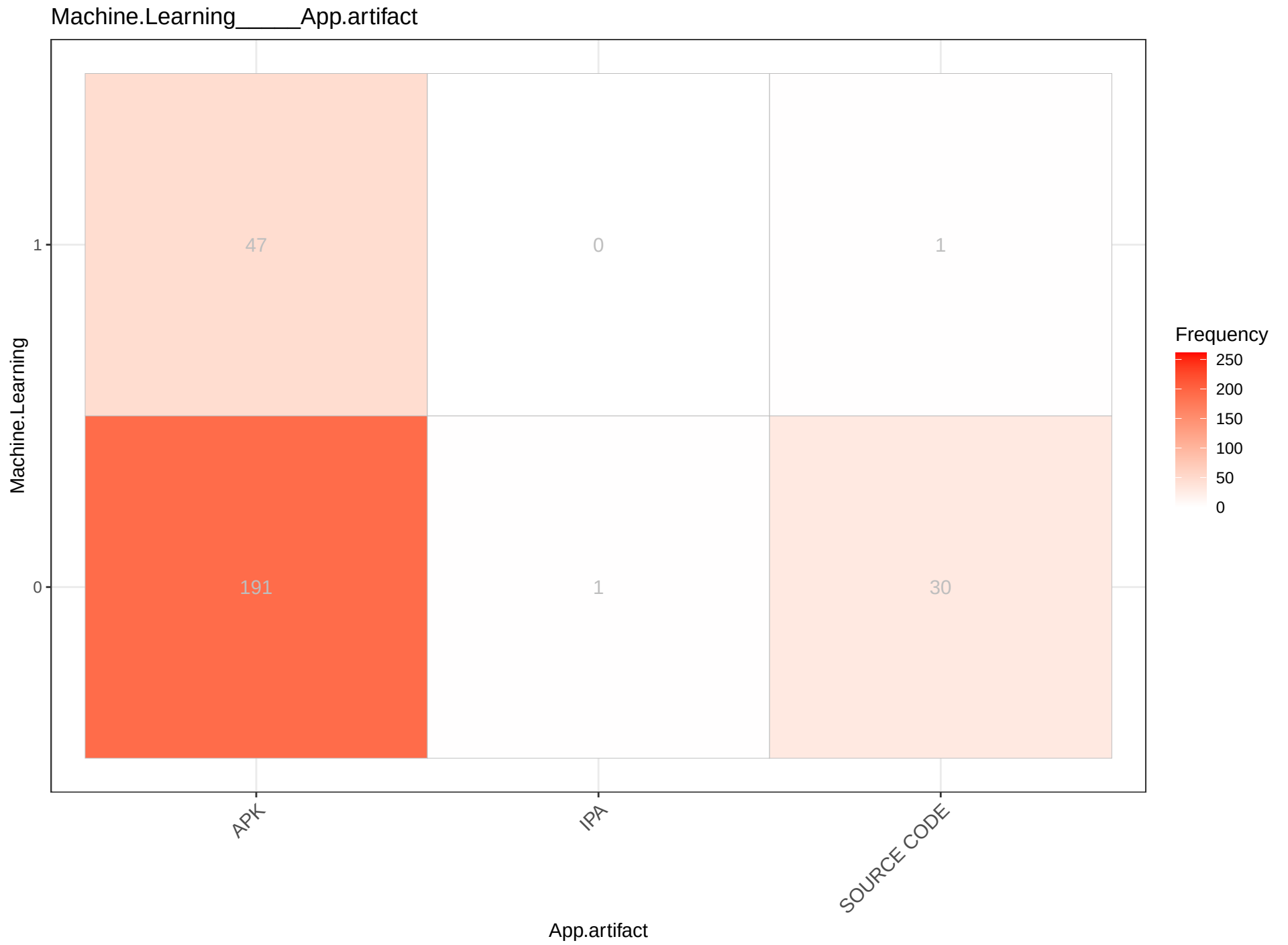
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0
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Machine.Learning
APK
IPA
SOURCE CODE
App.artifact
Frequency
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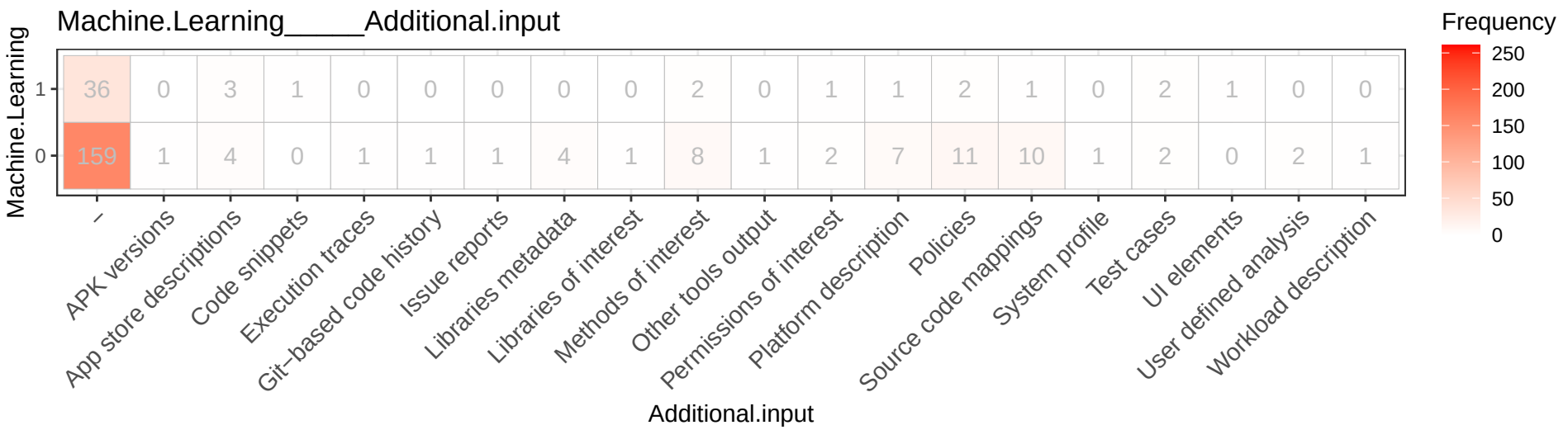
Machine.Learning_____Additional.input
Machine.Learning
1
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36 0 3 1 0 0 0 0 0 2 0 1 1 2 1 0 2 1 0 0
159 1 4 0 1 1 1 4 1 8 1 2 7 11 10 1 2 0 2 1
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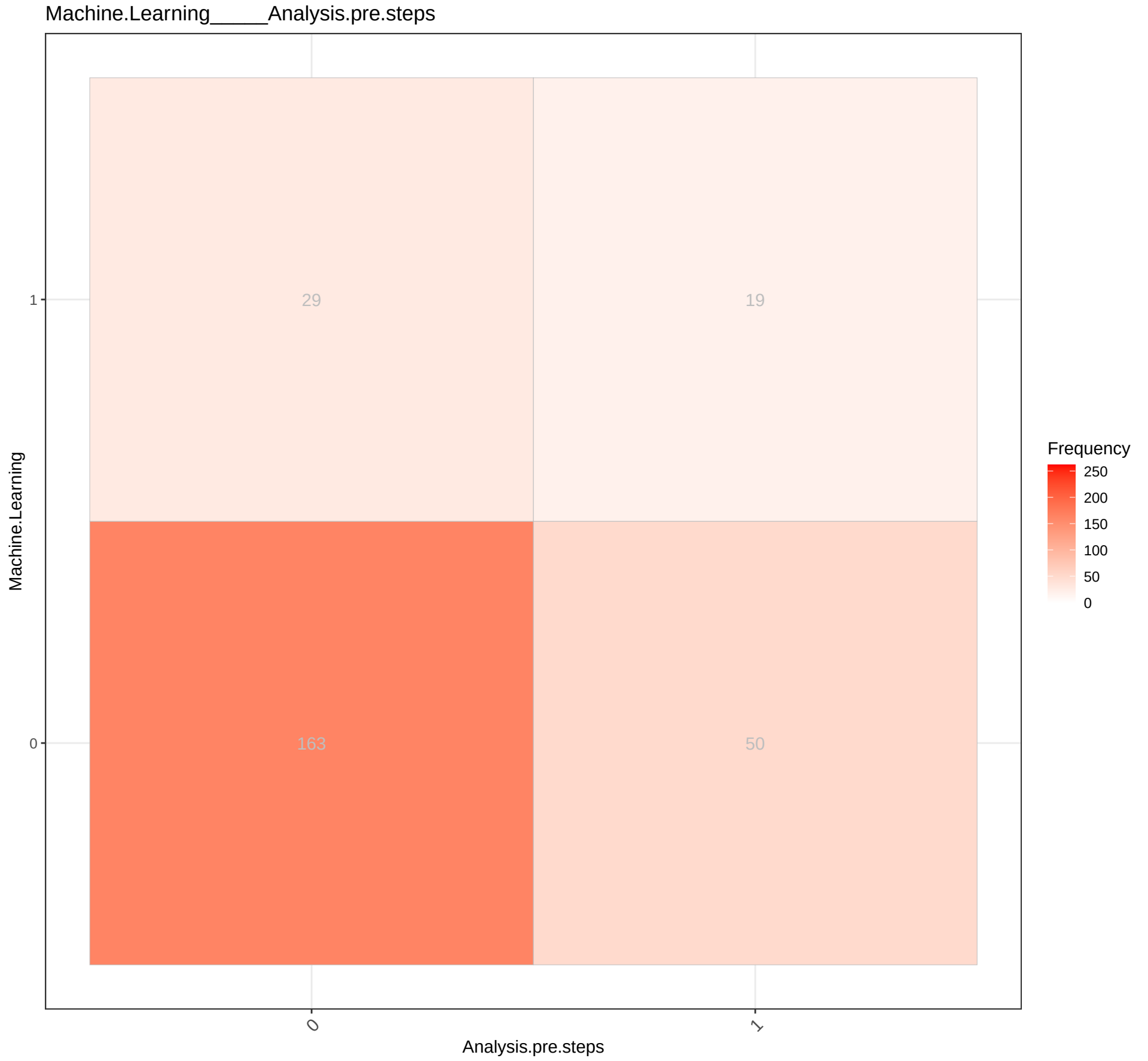
Machine.Learning_____Analysis.pre.steps
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1
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Frequency
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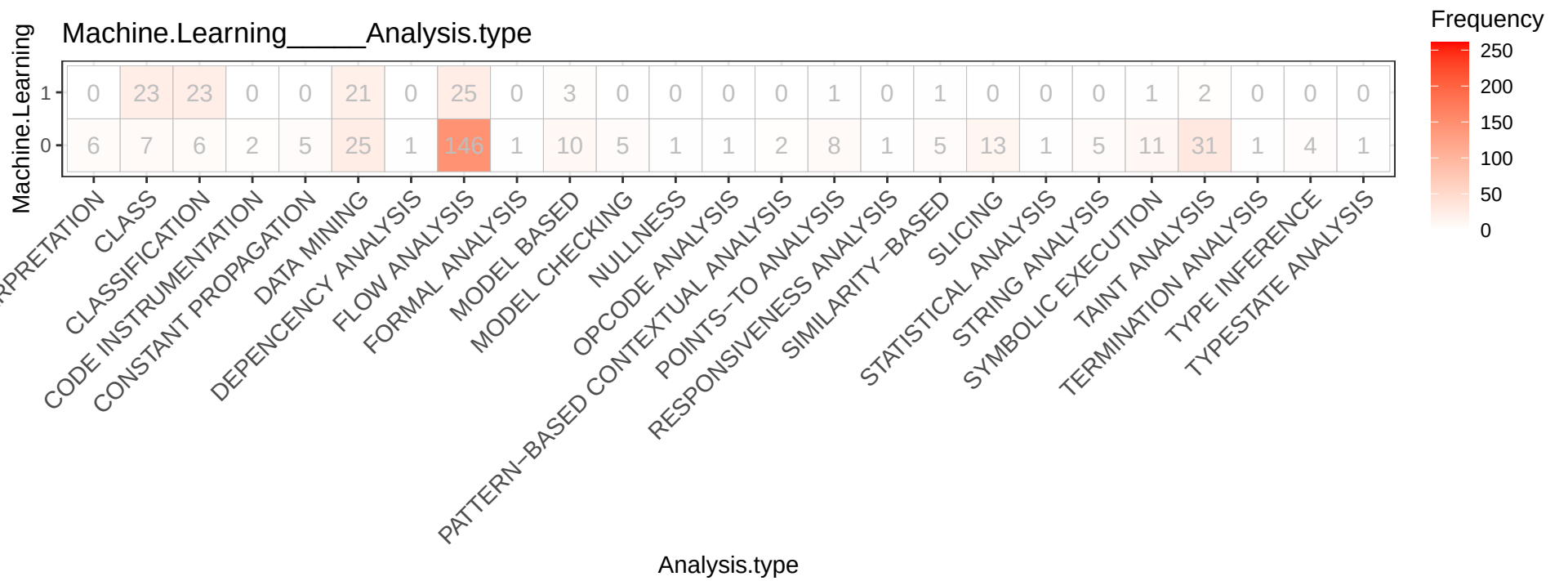
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TAINT ANALYSIS
TERMINATION ANALYSIS
TYPE INFERENCE
TYPESTATE ANALYSIS
Analysis.type
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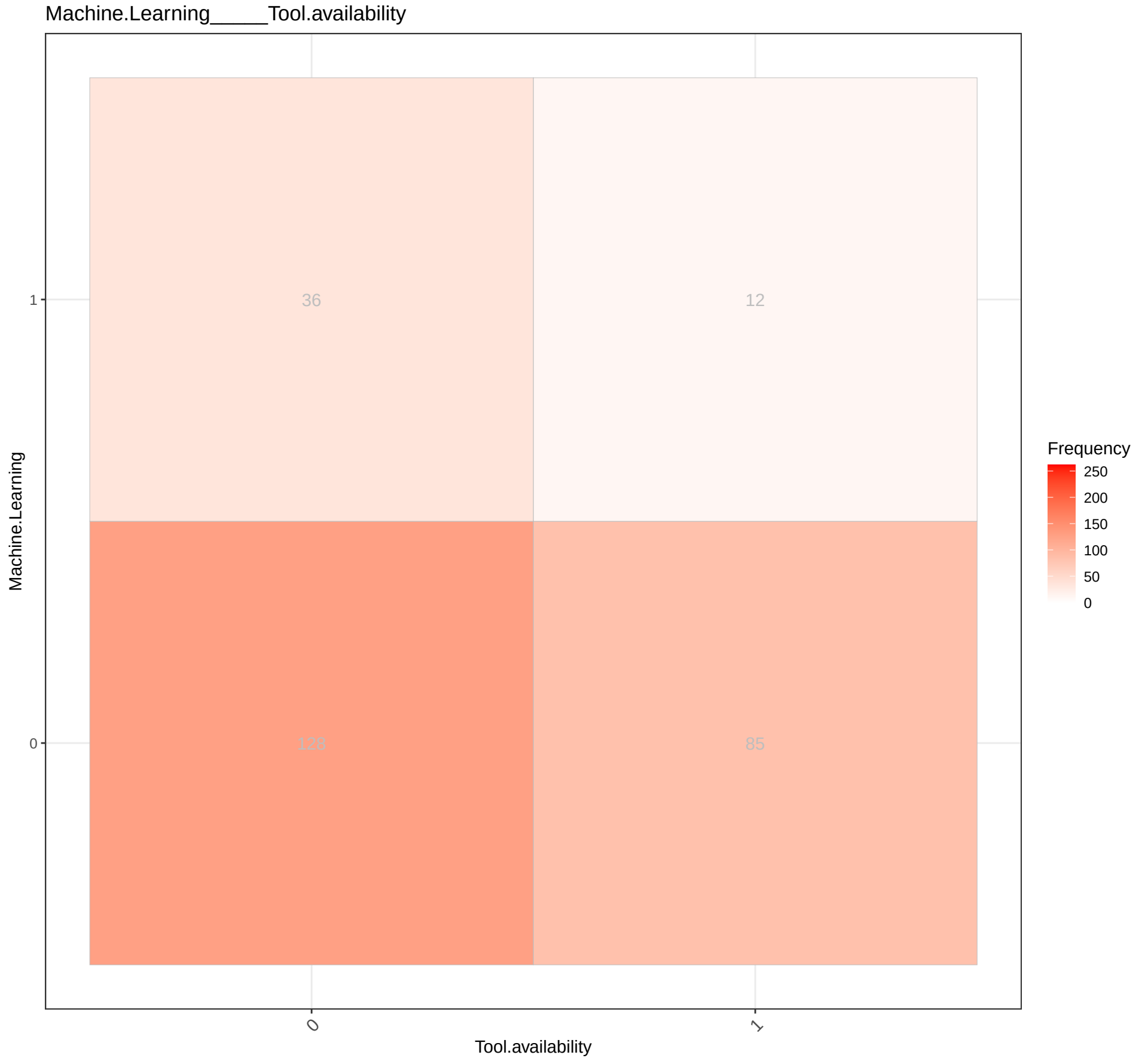
Machine.Learning_____Tool.availability
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Tool.availability
Frequency
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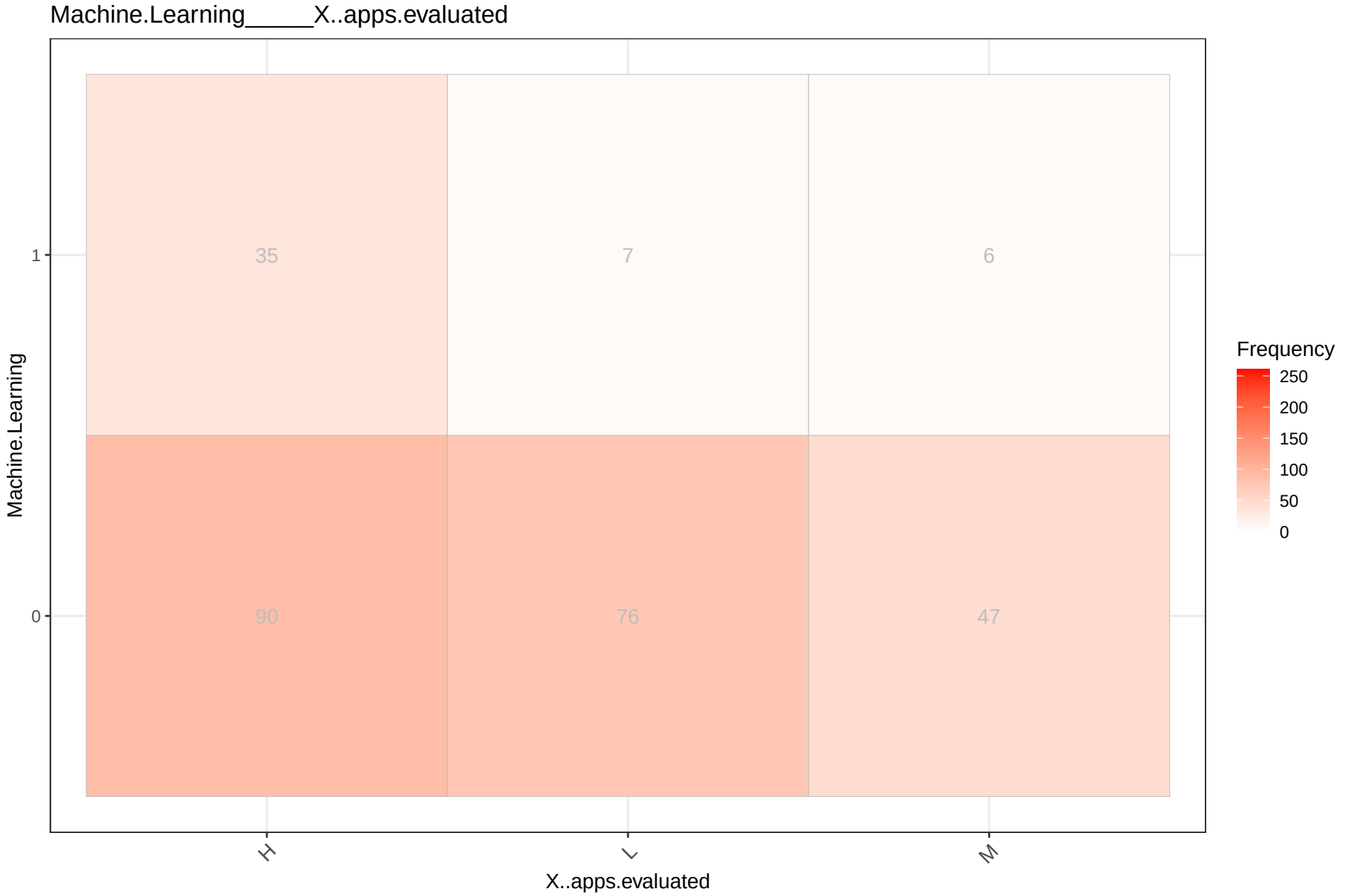
Machine.Learning_____X..apps.evaluated
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76
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Machine.Learning
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L
M
X..apps.evaluated
Frequency
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100
50
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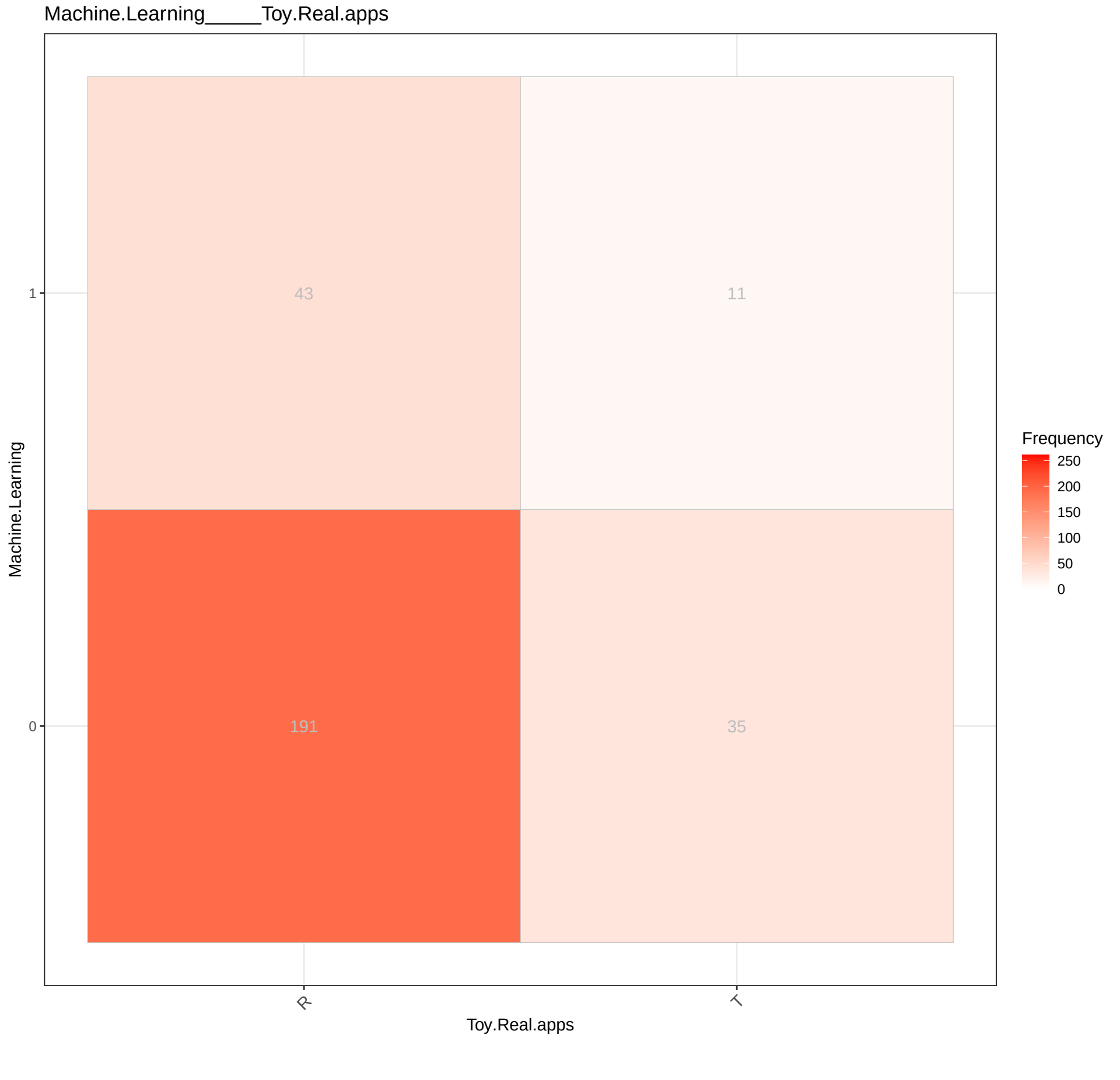
Machine.Learning_____Toy.Real.apps
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Machine.Learning
R
T
Toy.Real.apps
Frequency
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150
100
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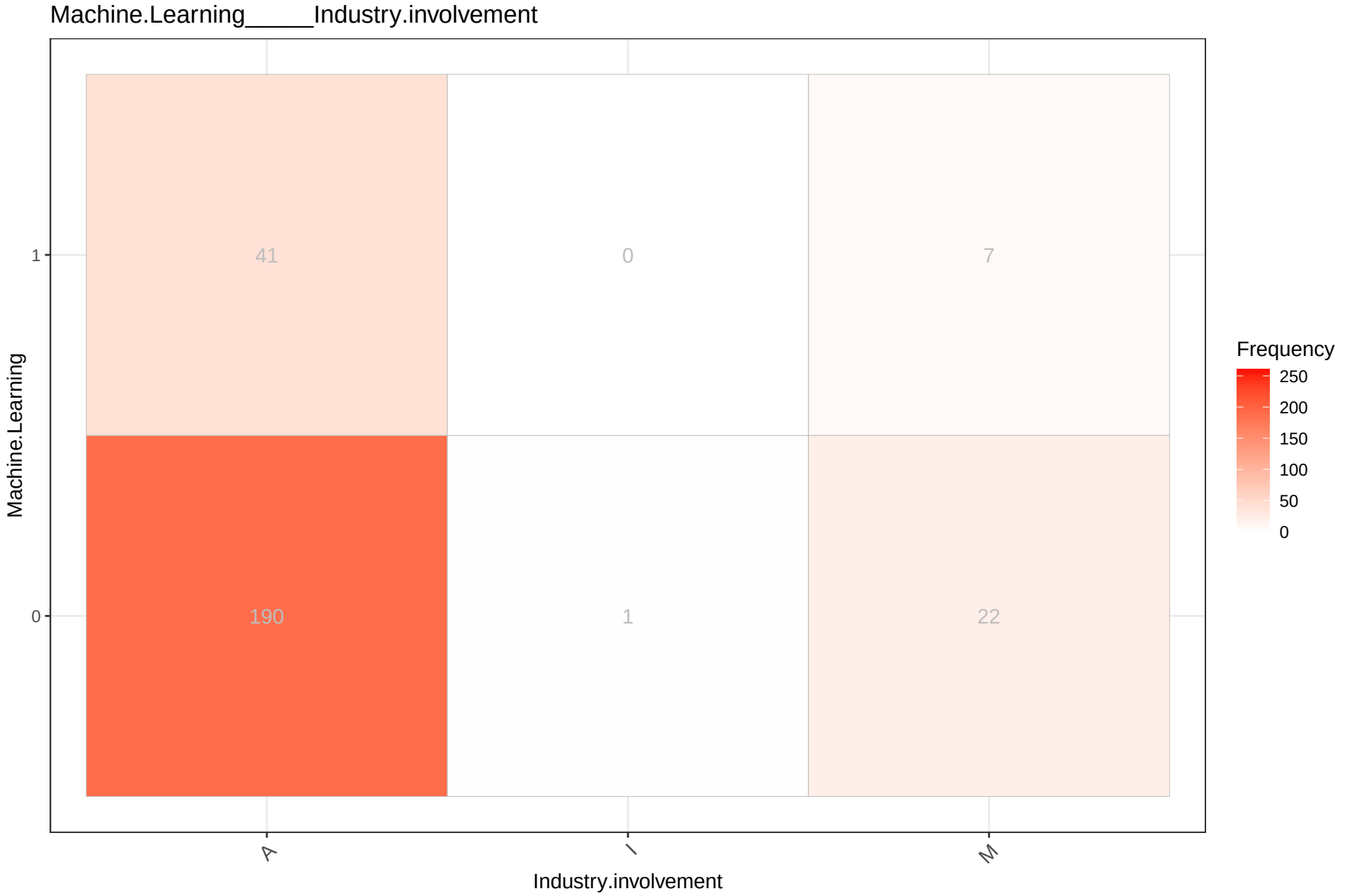
Machine.Learning_____Industry.involvement
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A
I
M
Industry.involvement
Frequency
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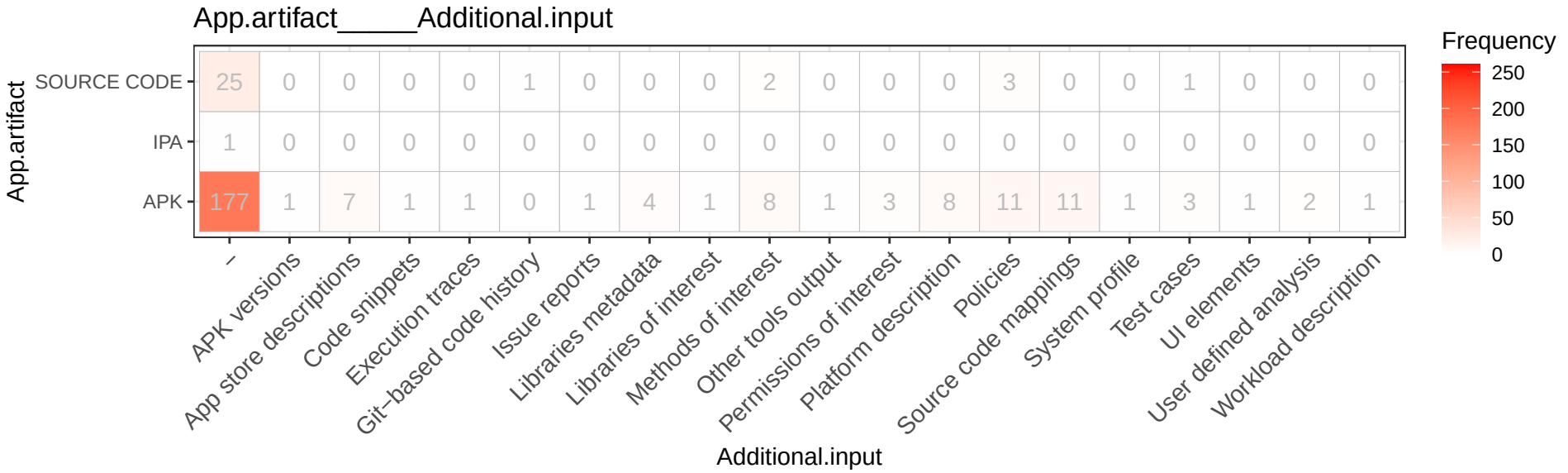
App.artifact_____Additional.input
App.artifact
SOURCE CODE
IPA
APK
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1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
177 1 7 1 1 0 1 4 1 8 1 3 8 11 11 1 3 1 2 1
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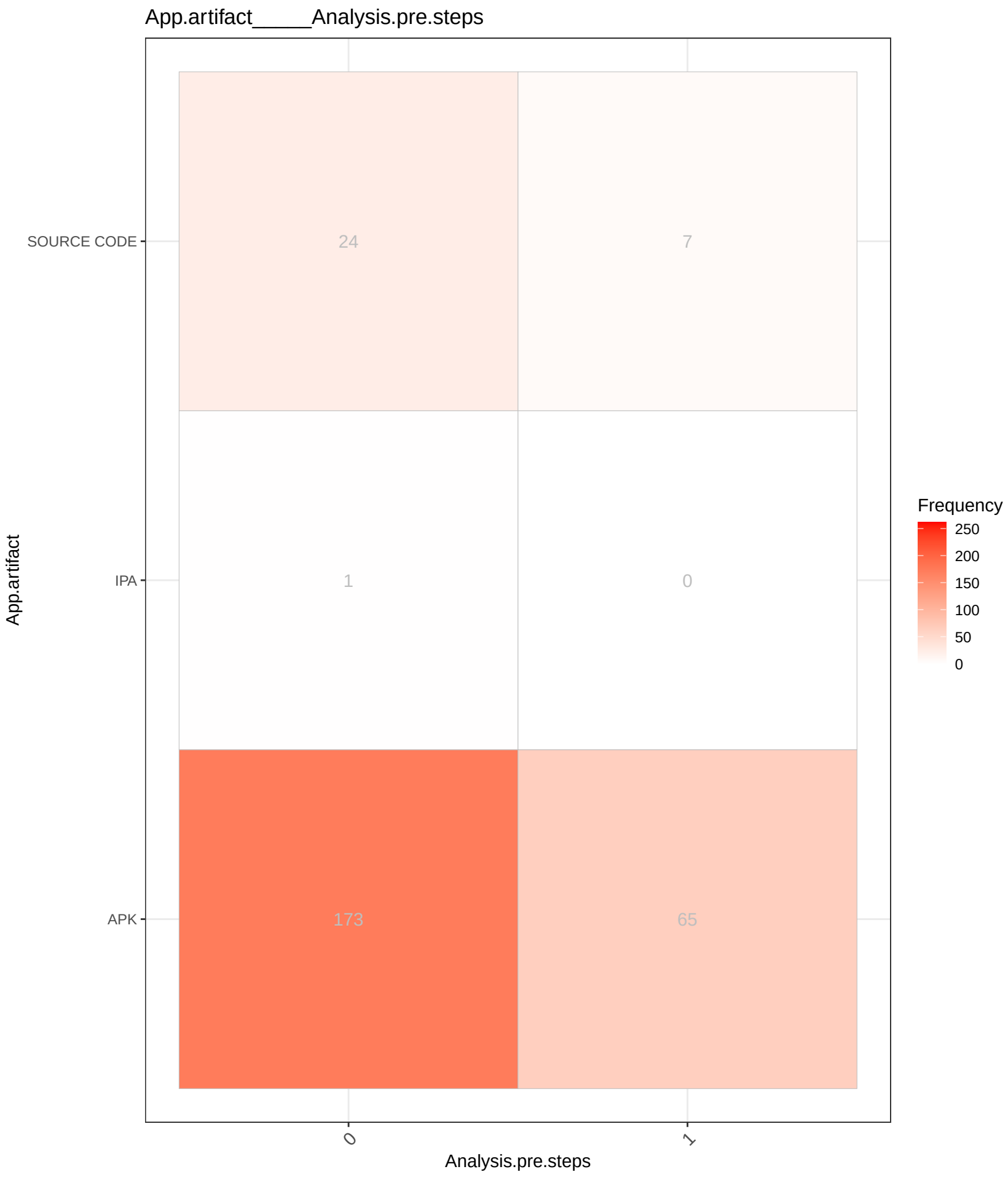
App.artifact_____Analysis.pre.steps
SOURCE CODE
IPA
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Analysis.pre.steps
Frequency
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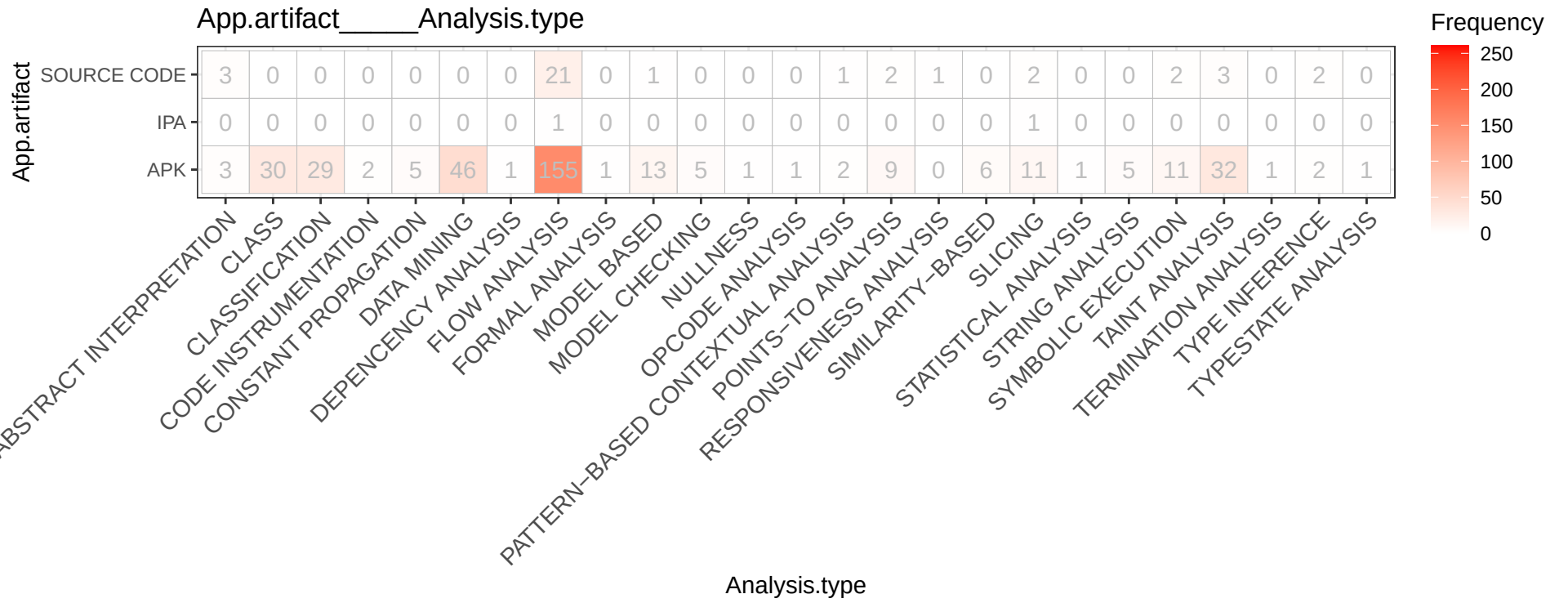
App.artifact_____Analysis.type
App.artifact
SOURCE CODE
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APK
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0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
3 30 29 2 5 46 1 155 1 13 5 1 1 2 9 0 6 11 1 5 11 32 1 2 1
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STRING ANALYSIS
SYMBOLIC EXECUTION
TAINT ANALYSIS
TERMINATION ANALYSIS
TYPE INFERENCE
TYPESTATE ANALYSIS
Analysis.type
Frequency
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200
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50
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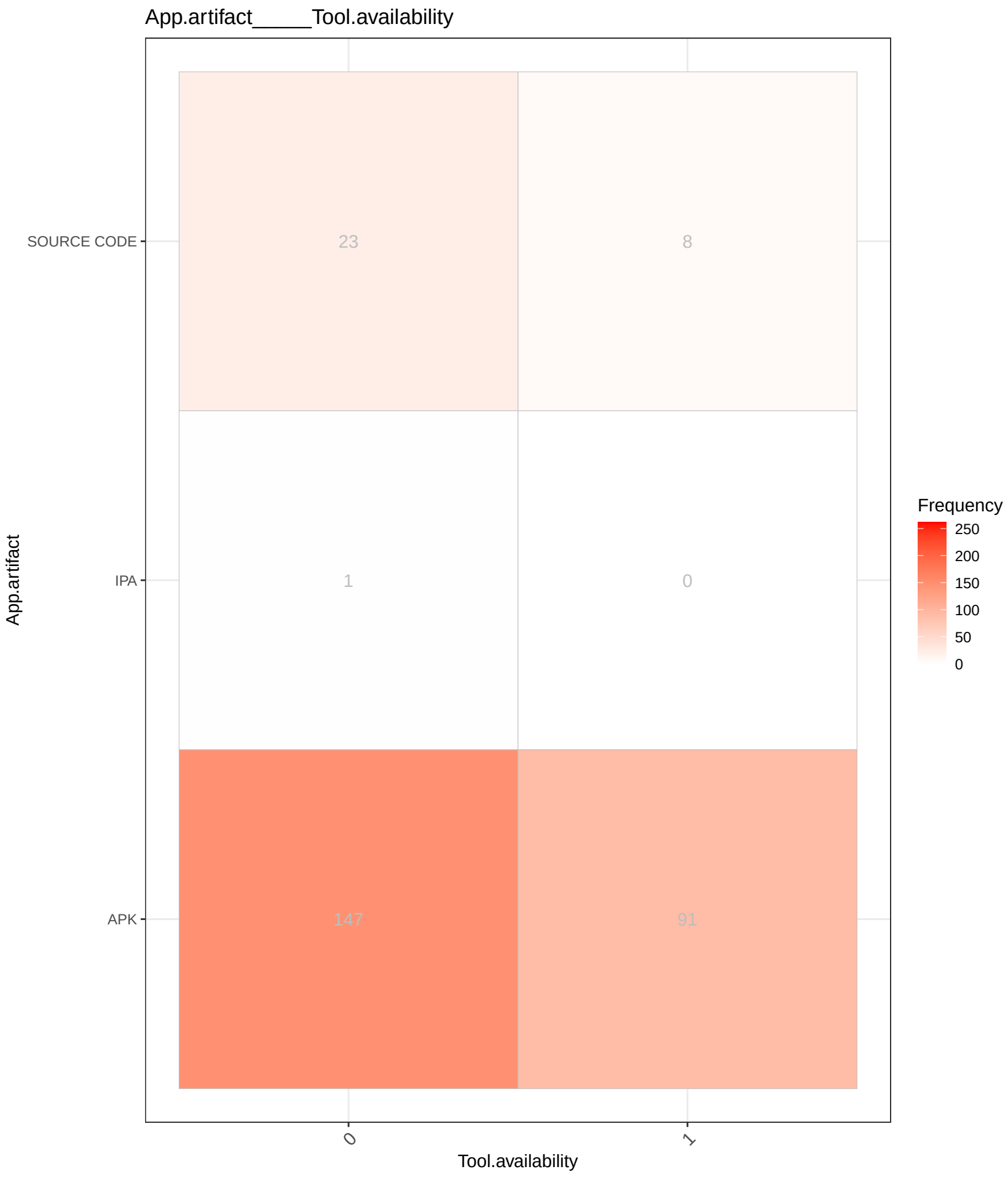
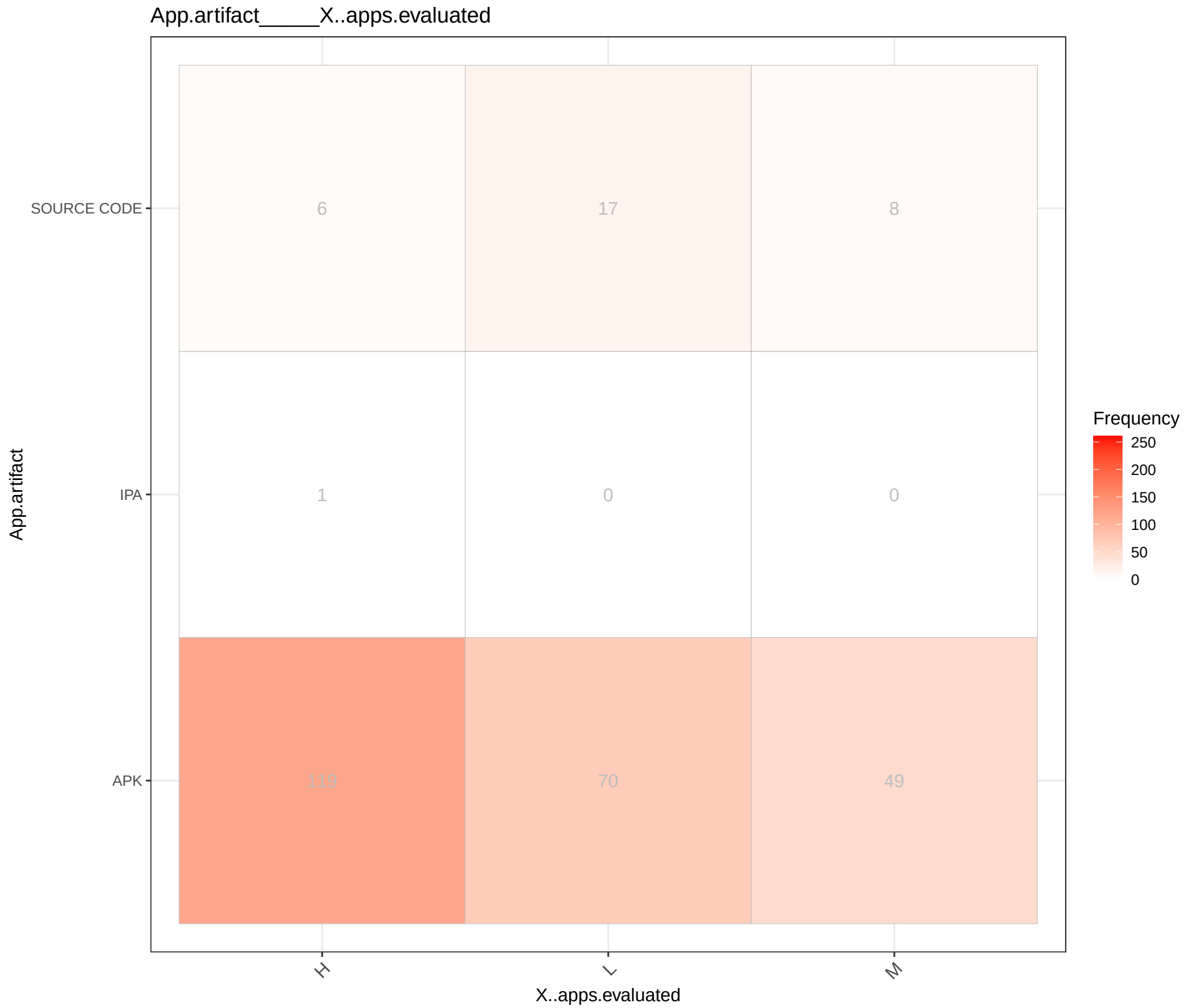
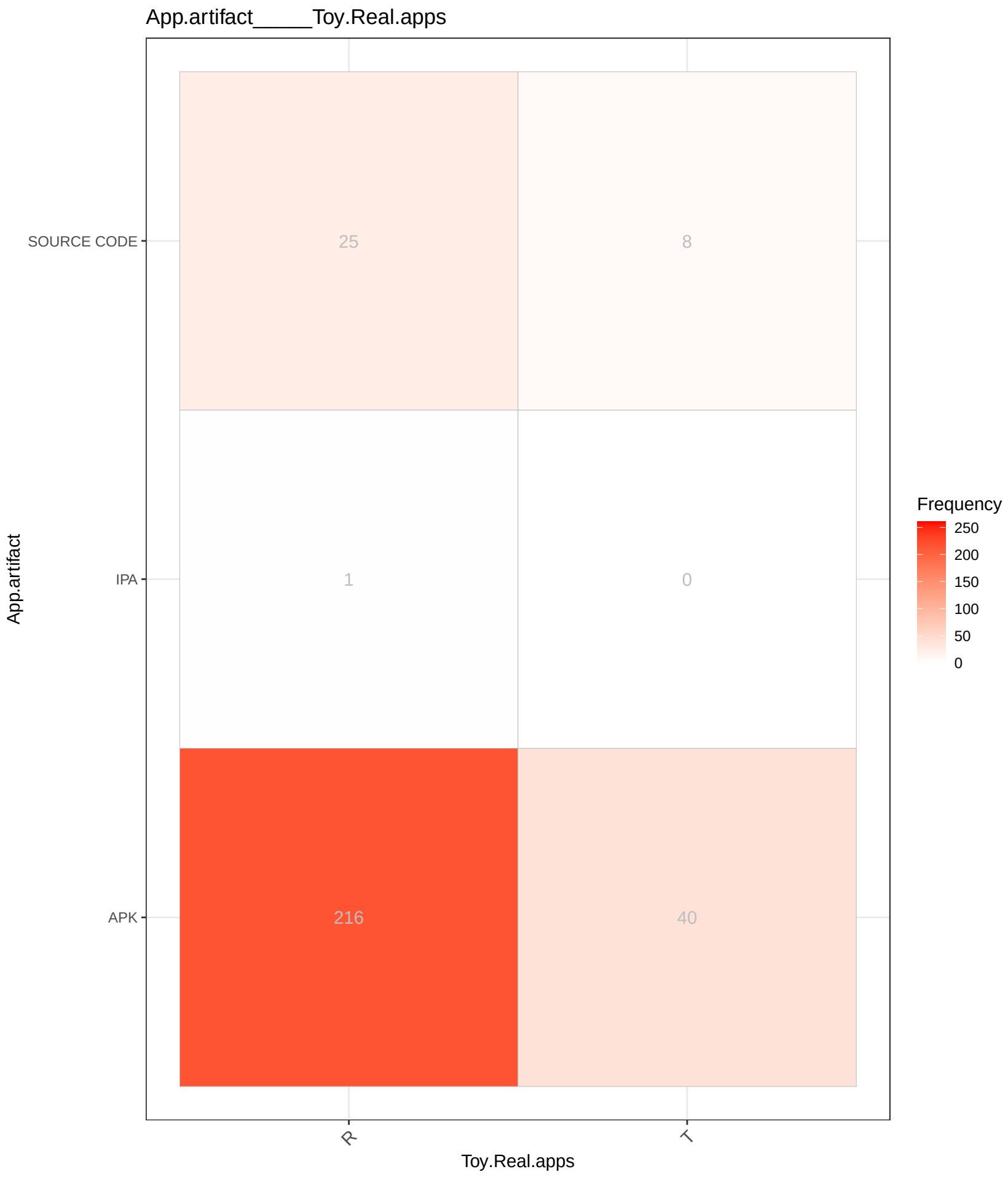
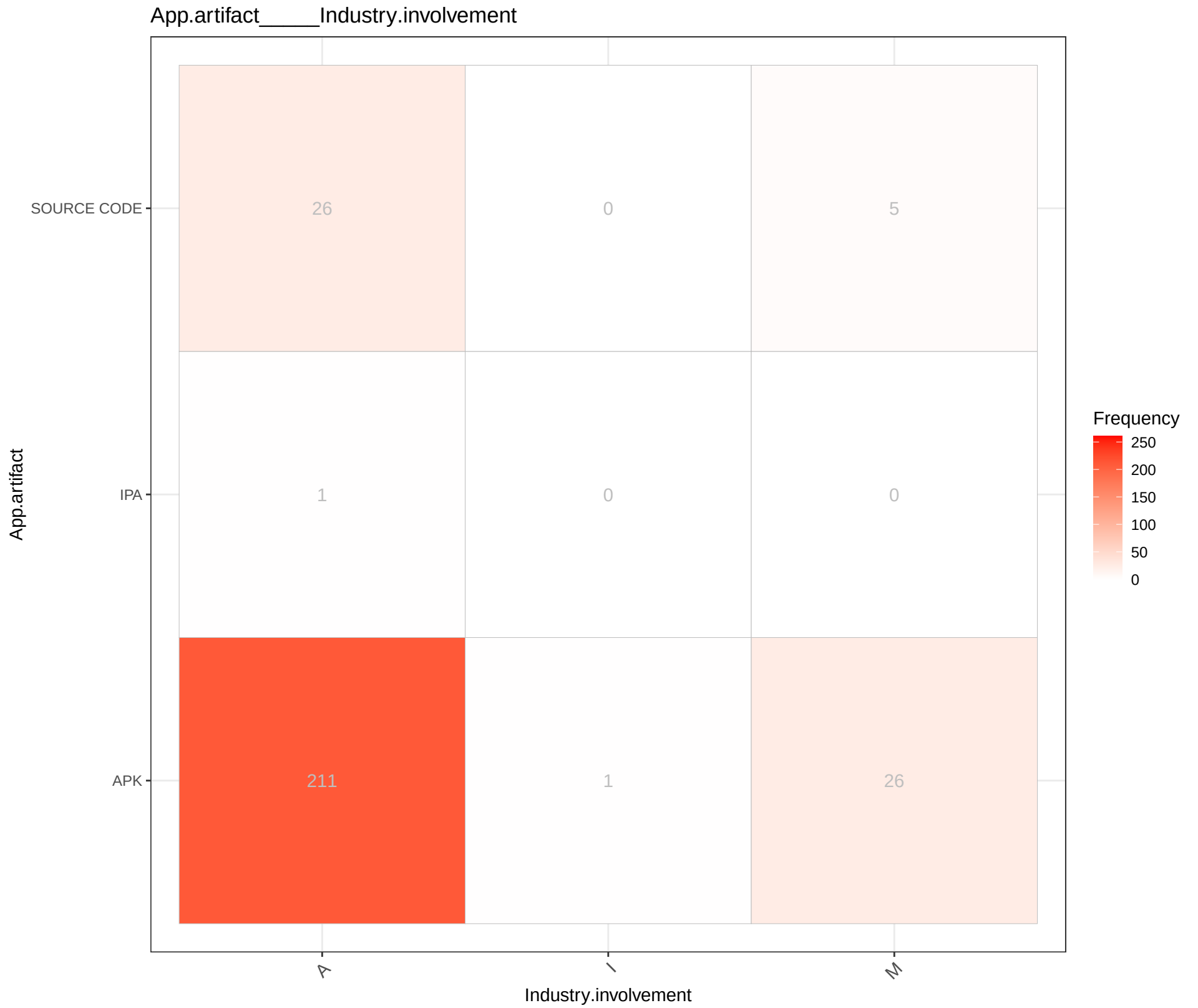
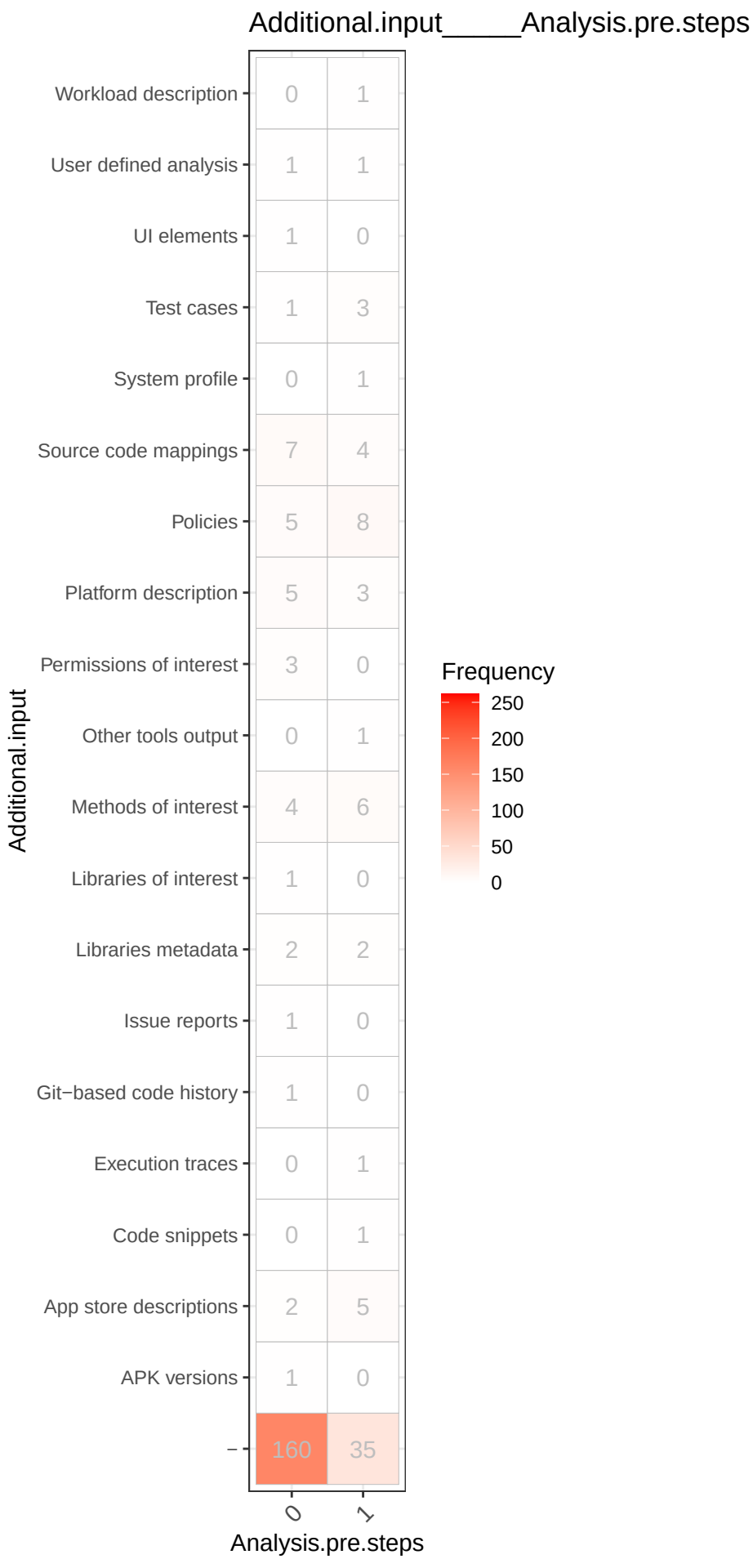
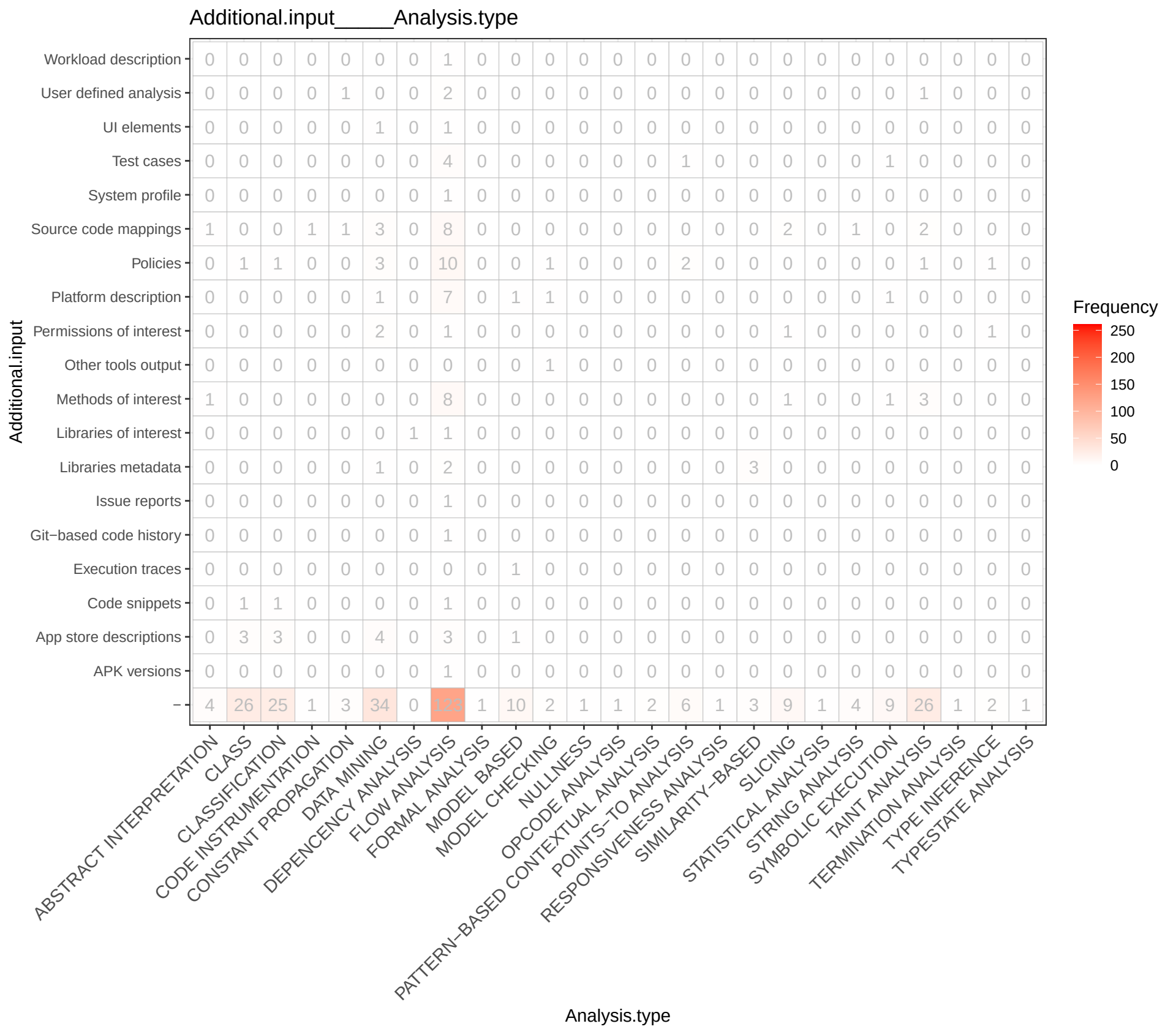

App.artifact_____Tool.availability
SOURCE CODE
IPA
APK
23
8
1
0
147
91
App.artifact
0
1
Tool.availability
Frequency
250
200
150
100
50
0

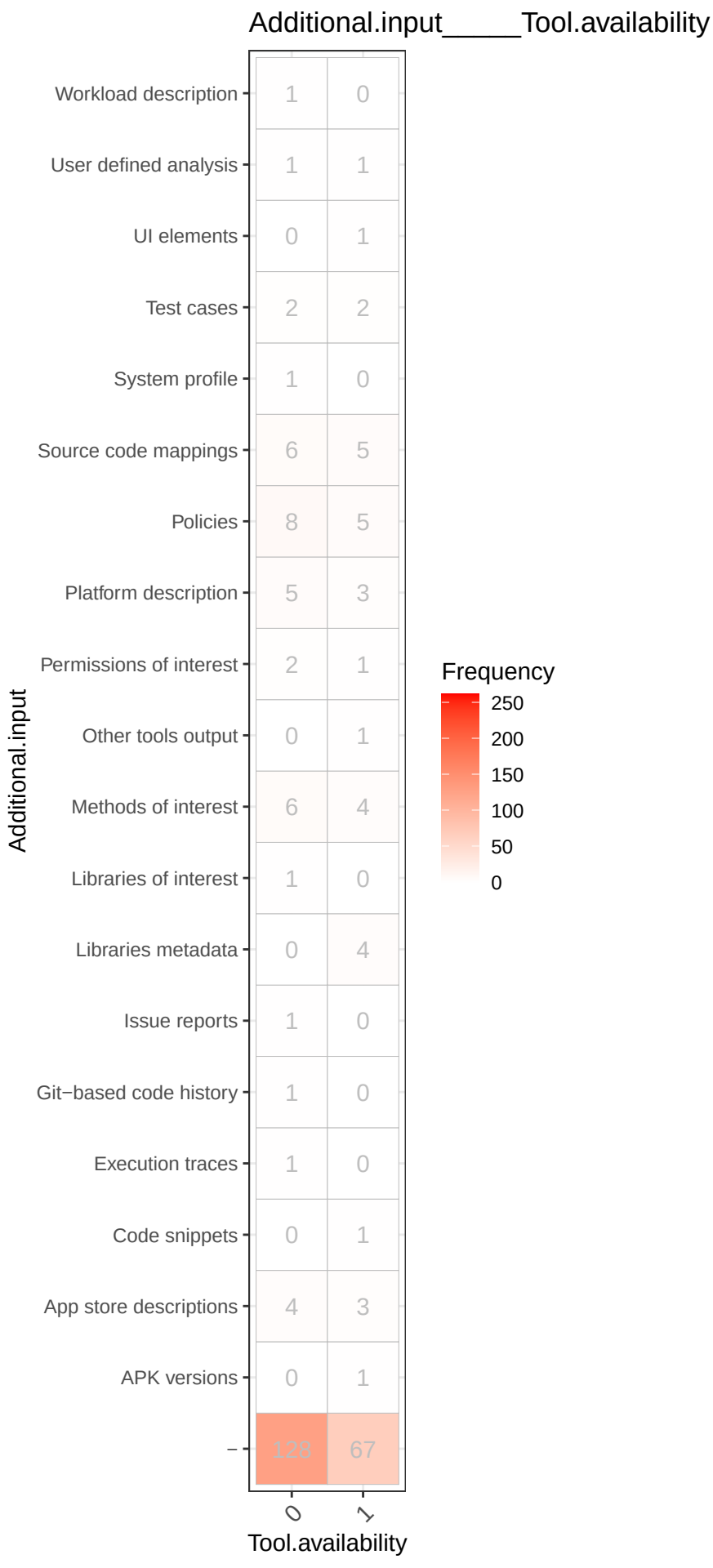

App.artifact_____X..apps.evaluated
SOURCE CODE
IPA
APK
6
17
8
1
0
0
119
70
49
App.artifact
H
L
M
X..apps.evaluated
Frequency
250
200
150
100
50
0

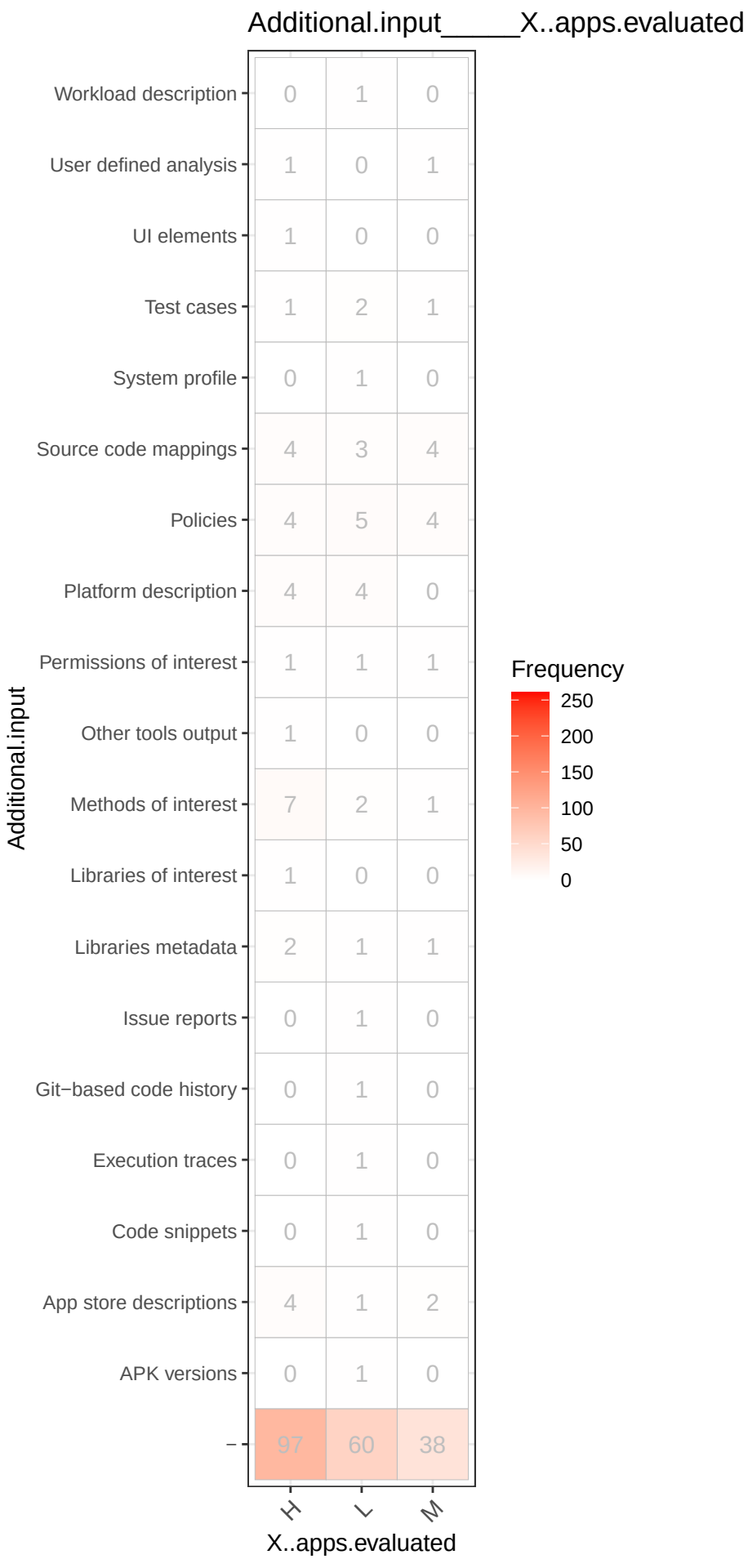

App.artifact_____Toy.Real.apps
SOURCE CODE
IPA
APK
25
8
1
0
216
40
App.artifact
R
T
Toy.Real.apps
Frequency
250
200
150
100
50
0


App.artifact_____Industry.involvement
SOURCE CODE
IPA
APK
26
0
5
1
0
0
211
1
26
App.artifact
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
0


Additional.input_____Analysis.pre.steps
Workload description
User defined analysis
UI elements
Test cases
System profile
Source code mappings
Policies
Platform description
Permissions of interest
Other tools output
Methods of interest
Libraries of interest
Libraries metadata
Issue reports
Git−based code history
Execution traces
Code snippets
App store descriptions
APK versions
–
0 1
1 1
1 0
1 3
0 1
7 4
5 8
5 3
3 0
0 1
4 6
1 0
2 2
1 0
1 0
0 1
0 1
2 5
1 0
160 35
0
1
Analysis.pre.steps
Additional.input
Frequency
250
200
150
100
50
0


Additional.input_____Analysis.type
Workload description 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
User defined analysis 0 0 0 0 1 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
UI elements 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Test cases 0 0 0 0 0 0 0 4 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0
System profile 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Source code mappings 1 0 0 1 1 3 0 8 0 0 0 0 0 0 0 0 0 2 0 1 0 2 0 0 0
Policies 0 1 1 0 0 3 0 10 0 0 1 0 0 0 2 0 0 0 0 0 0 1 0 1 0
Platform description 0 0 0 0 0 1 0 7 0 1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
Permissions of interest 0 0 0 0 0 2 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0
Other tools output 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Methods of interest 1 0 0 0 0 0 0 8 0 0 0 0 0 0 0 0 0 1 0 0 1 3 0 0 0
Libraries of interest 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Libraries metadata 0 0 0 0 0 1 0 2 0 0 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0
Issue reports 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Git−based code history 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Execution traces 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Code snippets 0 1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
App store descriptions 0 3 3 0 0 4 0 3 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
APK versions 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
− 4 26 25 1 3 34 0 123 1 10 2 1 1 2 6 1 3 9 1 4 9 26 1 2 1
Additional.input
ABSTRACT INTERPRETATION
CLASS
CLASSIFICATION
CODE INSTRUMENTATION
CONSTANT PROPAGATION
DATA MINING
DEPENCENCY ANALYSIS
FLOW ANALYSIS
FORMAL ANALYSIS
MODEL BASED
MODEL CHECKING
NULLNESS
OPCODE ANALYSIS
PATTERN−BASED CONTEXTUAL ANALYSIS
POINTS−TO ANALYSIS
RESPONSIVENESS ANALYSIS
SIMILARITY−BASED
SLICING
STATISTICAL ANALYSIS
STRING ANALYSIS
SYMBOLIC EXECUTION
TAINT ANALYSIS
TERMINATION ANALYSIS
TYPE INFERENCE
TYPESTATE ANALYSIS
Analysis.type
Frequency
250
200
150
100
50
0


Additional.input_____Tool.availability
Workload description
User defined analysis
UI elements
Test cases
System profile
Source code mappings
Policies
Platform description
Permissions of interest
Other tools output
Methods of interest
Libraries of interest
Libraries metadata
Issue reports
Git−based code history
Execution traces
Code snippets
App store descriptions
APK versions
–
1 0
1 1
0 1
2 2
1 0
6 5
8 5
5 3
2 1
0 1
6 4
1 0
0 4
1 0
1 0
1 0
0 1
4 3
0 1
128 67
0
1
Tool.availability
Additional.input
Frequency
250
200
150
100
50
0


Additional.input_____X..apps.evaluated
Workload description
User defined analysis
UI elements
Test cases
System profile
Source code mappings
Policies
Platform description
Permissions of interest
Other tools output
Methods of interest
Libraries of interest
Libraries metadata
Issue reports
Git−based code history
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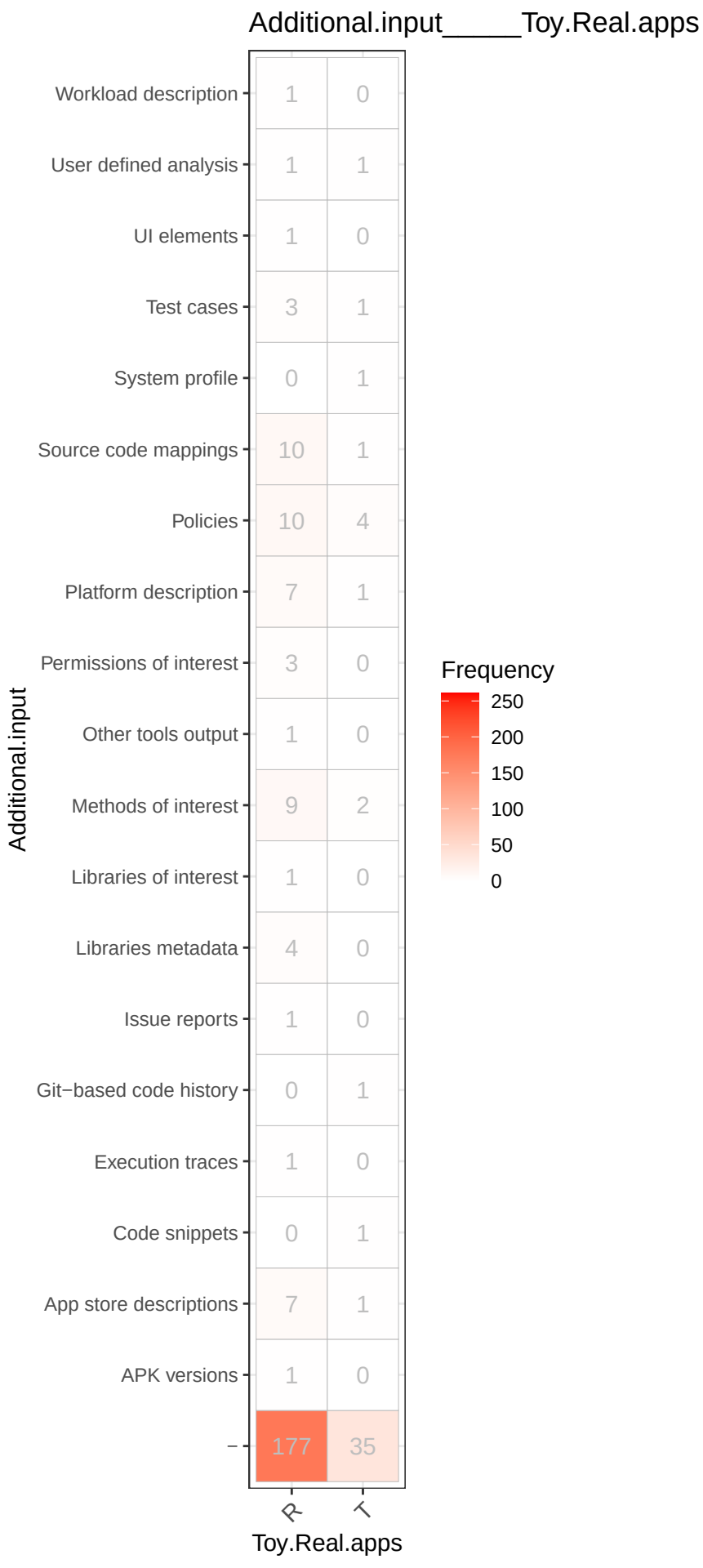
Code snippets
App store descriptions
APK versions
–
0 1 0
1 0 1
1 0 0
1 2 1
0 1 0
4 3 4
4 5 4
4 4 0
1 1 1
1 0 0
7 2 1
1 0 0
2 1 1
0 1 0
0 1 0
0 1 0
0 1 0
4 1 2
0 1 0
97 60 38
Additional.input
H
L
M
X..apps.evaluated
Frequency
250
200
150
100
50
0


Additional.input_____Toy.Real.apps
Workload description
User defined analysis
UI elements
Test cases
System profile
Source code mappings
Policies
Platform description
Permissions of interest
Other tools output
Methods of interest
Libraries of interest
Libraries metadata
Issue reports
Git−based code history
Execution traces
Code snippets
App store descriptions
APK versions
–
1 0
1 1
1 0
3 1
0 1
10 1
10 4
7 1
3 0
1 0
9 2
1 0
4 0
1 0
0 1
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0 1
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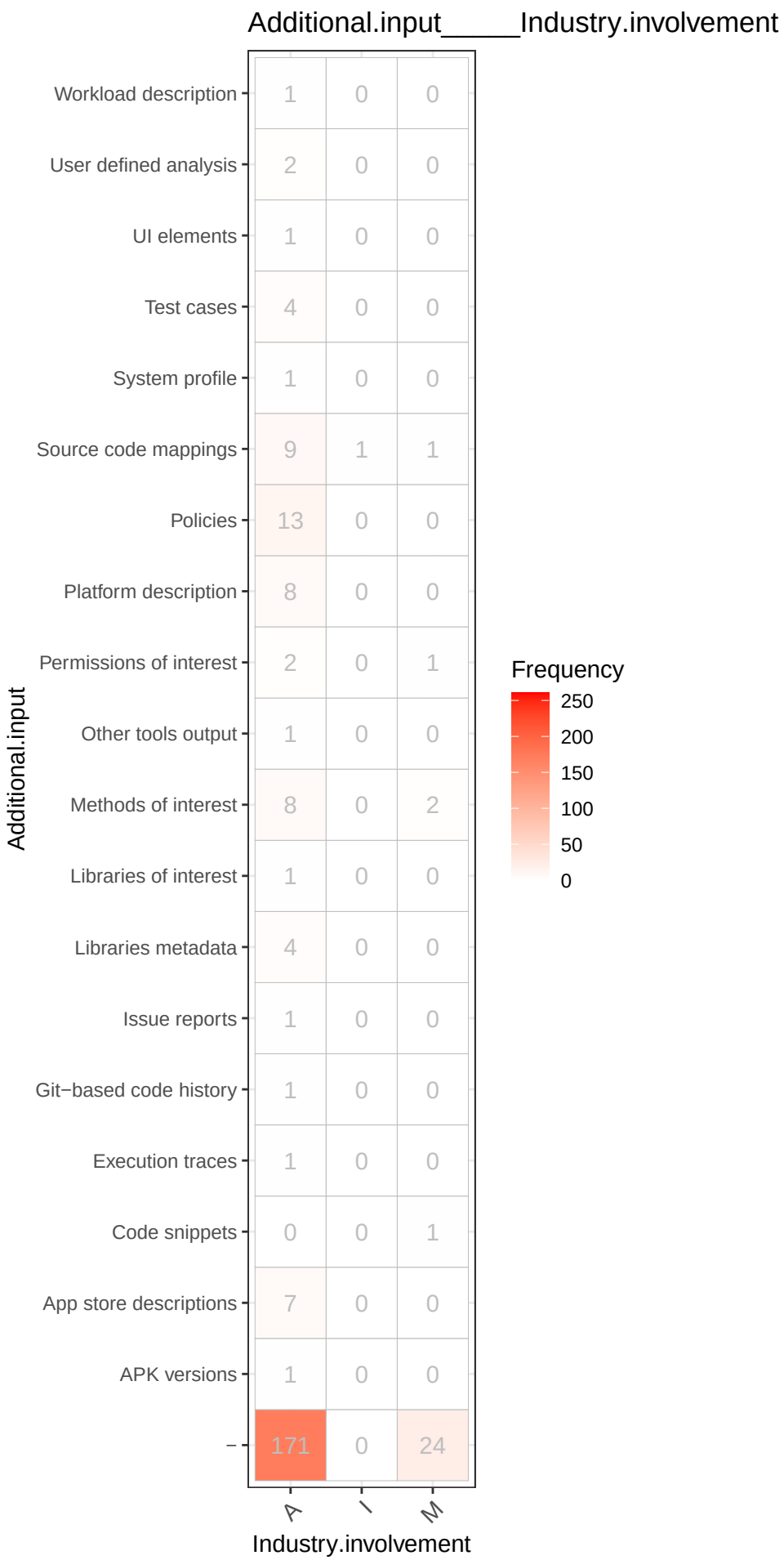
1 0
177 35
R
T
Toy.Real.apps
Additional.input
Frequency
250
200
150
100
50
0


Additional.input_____Industry.involvement
Workload description
User defined analysis
UI elements
Test cases
System profile
Source code mappings
Policies
Platform description
Permissions of interest
Other tools output
Methods of interest
Libraries of interest
Libraries metadata
Issue reports
Git−based code history
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APK versions
–
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1 0 0
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1 0 0
9 1 1
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8 0 0
2 0 1
1 0 0
8 0 2
1 0 0
4 0 0
1 0 0
1 0 0
1 0 0
0 0 1
7 0 0
1 0 0
171 0 24
A
I
M
Industry.involvement
Additional.input
Frequency
250
200
150
100
50
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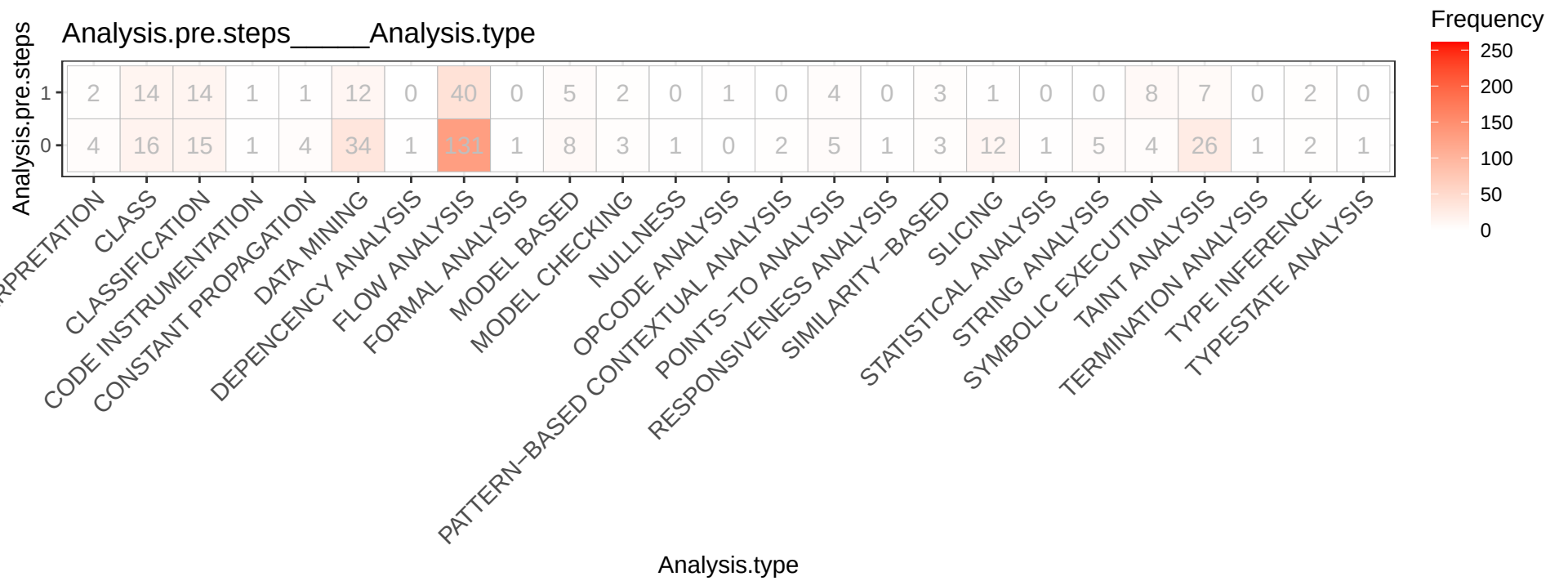
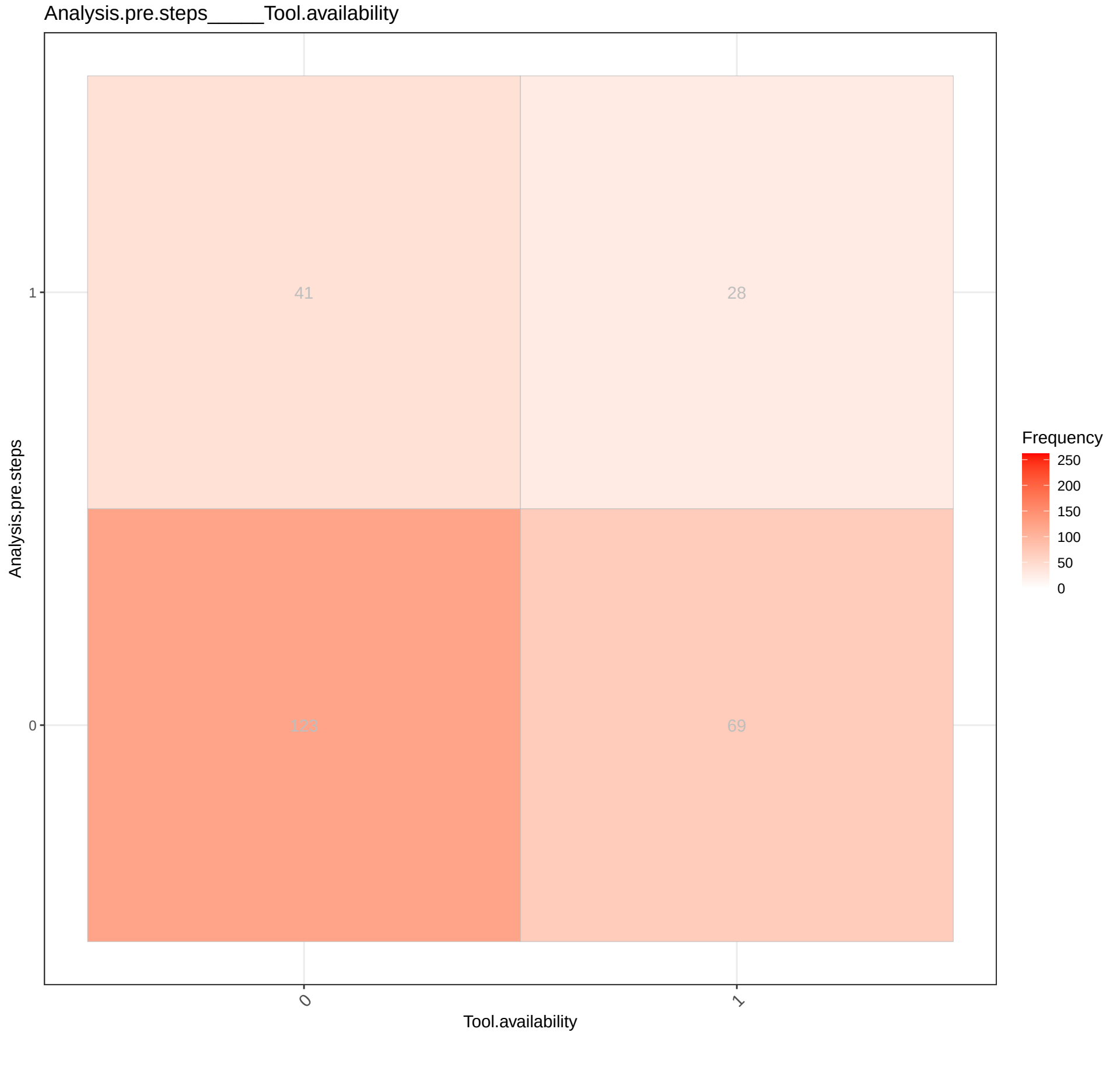
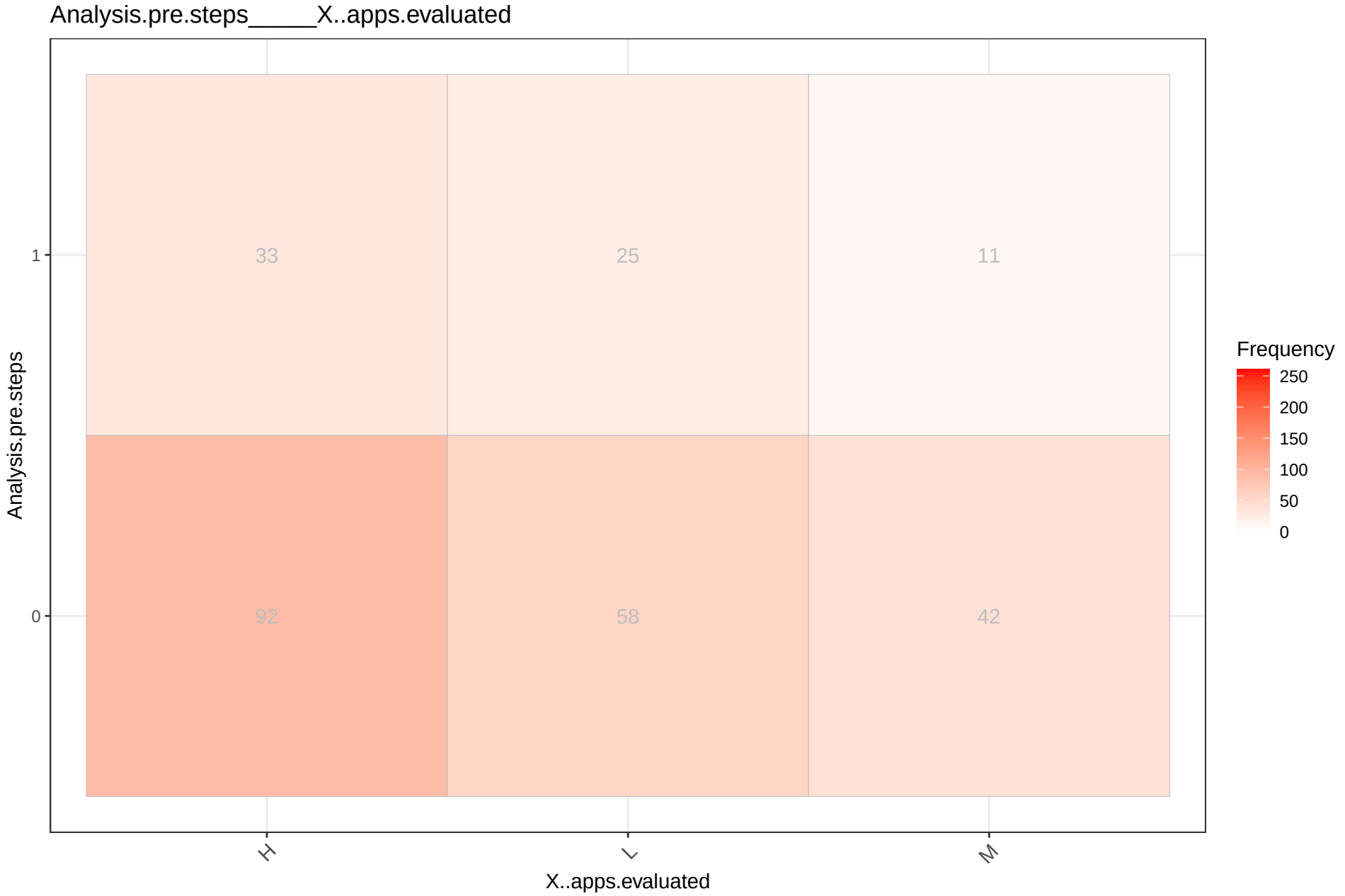
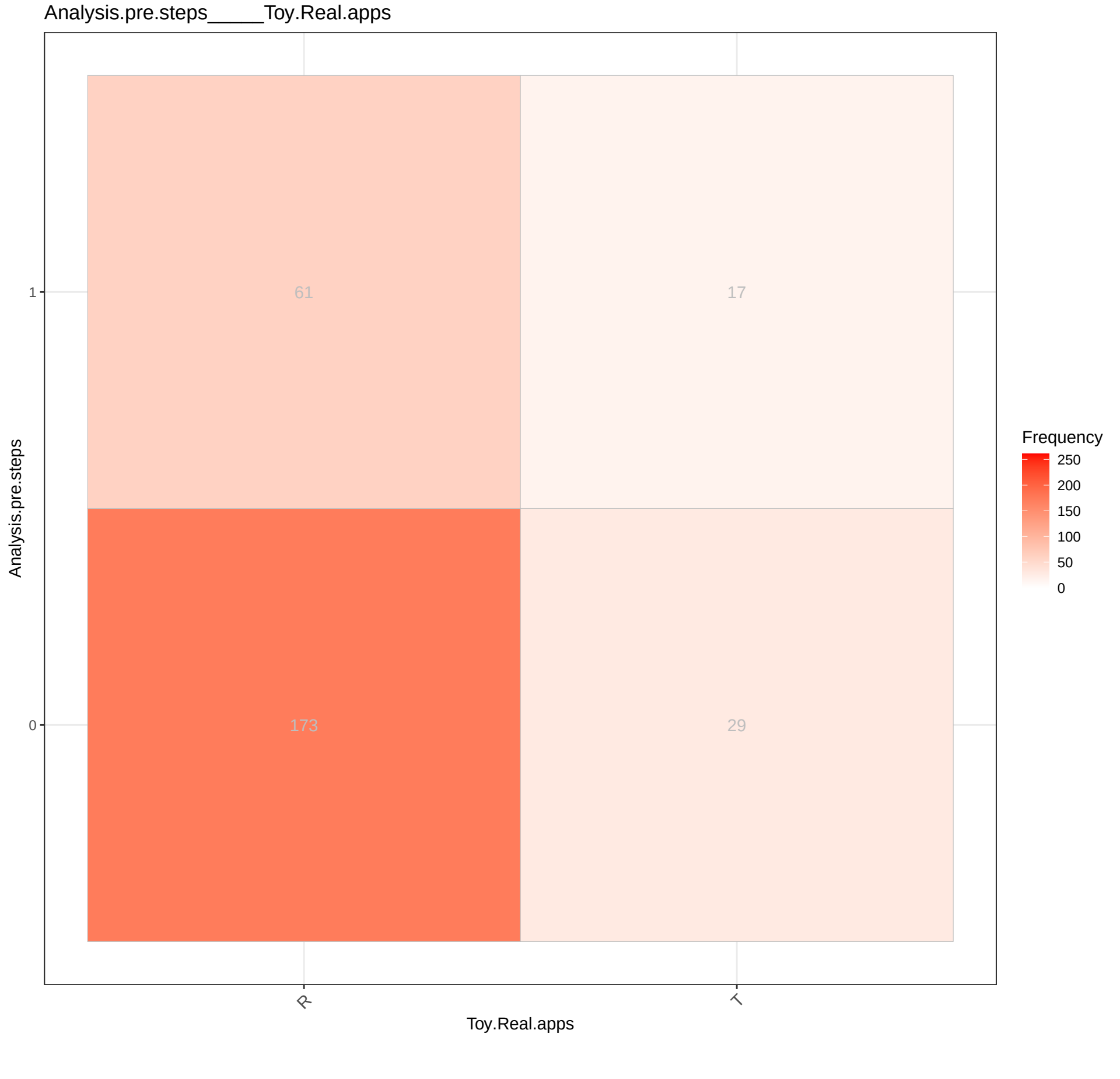

Analysis.pre.steps_____Analysis.type
Analysis.pre.steps
1
0
2 14 14 1 1 12 0 40 0 5 2 0 1 0 4 0 3 1 0 0 8 7 0 2 0
4 16 15 1 4 34 1 131 1 8 3 1 0 2 5 1 3 12 1 5 4 26 1 2 1
RPRETATION
CLASS
CLASSIFICATION
CODE INSTRUMENTATION
CONSTANT PROPAGATION
DATA MINING
DEPENCENCY ANALYSIS
FLOW ANALYSIS
FORMAL ANALYSIS
MODEL BASED
MODEL CHECKING
NULLNESS
OPCODE ANALYSIS
PATTERN−BASED CONTEXTUAL ANALYSIS
POINTS−TO ANALYSIS
RESPONSIVENESS ANALYSIS
SIMILARITY−BASED
SLICING
STATISTICAL ANALYSIS
STRING ANALYSIS
SYMBOLIC EXECUTION
TAINT ANALYSIS
TERMINATION ANALYSIS
TYPE INFERENCE
TYPESTATE ANALYSIS
Analysis.type
Frequency
250
200
150
100
50
0


Analysis.pre.steps_____Tool.availability
41
28
123
69
1
0
Analysis.pre.steps
0
1
Tool.availability
Frequency
250
200
150
100
50
0


Analysis.pre.steps_____X..apps.evaluated
33
25
11
92
58
42
1
0
Analysis.pre.steps
H
L
M
X..apps.evaluated
Frequency
250
200
150
100
50
0


Analysis.pre.steps_____Toy.Real.apps
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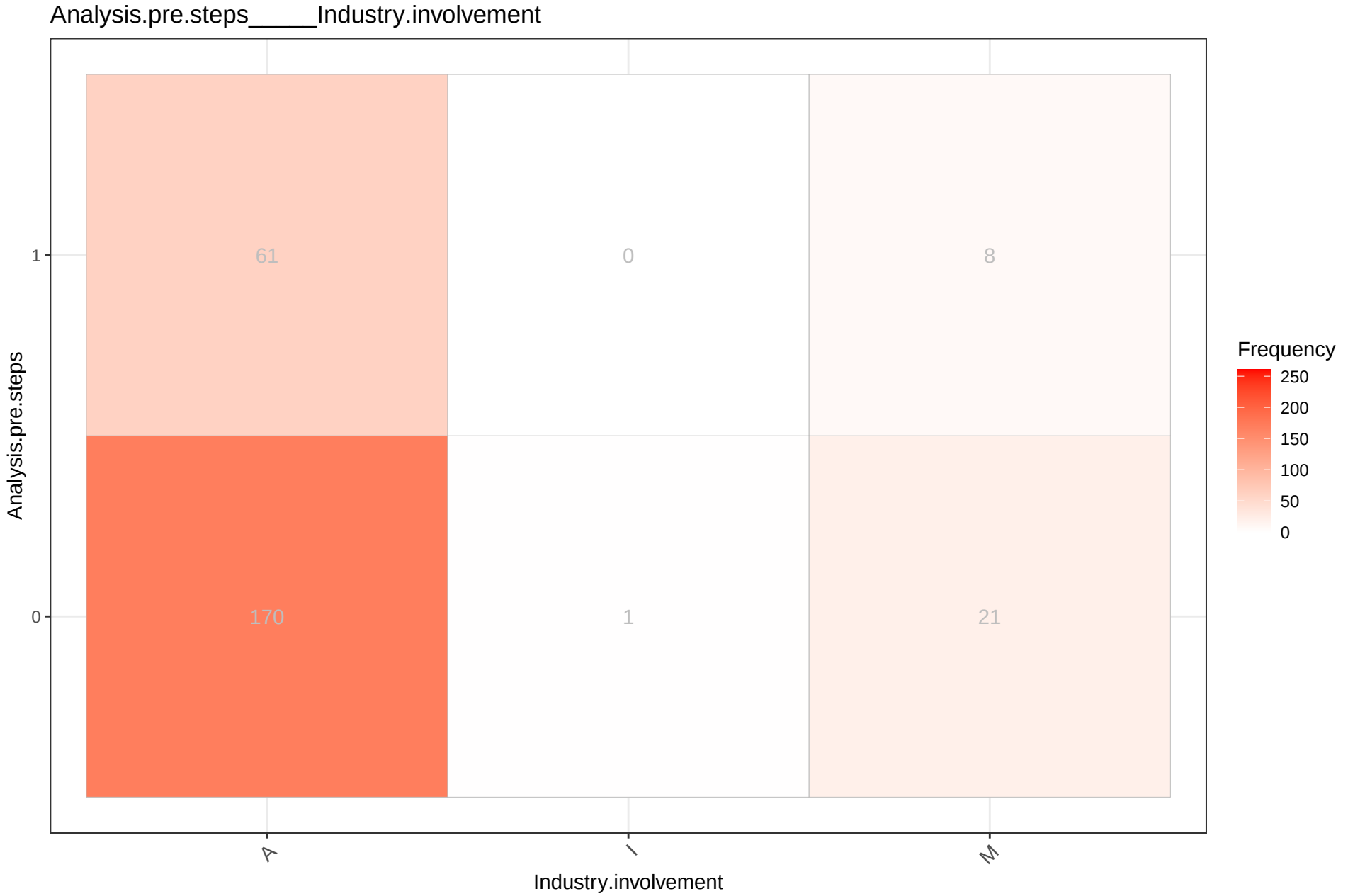
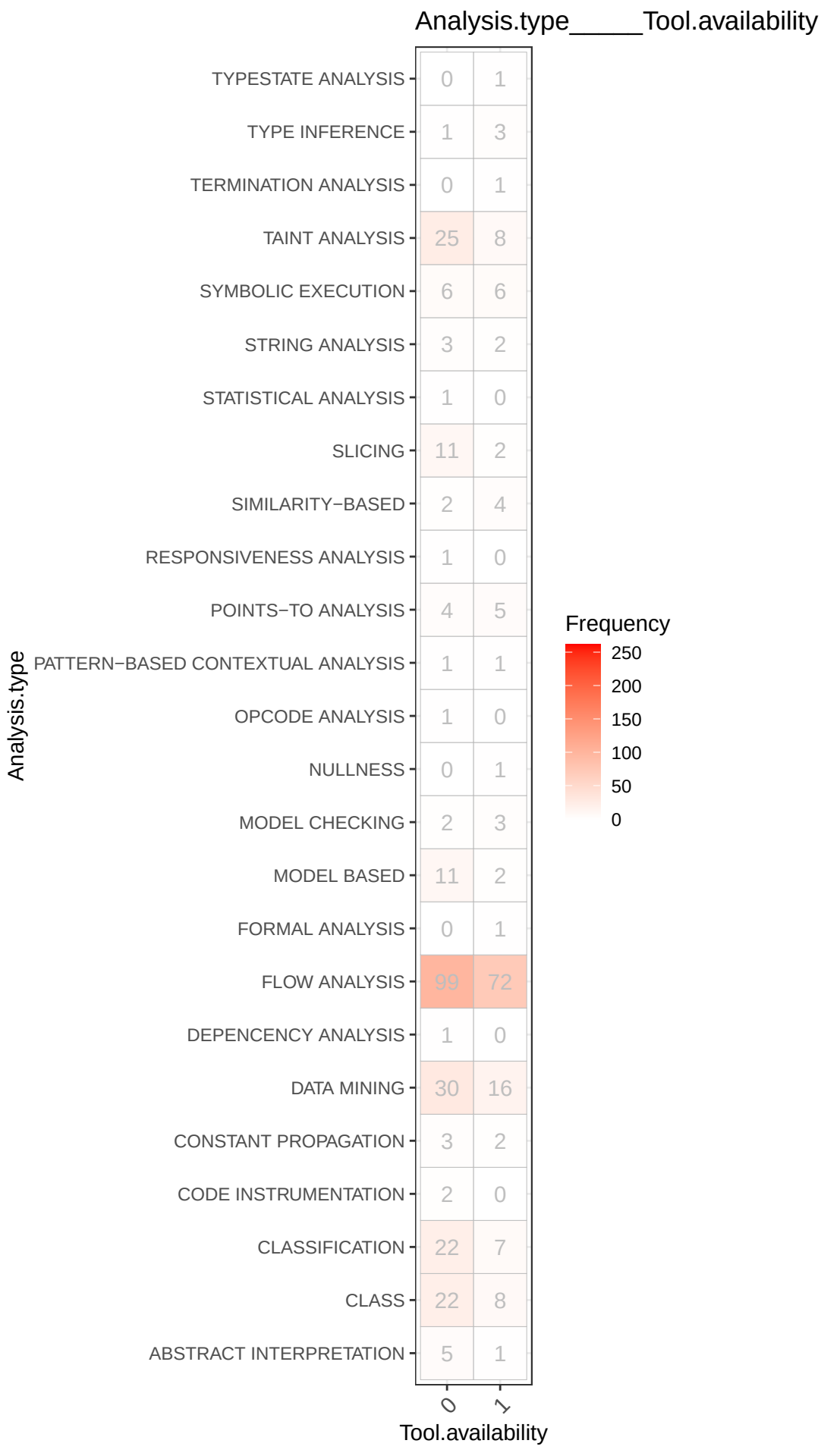
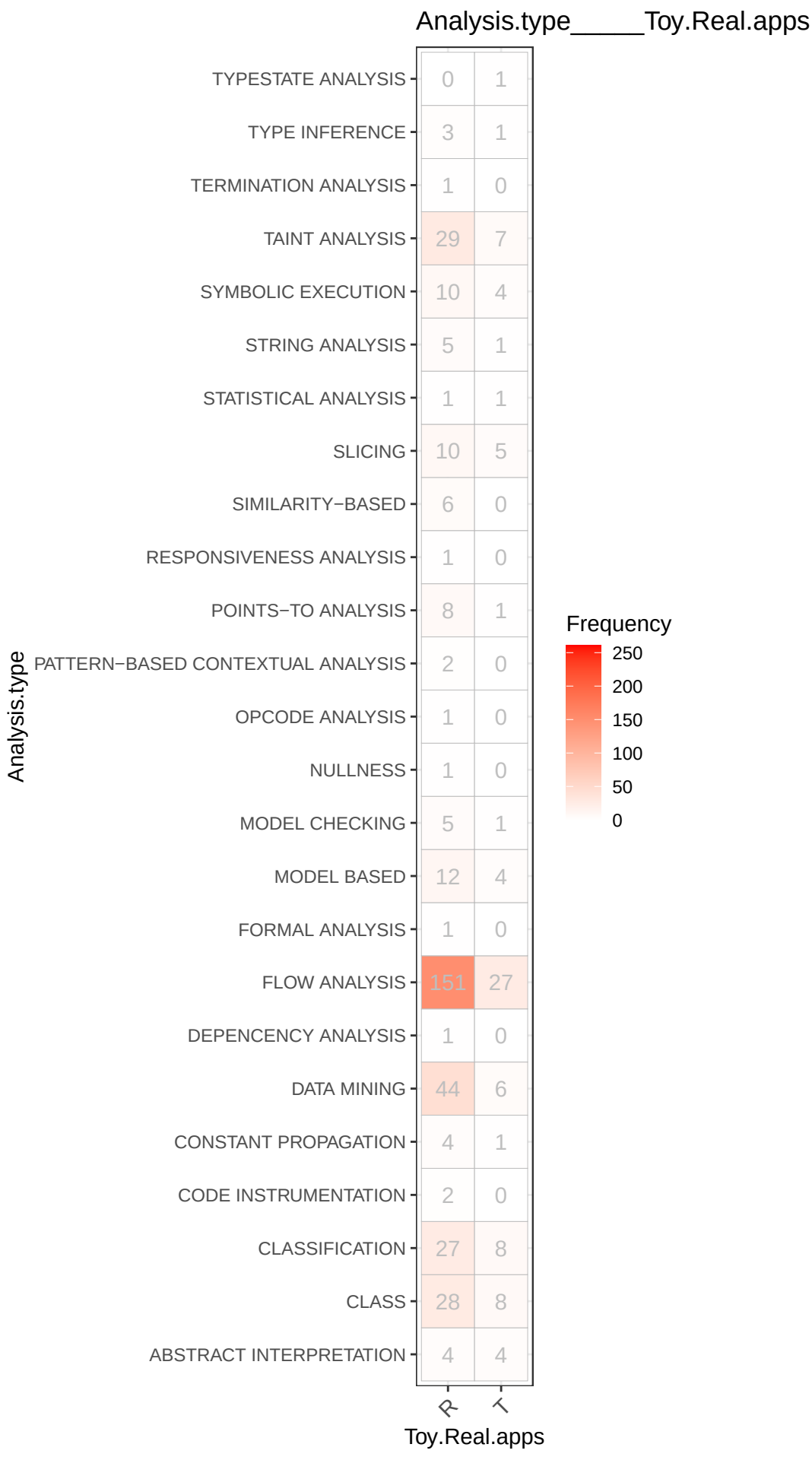
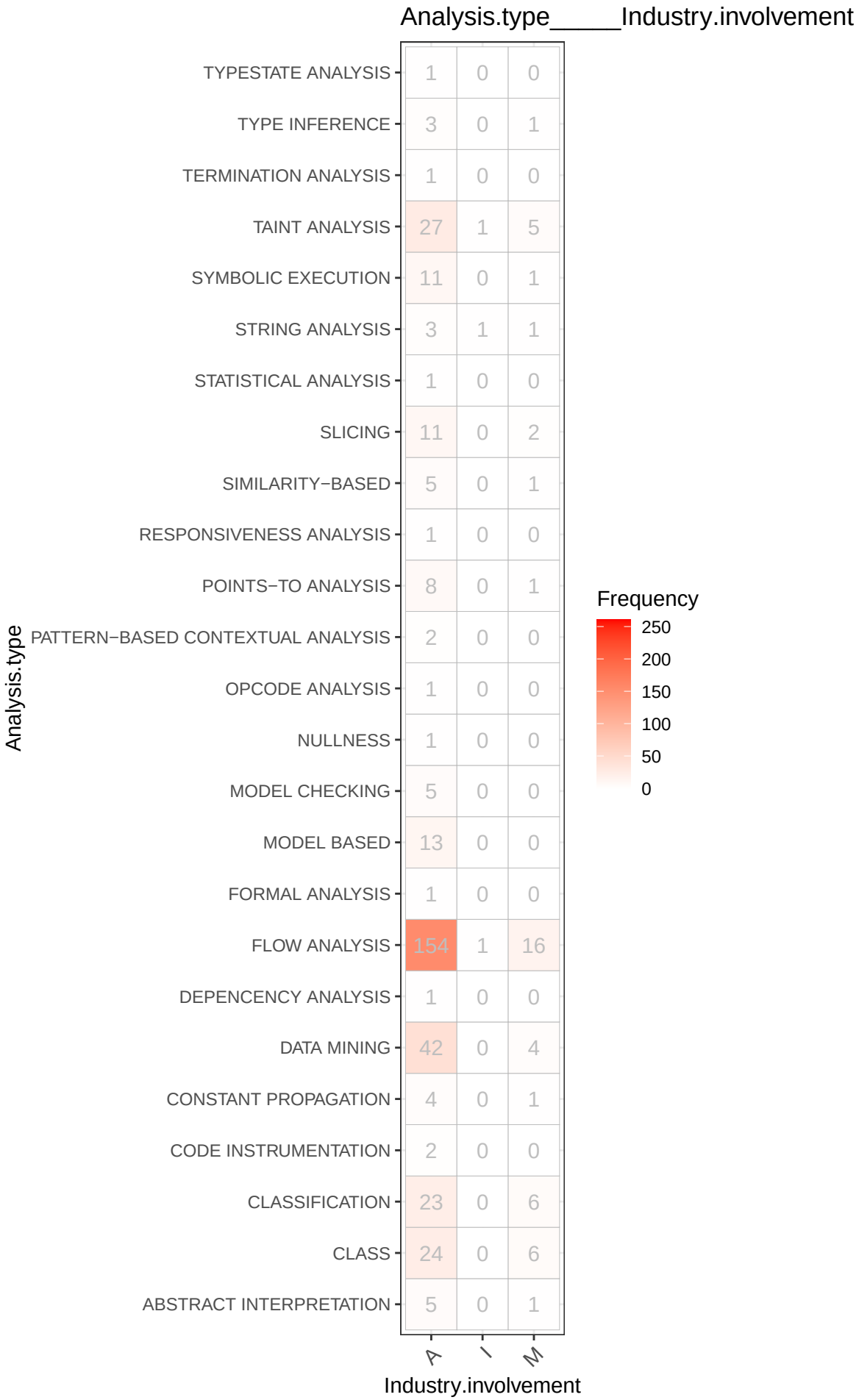
17
173
29
1
0
Analysis.pre.steps
R
T
Toy.Real.apps
Frequency
250
200
150
100
50
0

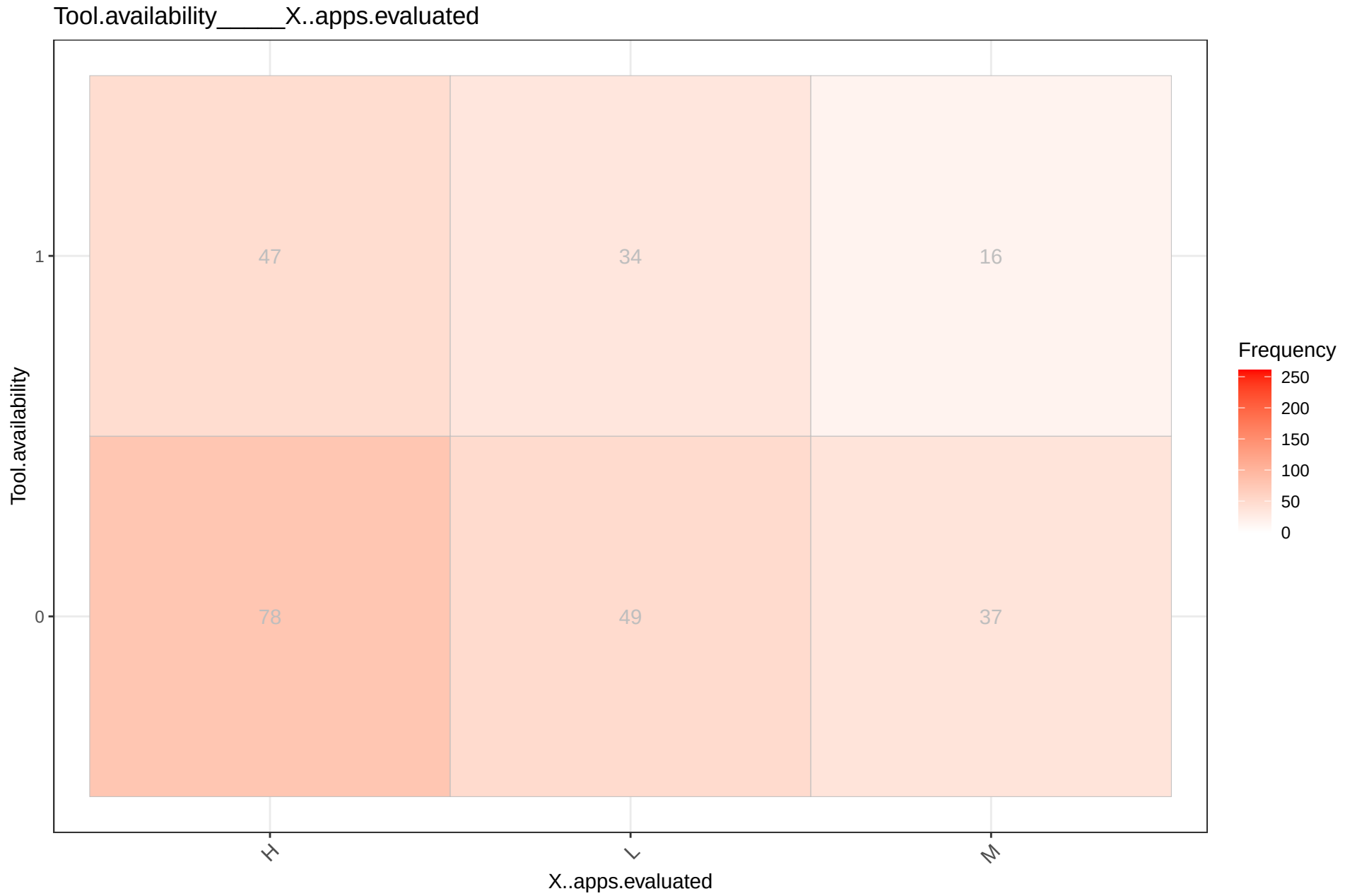

Analysis.pre.steps_____Industry.involvement
61
0
8
170
1
21
1
0
Analysis.pre.steps
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
0

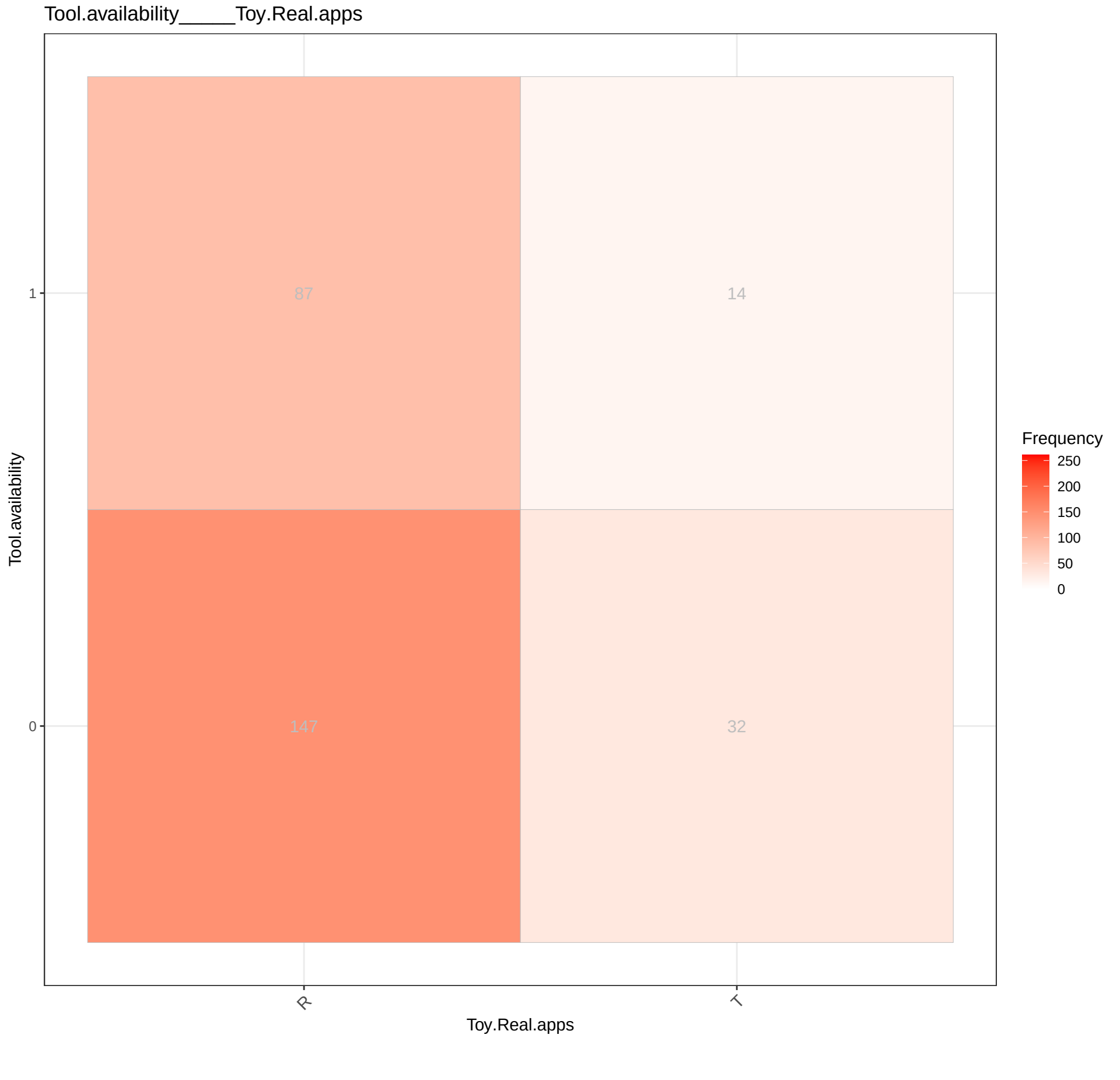

Analysis.type_____Tool.availability
TYPESTATE ANALYSIS 0 1
TYPE INFERENCE 1 3
TERMINATION ANALYSIS 0 1
TAINT ANALYSIS 25 8
SYMBOLIC EXECUTION 6 6
STRING ANALYSIS 3 2
STATISTICAL ANALYSIS 1 0
SLICING 11 2
SIMILARITY−BASED 2 4
RESPONSIVENESS ANALYSIS 1 0
POINTS−TO ANALYSIS 4 5
PATTERN−BASED CONTEXTUAL ANALYSIS 1 1
OPCODE ANALYSIS 1 0
NULLNESS 0 1
MODEL CHECKING 2 3
MODEL BASED 11 2
FORMAL ANALYSIS 0 1
FLOW ANALYSIS 99 72
DEPENCENCY ANALYSIS 1 0
DATA MINING 30 16
CONSTANT PROPAGATION 3 2
CODE INSTRUMENTATION 2 0
CLASSIFICATION 22 7
CLASS 22 8
ABSTRACT INTERPRETATION 5 1
Analysis.type
0
1
Tool.availability
Frequency
250
200
150
100
50
0

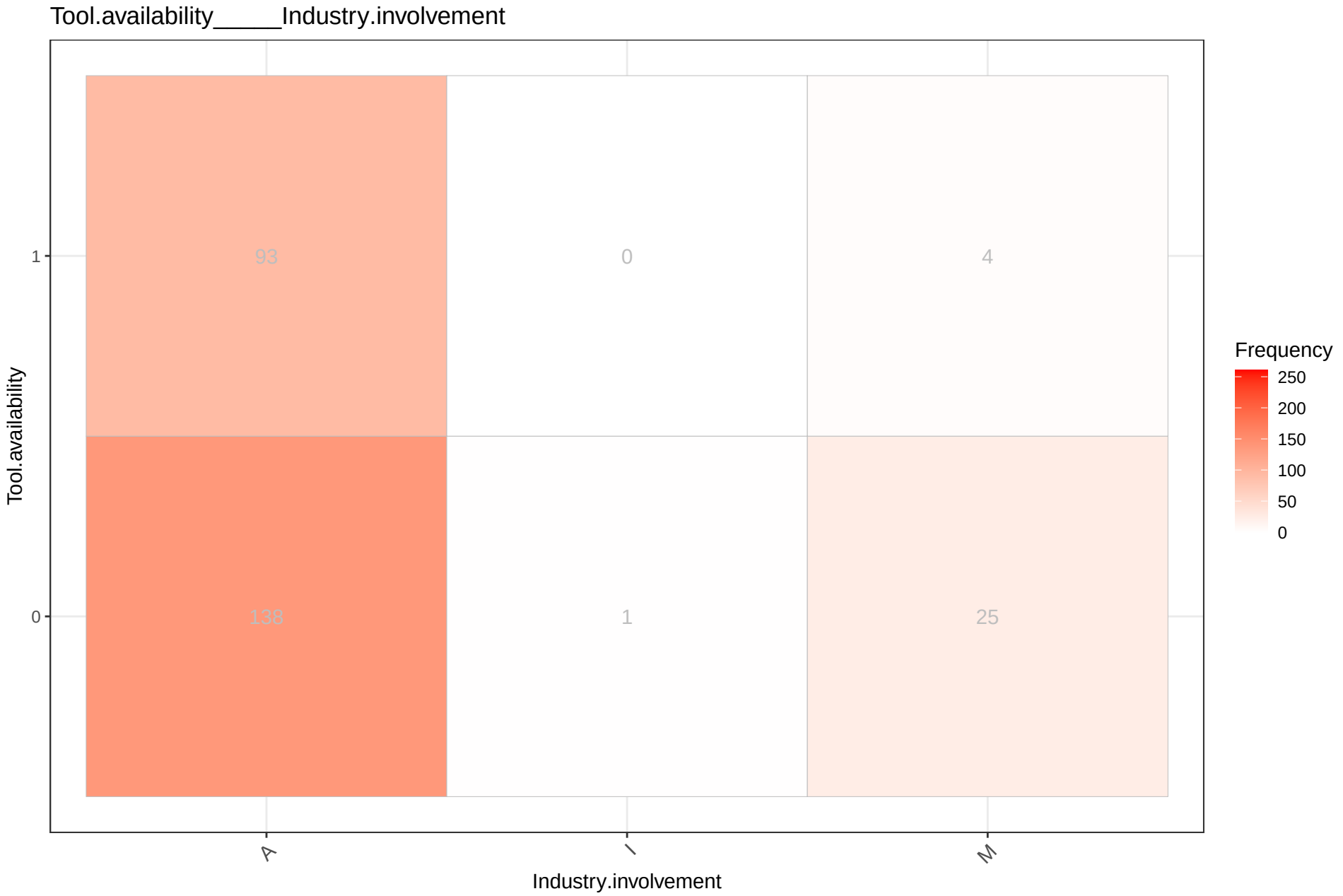
Analysis.type_____X..apps.evaluated
TYPESTATE ANALYSIS 0 1 0
TYPE INFERENCE 1 2 1
TERMINATION ANALYSIS 0 1 0
TAINT ANALYSIS 16 7 10
SYMBOLIC EXECUTION 6 4 2
STRING ANALYSIS 2 1 2
STATISTICAL ANALYSIS 0 0 1
SLICING 7 4 2
SIMILARITY−BASED 4 1 1
RESPONSIVENESS ANALYSIS 0 1 0
POINTS−TO ANALYSIS 3 2 4
PATTERN−BASED CONTEXTUAL ANALYSIS 1 0 1
OPCODE ANALYSIS 1 0 0
NULLNESS 0 1 0
MODEL CHECKING 2 1 2
MODEL BASED 4 5 4
FORMAL ANALYSIS 0 0 1
FLOW ANALYSIS 78 61 32
DEPENCENCY ANALYSIS 1 0 0
DATA MINING 26 8 12
CONSTANT PROPAGATION 1 2 2
CODE INSTRUMENTATION 1 1 0
CLASSIFICATION 21 4 4
CLASS 21 5 4
ABSTRACT INTERPRETATION 2 3 1
Analysis.type
H
L
M
X..apps.evaluated
Frequency
250
200
150
100
50
0

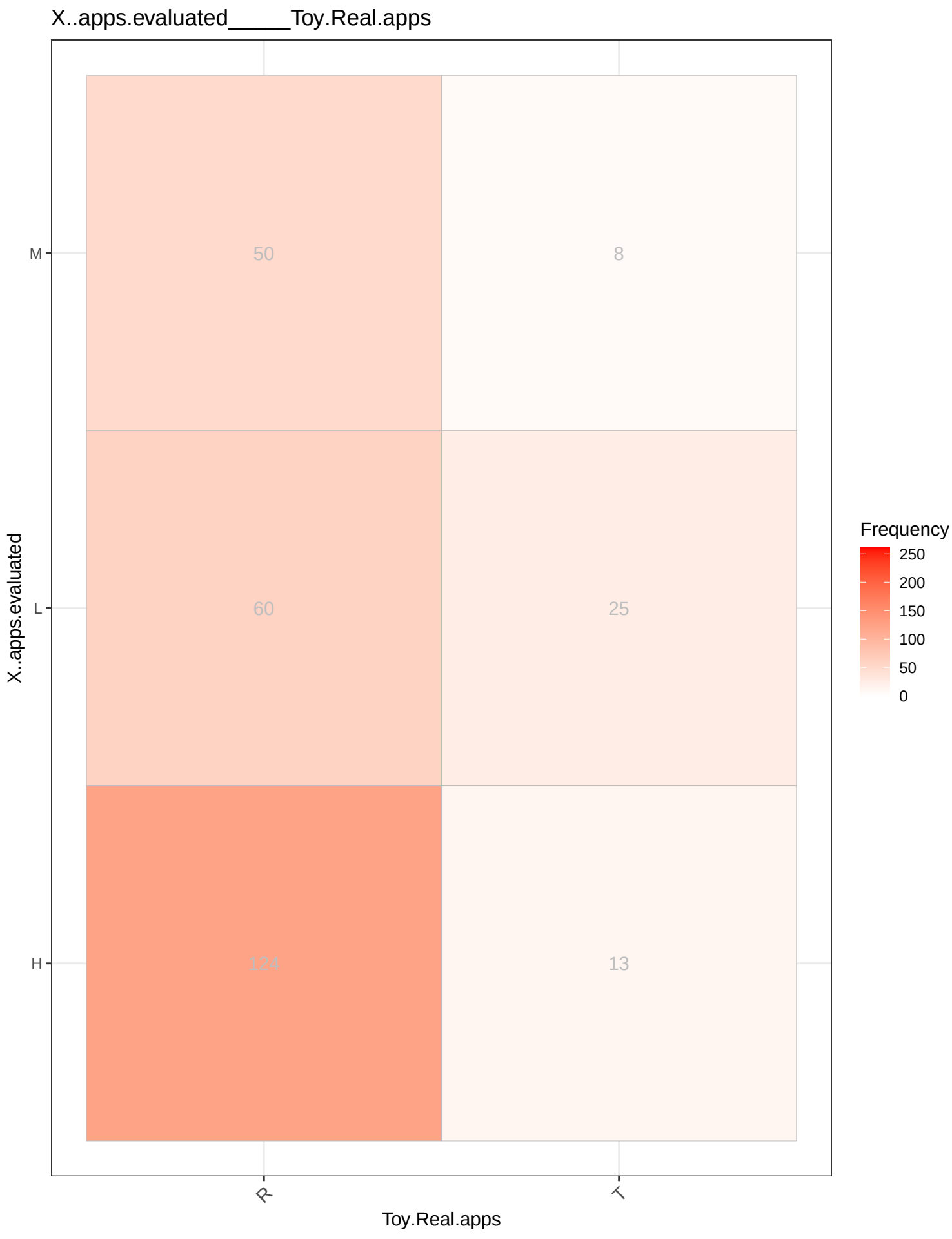

Analysis.type_____Toy.Real.apps
TYPESTATE ANALYSIS 0 1
TYPE INFERENCE 3 1
TERMINATION ANALYSIS 1 0
TAINT ANALYSIS 29 7
SYMBOLIC EXECUTION 10 4
STRING ANALYSIS 5 1
STATISTICAL ANALYSIS 1 1
SLICING 10 5
SIMILARITY−BASED 6 0
RESPONSIVENESS ANALYSIS 1 0
POINTS−TO ANALYSIS 8 1
PATTERN−BASED CONTEXTUAL ANALYSIS 2 0
OPCODE ANALYSIS 1 0
NULLNESS 1 0
MODEL CHECKING 5 1
MODEL BASED 12 4
FORMAL ANALYSIS 1 0
FLOW ANALYSIS 151 27
DEPENCENCY ANALYSIS 1 0
DATA MINING 44 6
CONSTANT PROPAGATION 4 1
CODE INSTRUMENTATION 2 0
CLASSIFICATION 27 8
CLASS 28 8
ABSTRACT INTERPRETATION 4 4
Analysis.type
R
T
Toy.Real.apps
Frequency
250
200
150
100
50
0

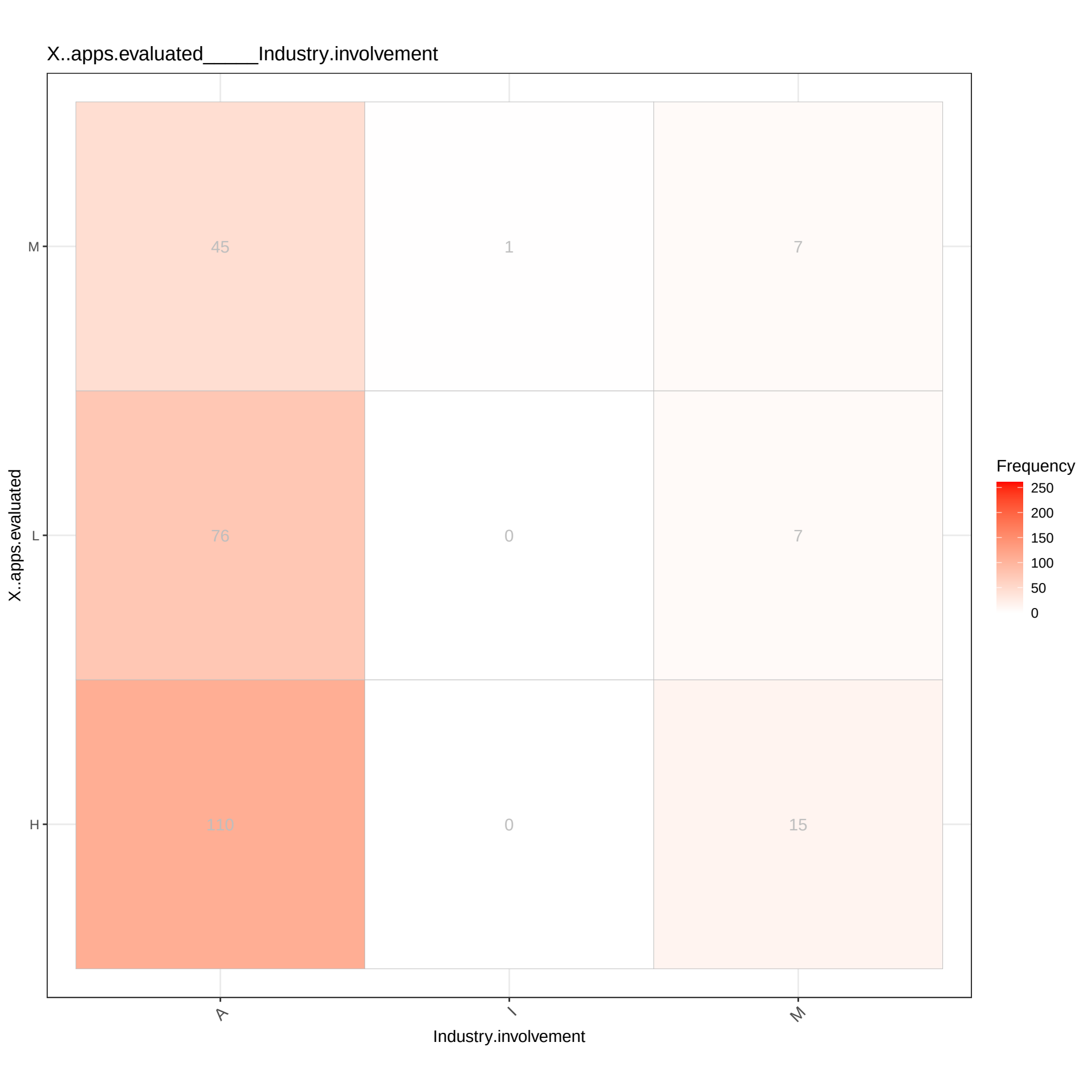

Analysis.type_____Industry.involvement
TYPESTATE ANALYSIS 1 0 0
TYPE INFERENCE 3 0 1
TERMINATION ANALYSIS 1 0 0
TAINT ANALYSIS 27 1 5
SYMBOLIC EXECUTION 11 0 1
STRING ANALYSIS 3 1 1
STATISTICAL ANALYSIS 1 0 0
SLICING 11 0 2
SIMILARITY−BASED 5 0 1
RESPONSIVENESS ANALYSIS 1 0 0
POINTS−TO ANALYSIS 8 0 1
PATTERN−BASED CONTEXTUAL ANALYSIS 2 0 0
OPCODE ANALYSIS 1 0 0
NULLNESS 1 0 0
MODEL CHECKING 5 0 0
MODEL BASED 13 0 0
FORMAL ANALYSIS 1 0 0
FLOW ANALYSIS 154 1 16
DEPENCENCY ANALYSIS 1 0 0
DATA MINING 42 0 4
CONSTANT PROPAGATION 4 0 1
CODE INSTRUMENTATION 2 0 0
CLASSIFICATION 23 0 6
CLASS 24 0 6
ABSTRACT INTERPRETATION 5 0 1
Analysis.type
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
0

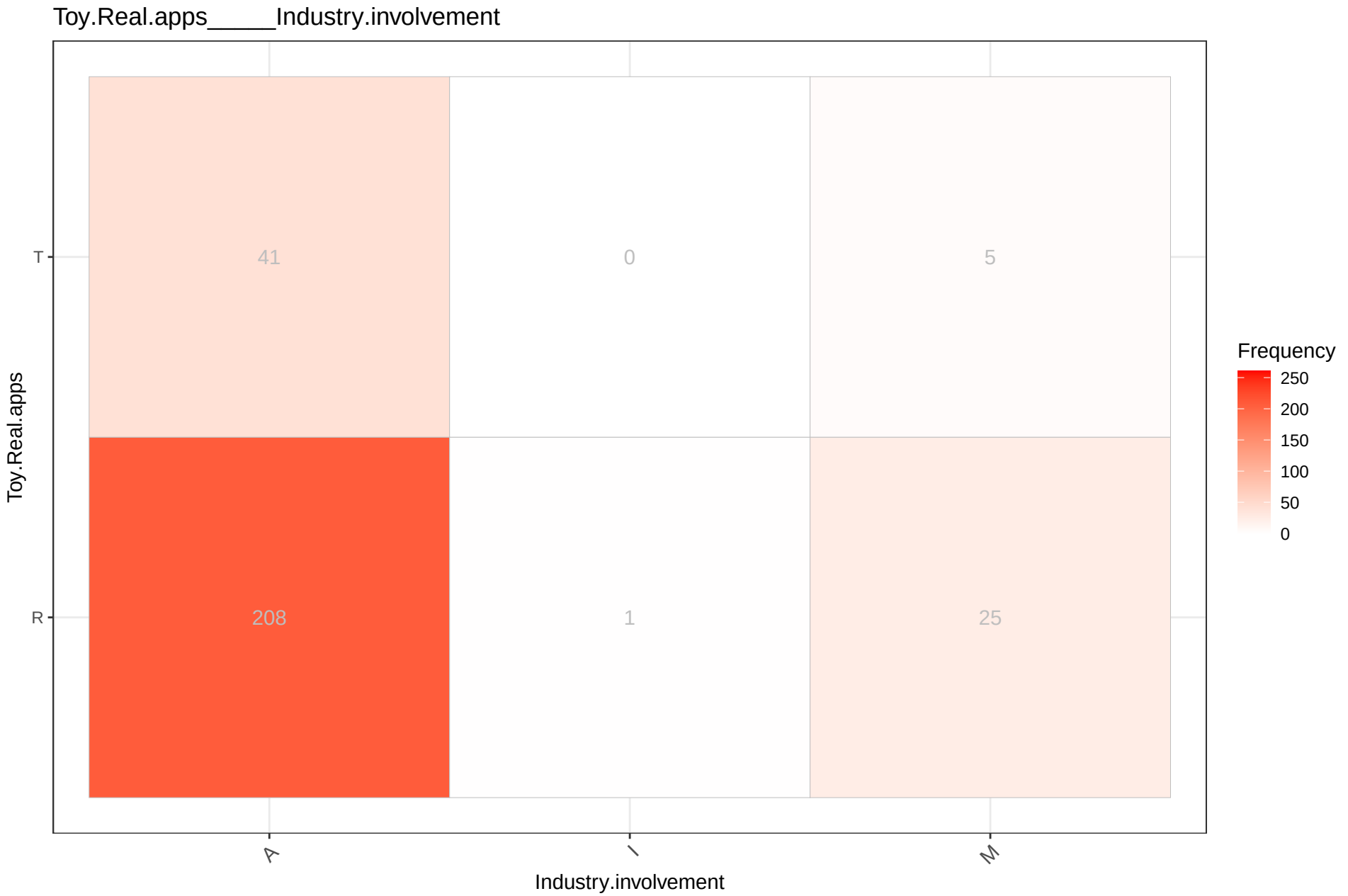

Tool.availability_____X..apps.evaluated
47
34
16
78
49
37
1
0
Tool.availability
H
L
M
X..apps.evaluated
Frequency
250
200
150
100
50
0


Tool.availability_____Toy.Real.apps
87
14
147
32
1
0
Tool.availability
R
T
Toy.Real.apps
Frequency
250
200
150
100
50
0


Tool.availability_____Industry.involvement
93
0
4
138
1
25
1
0
Tool.availability
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
0


X..apps.evaluated_____Toy.Real.apps
M
L
H
50
8
60
25
124
13
X..apps.evaluated
R
Y
Toy.Real.apps
Frequency
250
200
150
100
50
0


X..apps.evaluated_____Industry.involvement
M
L
H
45
1
7
76
0
7
110
0
15
X..apps.evaluated
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
0


Toy.Real.apps_____Industry.involvement
41
0
5
208
1
25
T
R
Toy.Real.apps
A
I
M
Industry.involvement
Frequency
250
200
150
100
50
0