### 数据集2：NFL Play-by-Play 2009-2017

#### 频繁项集：

这里设最小支持度阈值为0.2，最小置信度阈值为0.4。代码见apriori.py，处理结果见pinfanxinagji.txt。

[5,1,St,Av,issued,street space,3,otc alterations permit,0,wood frame (5),2,8]

[5,1,street space,St,0,issued,1,otc alterations permit,issued,8,St,5,2,8,Av,otc alterations permit,5,8,St,8,2,1,issued,1,0,8,Av,1,0,1,street space,issued,street space,otc alterations permit,St,3,5,wood frame (5),St,1,street space,1,0,otc alterations permit,2,5,St,otc alterations permit,5,otc alterations permit,St,2,Av,8,8,otc alterations permit,2,otc alterations permit,Av,issued,issued,otc alterations permit,8,1,St,issued,street space,8]

[issued,8,otc alterations permit,St,8,otc alterations permit,5,1,otc alterations permit,street space,St,1,street space,1,otc alterations permit,street space,issued,8,street space,St,8,street space,St,issued,Av,issued,otc alterations permit,issued,1,otc alterations permit,St,1,otc alterations permit,2,8,otc alterations permit,St,5,8,2,1,8,0,issued,otc alterations permit,5,8,otc alterations permit,0,1,otc alterations permit,Av,8,otc alterations permit,street space,8,otc alterations permit,St,issued,otc alterations permit,St,issued,8,0,8,otc alterations permit,street space,St,otc alterations permit,0,issued,8,1,8,otc alterations permit,2,1,otc alterations permit,St,5,otc alterations permit,St,1,8,issued,1,8,0,1,8,street space,issued,otc alterations permit,St,issued,1,street space,8,1,street space,issued,1,5,8,1,Av,issued,8]

[0,issued,8,otc alterations permit,issued,1,St,otc alterations permit,1,street space,St,8,2,1,8,otc alterations permit,issued,1,St,8,issued,1,street space,8,issued,1,street space,St,issued,street space,8,otc alterations permit,issued,1,8,otc alterations permit,1,5,8,otc alterations permit,1,street space,8,otc alterations permit,1,St,8,otc alterations permit,issued,street space,St,8,Av,issued,8,otc alterations permit,street space,St,8,otc alterations permit,0,1,8,otc alterations permit,1,street space,St,otc alterations permit,issued,street space,St,otc alterations permit,issued,1,street space,otc alterations permit,issued,St,8,otc alterations permit,St,5,8,otc alterations permit]

[issued,St,street space,8,otc alterations permit,issued,1,St,street space,otc alterations permit,issued,1,street space,8,otc alterations permit,issued,1,St,8,otc alterations permit,1,St,street space,8,otc alterations permit,issued,1,St,street space,8]

[issued,1,St,street space,8,otc alterations permit]

#### 关联规则：

这里设最小支持度阈值为0.2，最小置信度阈值为0.4。代码见guanlianguize.py，处理结果见guanlianguize.txt。

otc alterations permit-->issued,8conf:0.861111111111

8-->issued,otc alterations permitconf:0.861111111111

issued-->8,otc alterations permitconf:0.939393939394

otc alterations permit-->St,8conf:0.638888888889

8-->St,otc alterations permitconf:0.638888888889

St-->8,otc alterations permitconf:0.821428571429

5-->1,otc alterations permitconf:0.733333333333

1-->street space,Stconf:0.40625

St-->street space,1conf:0.464285714286

street space-->St,1conf:0.590909090909

otc alterations permit-->street space,1conf:0.527777777778

1-->street space,otc alterations permitconf:0.59375

street space-->1,otc alterations permitconf:0.863636363636

8-->street space,issuedconf:0.611111111111

issued-->street space,8conf:0.666666666667

street space-->issued,8conf:1.0

St-->street space,8conf:0.5

street space-->St,8conf:0.636363636364

issued-->street space,Stconf:0.424242424242

St-->street space,issuedconf:0.5

street space-->St,issuedconf:0.636363636364

Av-->issued,otc alterations permitconf:0.75

otc alterations permit-->issued,1conf:0.75

1-->issued,otc alterations permitconf:0.84375

issued-->1,otc alterations permitconf:0.818181818182

otc alterations permit-->St,1conf:0.583333333333

1-->St,otc alterations permitconf:0.65625

St-->1,otc alterations permitconf:0.75

2-->8,otc alterations permitconf:0.625

5-->St,8conf:0.6

2-->8,1conf:0.5625

0-->issued,otc alterations permitconf:0.625

5-->8,otc alterations permitconf:0.866666666667

0-->1,otc alterations permitconf:0.5625

Av-->8,otc alterations permitconf:0.916666666667

otc alterations permit-->street space,8conf:0.611111111111

8-->street space,otc alterations permitconf:0.611111111111

street space-->8,otc alterations permitconf:1.0

otc alterations permit-->St,issuedconf:0.555555555556

issued-->St,otc alterations permitconf:0.606060606061

St-->issued,otc alterations permitconf:0.714285714286

8-->St,issuedconf:0.555555555556

issued-->St,8conf:0.606060606061

St-->issued,8conf:0.714285714286

otc alterations permit-->0,8conf:0.416666666667

8-->0,otc alterations permitconf:0.416666666667

0-->8,otc alterations permitconf:0.9375

St-->street space,otc alterations permitconf:0.5

street space-->St,otc alterations permitconf:0.636363636364

0-->issued,8conf:0.625

otc alterations permit-->8,1conf:0.833333333333

8-->1,otc alterations permitconf:0.833333333333

1-->8,otc alterations permitconf:0.9375

2-->1,otc alterations permitconf:0.5625

5-->St,otc alterations permitconf:0.6

8-->St,1conf:0.583333333333

1-->St,8conf:0.65625

St-->8,1conf:0.75

8-->issued,1conf:0.75

1-->issued,8conf:0.84375

issued-->8,1conf:0.818181818182

0-->8,1conf:0.5625

otc alterations permit-->street space,issuedconf:0.611111111111

issued-->street space,otc alterations permitconf:0.666666666667

street space-->issued,otc alterations permitconf:1.0

1-->St,issuedconf:0.625

issued-->St,1conf:0.606060606061

St-->issued,1conf:0.714285714286

1-->street space,8conf:0.59375

8-->street space,1conf:0.527777777778

street space-->1,8conf:0.863636363636

1-->street space,issuedconf:0.59375

issued-->street space,1conf:0.575757575758

street space-->issued,1conf:0.863636363636

5-->1,8conf:0.733333333333

Av-->issued,8conf:0.75

0,otc alterations permit-->issued,8conf:0.666666666667

0,8-->issued,otc alterations permitconf:0.666666666667

0,issued-->8,otc alterations permitconf:0.909090909091

St,otc alterations permit-->issued,1conf:0.826086956522

1,otc alterations permit-->St,issuedconf:0.633333333333

St,1-->issued,otc alterations permitconf:0.863636363636

issued,otc alterations permit-->St,1conf:0.612903225806

St,issued-->1,otc alterations permitconf:0.863636363636

issued,1-->St,otc alterations permitconf:0.678571428571

St,8-->street space,1conf:0.565217391304

street space,8-->St,1conf:0.590909090909

street space,St-->8,1conf:0.928571428571

8,1-->street space,Stconf:0.433333333333

St,1-->street space,8conf:0.590909090909

street space,1-->St,8conf:0.684210526316

2,otc alterations permit-->8,1conf:0.9

2,8-->1,otc alterations permitconf:0.9

2,1-->8,otc alterations permitconf:0.818181818182

St,8-->issued,1conf:0.826086956522

8,1-->St,issuedconf:0.633333333333

St,1-->issued,8conf:0.863636363636

issued,8-->St,1conf:0.612903225806

St,issued-->8,1conf:0.863636363636

issued,1-->St,8conf:0.678571428571

street space,8-->issued,1conf:0.863636363636

8,1-->street space,issuedconf:0.633333333333

street space,1-->issued,8conf:1.0

issued,8-->street space,1conf:0.612903225806

street space,issued-->8,1conf:0.863636363636

issued,1-->street space,8conf:0.678571428571

street space,St-->issued,1conf:0.928571428571

St,1-->street space,issuedconf:0.590909090909

street space,1-->St,issuedconf:0.684210526316

St,issued-->street space,1conf:0.590909090909

street space,issued-->St,1conf:0.590909090909

issued,1-->street space,Stconf:0.464285714286

8,otc alterations permit-->street space,issuedconf:0.611111111111

street space,otc alterations permit-->issued,8conf:1.0

street space,8-->issued,otc alterations permitconf:1.0

issued,otc alterations permit-->street space,8conf:0.709677419355

issued,8-->street space,otc alterations permitconf:0.709677419355

street space,issued-->8,otc alterations permitconf:1.0

8,otc alterations permit-->issued,1conf:0.75

1,otc alterations permit-->issued,8conf:0.9

8,1-->issued,otc alterations permitconf:0.9

issued,otc alterations permit-->8,1conf:0.870967741935

issued,8-->1,otc alterations permitconf:0.870967741935

issued,1-->8,otc alterations permitconf:0.964285714286

5,otc alterations permit-->8,1conf:0.846153846154

5,8-->1,otc alterations permitconf:0.846153846154

5,1-->8,otc alterations permitconf:1.0

8,otc alterations permit-->street space,1conf:0.527777777778

street space,otc alterations permit-->8,1conf:0.863636363636

street space,8-->1,otc alterations permitconf:0.863636363636

1,otc alterations permit-->street space,8conf:0.633333333333

8,1-->street space,otc alterations permitconf:0.633333333333

street space,1-->8,otc alterations permitconf:1.0

8,otc alterations permit-->St,1conf:0.583333333333

St,otc alterations permit-->8,1conf:0.913043478261

St,8-->1,otc alterations permitconf:0.913043478261

1,otc alterations permit-->St,8conf:0.7

8,1-->St,otc alterations permitconf:0.7

St,1-->8,otc alterations permitconf:0.954545454545

St,8-->street space,issuedconf:0.608695652174

street space,8-->St,issuedconf:0.636363636364

street space,St-->issued,8conf:1.0

issued,8-->street space,Stconf:0.451612903226

St,issued-->street space,8conf:0.636363636364

street space,issued-->St,8conf:0.636363636364

Av,otc alterations permit-->issued,8conf:0.818181818182

Av,8-->issued,otc alterations permitconf:0.818181818182

Av,issued-->8,otc alterations permitconf:1.0

St,otc alterations permit-->street space,8conf:0.608695652174

St,8-->street space,otc alterations permitconf:0.608695652174

street space,otc alterations permit-->St,8conf:0.636363636364

street space,8-->St,otc alterations permitconf:0.636363636364

street space,St-->8,otc alterations permitconf:1.0

0,otc alterations permit-->8,1conf:0.6

0,8-->1,otc alterations permitconf:0.6

0,1-->8,otc alterations permitconf:0.9

St,otc alterations permit-->street space,1conf:0.565217391304

street space,otc alterations permit-->St,1conf:0.590909090909

street space,St-->1,otc alterations permitconf:0.928571428571

1,otc alterations permit-->street space,Stconf:0.433333333333

St,1-->street space,otc alterations permitconf:0.590909090909

street space,1-->St,otc alterations permitconf:0.684210526316

St,otc alterations permit-->street space,issuedconf:0.608695652174

street space,otc alterations permit-->St,issuedconf:0.636363636364

street space,St-->issued,otc alterations permitconf:1.0

issued,otc alterations permit-->street space,Stconf:0.451612903226

St,issued-->street space,otc alterations permitconf:0.636363636364

street space,issued-->St,otc alterations permitconf:0.636363636364

street space,otc alterations permit-->issued,1conf:0.863636363636

1,otc alterations permit-->street space,issuedconf:0.633333333333

street space,1-->issued,otc alterations permitconf:1.0

issued,otc alterations permit-->street space,1conf:0.612903225806

street space,issued-->1,otc alterations permitconf:0.863636363636

issued,1-->street space,otc alterations permitconf:0.678571428571

8,otc alterations permit-->St,issuedconf:0.555555555556

St,otc alterations permit-->issued,8conf:0.869565217391

St,8-->issued,otc alterations permitconf:0.869565217391

issued,otc alterations permit-->St,8conf:0.645161290323

issued,8-->St,otc alterations permitconf:0.645161290323

St,issued-->8,otc alterations permitconf:0.909090909091

5,otc alterations permit-->St,8conf:0.692307692308

5,8-->St,otc alterations permitconf:0.692307692308

St,5-->8,otc alterations permitconf:0.818181818182

street space,8,otc alterations permit-->St,issuedconf:0.636363636364

St,8,otc alterations permit-->street space,issuedconf:0.608695652174

street space,St,otc alterations permit-->issued,8conf:1.0

street space,St,8-->issued,otc alterations permitconf:1.0

issued,8,otc alterations permit-->street space,Stconf:0.451612903226

street space,issued,otc alterations permit-->St,8conf:0.636363636364

street space,issued,8-->St,otc alterations permitconf:0.636363636364

St,issued,otc alterations permit-->street space,8conf:0.7

St,issued,8-->street space,otc alterations permitconf:0.7

street space,St,issued-->8,otc alterations permitconf:1.0

street space,St,otc alterations permit-->issued,1conf:0.928571428571

street space,1,otc alterations permit-->St,issuedconf:0.684210526316

St,1,otc alterations permit-->street space,issuedconf:0.619047619048

street space,St,1-->issued,otc alterations permitconf:1.0

street space,issued,otc alterations permit-->St,1conf:0.590909090909

St,issued,otc alterations permit-->street space,1conf:0.65

street space,St,issued-->1,otc alterations permitconf:0.928571428571

issued,1,otc alterations permit-->street space,Stconf:0.481481481481

street space,issued,1-->St,otc alterations permitconf:0.684210526316

St,issued,1-->street space,otc alterations permitconf:0.65

street space,8,otc alterations permit-->issued,1conf:0.863636363636

8,1,otc alterations permit-->street space,issuedconf:0.633333333333

street space,1,otc alterations permit-->issued,8conf:1.0

street space,8,1-->issued,otc alterations permitconf:1.0

issued,8,otc alterations permit-->street space,1conf:0.612903225806

street space,issued,otc alterations permit-->8,1conf:0.863636363636

street space,issued,8-->1,otc alterations permitconf:0.863636363636

issued,1,otc alterations permit-->street space,8conf:0.703703703704

issued,8,1-->street space,otc alterations permitconf:0.703703703704

street space,issued,1-->8,otc alterations permitconf:1.0

St,8,otc alterations permit-->issued,1conf:0.826086956522

8,1,otc alterations permit-->St,issuedconf:0.633333333333

St,1,otc alterations permit-->issued,8conf:0.904761904762

St,8,1-->issued,otc alterations permitconf:0.904761904762

issued,8,otc alterations permit-->St,1conf:0.612903225806

St,issued,otc alterations permit-->8,1conf:0.95

St,issued,8-->1,otc alterations permitconf:0.95

issued,1,otc alterations permit-->St,8conf:0.703703703704

issued,8,1-->St,otc alterations permitconf:0.703703703704

St,issued,1-->8,otc alterations permitconf:0.95

street space,8,otc alterations permit-->St,1conf:0.590909090909

St,8,otc alterations permit-->street space,1conf:0.565217391304

street space,St,otc alterations permit-->8,1conf:0.928571428571

street space,St,8-->1,otc alterations permitconf:0.928571428571

8,1,otc alterations permit-->street space,Stconf:0.433333333333

street space,1,otc alterations permit-->St,8conf:0.684210526316

street space,8,1-->St,otc alterations permitconf:0.684210526316

St,1,otc alterations permit-->street space,8conf:0.619047619048

St,8,1-->street space,otc alterations permitconf:0.619047619048

street space,St,1-->8,otc alterations permitconf:1.0

street space,St,8-->issued,1conf:0.928571428571

street space,8,1-->St,issuedconf:0.684210526316

St,8,1-->street space,issuedconf:0.619047619048

street space,St,1-->issued,8conf:1.0

street space,issued,8-->St,1conf:0.590909090909

St,issued,8-->street space,1conf:0.65

street space,St,issued-->8,1conf:0.928571428571

issued,8,1-->street space,Stconf:0.481481481481

street space,issued,1-->St,8conf:0.684210526316

St,issued,1-->street space,8conf:0.65

street space,St,8,otc alterations permit-->issued,1conf:0.928571428571

street space,8,1,otc alterations permit-->St,issuedconf:0.684210526316

St,8,1,otc alterations permit-->street space,issuedconf:0.619047619048

street space,St,1,otc alterations permit-->issued,8conf:1.0

street space,St,8,1-->issued,otc alterations permitconf:1.0

street space,issued,8,otc alterations permit-->St,1conf:0.590909090909

St,issued,8,otc alterations permit-->street space,1conf:0.65

street space,St,issued,otc alterations permit-->8,1conf:0.928571428571

street space,St,issued,8-->1,otc alterations permitconf:0.928571428571

issued,8,1,otc alterations permit-->street space,Stconf:0.481481481481

street space,issued,1,otc alterations permit-->St,8conf:0.684210526316

street space,issued,8,1-->St,otc alterations permitconf:0.684210526316

St,issued,1,otc alterations permit-->street space,8conf:0.684210526316

St,issued,8,1-->street space,otc alterations permitconf:0.684210526316

street space,St,issued,1-->8,otc alterations permitconf:1.0

#### 挖掘结果及分析

将最小支持度阈值设为0.2，最小置信度阈值设为0.4以后推导出来的强关联规则有258个。而数据集本身数据数量是非常庞大的，可以看出从大量的数据中只能挖掘出少量的强关联规则。但若将最小支持度阈值和追销置信度阈值变小之后可以挖掘到更多的关联规则。