```
import pandas as pd
df = pd.read_csv('labels.csv')
print(df)
```

```
    ClassId                         Name
0         0          Speed limit (5km/h)
1         1         Speed limit (15km/h)
2         2         Speed limit (30km/h)
3         3         Speed limit (40km/h)
4         4         Speed limit (50km/h)
5         5         Speed limit (60km/h)
6         6         Speed limit (70km/h)
7         7         speed limit (80km/h)
8         8     Dont Go straight or left
9         9    Dont Go straight or Right
10       10              Dont Go straight
11       11                  Dont Go Left
12       12        Dont Go Left or Right
13       13                 Dont Go Right
14       14      Dont overtake from Left
15       15                      No Uturn
16       16                        No Car
17       17                       No horn
18       18         Speed limit (40km/h)
19       19         Speed limit (50km/h)
20       20         Go straight or right
21       21                  Go straight
22       22                      Go Left
23       23            Go Left or right
24       24                     Go Right
25       25                   keep Left
26       26                  keep Right
27       27         Roundabout mandatory
28       28           watch out for cars
29       29                         Horn
30       30           Bicycles crossing
31       31                       Uturn
32       32                Road Divider
33       33              Traffic signals
34       34                 Danger Ahead
35       35              Zebra Crossing
36       36           Bicycles crossing
37       37           Children crossing
38       38  Dangerous curve to the left
39       39 Dangerous curve to the right
40       40                     Unknown1
41       41                     Unknown2
42       42                     Unknown3
43       43         Go right or straight
44       44          Go left or straight
45       45                     Unknown4
46       46                ZigZag Curve
47       47              Train Crossing
48       48           Under Construction
49       49                     Unknown5
50       50                       Fences
```

```
51       51       Heavy Vehicle Accidents
52       52                     Unknown6
53       53                     Give Way
54       54                   No stopping
55       55                     No entry
56       56                     Unknown7
```

```
# Display the head of the dataset (first few rows)
print("Head of the dataset:")
print(df.head())
```

```
Head of the dataset:
   ClassId                  Name
0        0   Speed limit (5km/h)
1        1  Speed limit (15km/h)
2        2  Speed limit (30km/h)
3        3  Speed limit (40km/h)
4        4  Speed limit (50km/h)
```

```
# Display the tail of the dataset (last few rows)
print("\nTail of the dataset:")
print(df.tail())
```

```
Tail of the dataset:
    ClassId         Name
53       53     Give Way
54       54  No stopping
55       55     No entry
56       56     Unknown7
57       57     Unknown8
```

```
# Count the number of instances for each class (assuming 'ClassId' column contains class
class_counts = df['ClassId'].value_counts()
print(class_counts)
```

```
0     1
43    1
31    1
32    1
33    1
34    1
35    1
36    1
37    1
38    1
39    1
40    1
41    1
42    1
44    1
1     1
45    1
46    1
```

```
47    1
48    1
49    1
50    1
51    1
52    1
53    1
54    1
55    1
56    1
30    1
29    1
28    1
27    1
2     1
3     1
4     1
5     1
6     1
7     1
8     1
9     1
10    1
11    1
12    1
13    1
14    1
15    1
16    1
17    1
18    1
19    1
20    1
21    1
22    1
23    1
24    1
25    1
26    1
57    1
```

```
# Filter rows where the 'Name' column contains 'Speed limit'
speed_limit_classes = df[df['Name'].str.contains('Speed limit')]
print(speed_limit_classes)
```

```
    ClassId                  Name
0         0   Speed limit (5km/h)
1         1  Speed limit (15km/h)
2         2  Speed limit (30km/h)
3         3  Speed limit (40km/h)
4         4  Speed limit (50km/h)
5         5  Speed limit (60km/h)
6         6  Speed limit (70km/h)
18       18  Speed limit (40km/h)
19       19  Speed limit (50km/h)
```

```
# Group by 'ClassId' and count instances per class
class_counts = df.groupby('ClassId').size()
print(class_counts)
```

```
ClassId
0     1
1     1
2     1
3     1
4     1
5     1
6     1
7     1
8     1
9     1
10    1
11    1
12    1
13    1
14    1
15    1
16    1
17    1
18    1
19    1
20    1
21    1
22    1
23    1
24    1
25    1
26    1
27    1
28    1
29    1
30    1
31    1
32    1
33    1
34    1
35    1
36    1
37    1
38    1
39    1
40    1
41    1
42    1
43    1
44    1
45    1
46    1
47    1
48    1
49    1
50    1
51    1
52    1
```

```
53    1
54    1
55    1
56    1
```

```
# Sort data by the 'Name' column in ascending order
sorted_df = df.sort_values(by='Name')
print(sorted_df)
```

```
    ClassId                         Name
36       36             Bicycles crossing
30       30             Bicycles crossing
37       37             Children crossing
34       34                  Danger Ahead
38       38   Dangerous curve to the left
39       39  Dangerous curve to the right
11       11                  Dont Go Left
12       12         Dont Go Left or Right
13       13                Dont Go Right
10       10              Dont Go straight
9         9     Dont Go straight or Right
8         8      Dont Go straight or left
14       14       Dont overtake from Left
50       50                        Fences
53       53                     Give Way
22       22                      Go Left
23       23             Go Left or right
24       24                     Go Right
44       44           Go left or straight
43       43          Go right or straight
21       21                    Go straight
20       20          Go straight or right
51       51       Heavy Vehicle Accidents
29       29                         Horn
16       16                       No Car
15       15                     No Uturn
55       55                     No entry
17       17                      No horn
54       54                   No stopping
32       32                  Road Divider
27       27          Roundabout mandatory
1         1          Speed limit (15km/h)
2         2          Speed limit (30km/h)
3         3          Speed limit (40km/h)
18       18          Speed limit (40km/h)
19       19          Speed limit (50km/h)
4         4          Speed limit (50km/h)
0         0           Speed limit (5km/h)
5         5          Speed limit (60km/h)
6         6          Speed limit (70km/h)
33       33               Traffic signals
47       47                Train Crossing
48       48            Under Construction
40       40                      Unknown1
41       41                      Unknown2
42       42                      Unknown3
45       45                      Unknown4
49       49                      Unknown5
```

```
52       52                      Unknown6
56       56                      Unknown7
57       57                      Unknown8
31       31                         Uturn
35       35                 Zebra Crossing
46       46                   ZigZag Curve
25       25                      keep Left
26       26                     keep Right
7         7           speed limit (80km/h)
```

```
# Select specific columns 'ClassId' and 'Name'
selected_columns = df[['ClassId', 'Name']]
print(selected_columns)
```

```
    ClassId                          Name
0         0           Speed limit (5km/h)
1         1          Speed limit (15km/h)
2         2          Speed limit (30km/h)
3         3          Speed limit (40km/h)
4         4          Speed limit (50km/h)
5         5          Speed limit (60km/h)
6         6          Speed limit (70km/h)
7         7          speed limit (80km/h)
8         8      Dont Go straight or left
9         9     Dont Go straight or Right
10       10               Dont Go straight
11       11                   Dont Go Left
12       12          Dont Go Left or Right
13       13                  Dont Go Right
14       14        Dont overtake from Left
15       15                       No Uturn
16       16                         No Car
17       17                        No horn
18       18          Speed limit (40km/h)
19       19          Speed limit (50km/h)
20       20          Go straight or right
21       21                    Go straight
22       22                        Go Left
23       23               Go Left or right
24       24                       Go Right
25       25                      keep Left
26       26                     keep Right
27       27          Roundabout mandatory
28       28            watch out for cars
29       29                           Horn
30       30             Bicycles crossing
31       31                         Uturn
32       32                  Road Divider
33       33               Traffic signals
34       34                  Danger Ahead
35       35                 Zebra Crossing
36       36             Bicycles crossing
37       37             Children crossing
38       38   Dangerous curve to the left
39       39  Dangerous curve to the right
40       40                       Unknown1
41       41                       Unknown2
```

```
42       42                    Unknown3
43       43          Go right or straight
44       44           Go left or straight
45       45                    Unknown4
46       46                 ZigZag Curve
47       47               Train Crossing
48       48            Under Construction
49       49                    Unknown5
50       50                      Fences
51       51       Heavy Vehicle Accidents
52       52                    Unknown6
53       53                    Give Way
54       54                  No stopping
55       55                     No entry
```

```
# Filter rows based on multiple conditions
filtered_data = df[(df['Name'].str.contains('Speed limit')) & (df['Name'].str.contains('k
print(filtered_data)
```

```
    ClassId                 Name
0         0   Speed limit (5km/h)
1         1  Speed limit (15km/h)
2         2  Speed limit (30km/h)
3         3  Speed limit (40km/h)
4         4  Speed limit (50km/h)
5         5  Speed limit (60km/h)
6         6  Speed limit (70km/h)
18       18  Speed limit (40km/h)
19       19  Speed limit (50km/h)
```

```
# Filter rows based on multiple conditions
filtered_data = df[(df['Name'].str.contains('Speed limit')) & (df['Name'].str.contains('k
print(filtered_data)
```

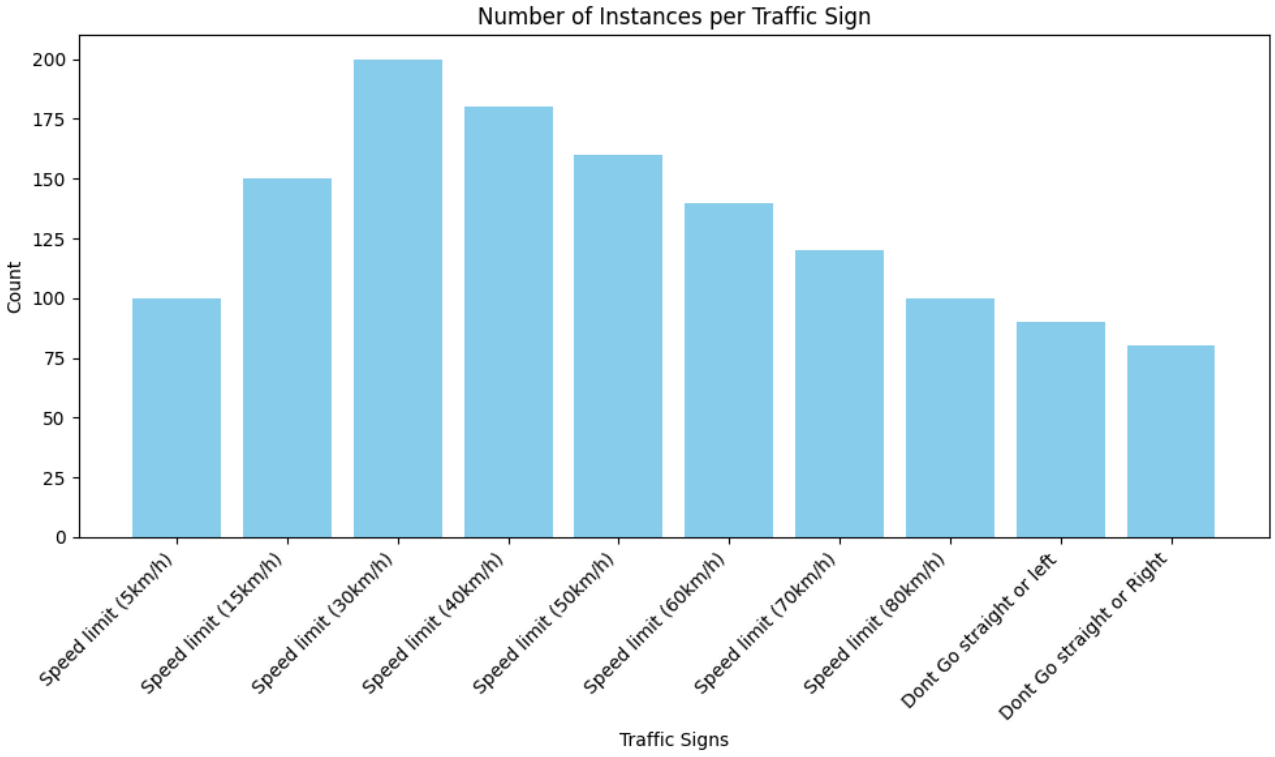
```
    ClassId                 Name
0         0   Speed limit (5km/h)
1         1  Speed limit (15km/h)
2         2  Speed limit (30km/h)
3         3  Speed limit (40km/h)
4         4  Speed limit (50km/h)
5         5  Speed limit (60km/h)
6         6  Speed limit (70km/h)
18       18  Speed limit (40km/h)
19       19  Speed limit (50km/h)
```

```
import pandas as pd
import matplotlib.pyplot as plt

# Sample dataset (replace with your actual dataset loading code)
data = {
    'ClassId': [0, 1, 2, 3, 4, 5, 6, 7, 8, 9],
    'Name': ['Speed limit (5km/h)', 'Speed limit (15km/h)', 'Speed limit (30km/h)', 'Spee
             'Speed limit (50km/h)', 'Speed limit (60km/h)', 'Speed limit (70km/h)', 'Spe
             'Dont Go straight or left', 'Dont Go straight or Right'],
    'Count': [100, 150, 200, 180, 160, 140, 120, 100, 90, 80]
}
df = pd.DataFrame(data)

# Plotting the bar graph
plt.figure(figsize=(10, 6))
plt.bar(df['Name'], df['Count'], color='skyblue')
plt.xlabel('Traffic Signs')
plt.ylabel('Count')
plt.title('Number of Instances per Traffic Sign')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()

# Display the bar graph
plt.show()
```



```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

# Sample dataset (replace with your actual dataset loading code)
data = {
    'ClassId': [0, 1, 2, 3, 4, 5, 6, 7, 8, 9],
    'Name': ['Speed limit (5km/h)', 'Speed limit (15km/h)', 'Speed limit (30km/h)', 'Spee
             'Speed limit (50km/h)', 'Speed limit (60km/h)', 'Speed limit (70km/h)', 'Spe
             'Dont Go straight or left', 'Dont Go straight or Right'],
    'Count': [100, 150, 200, 180, 160, 140, 120, 100, 90, 80]
}
df = pd.DataFrame(data)

# Plotting the sns figure
plt.figure(figsize=(10, 6))
sns.barplot(data=df, x='Name', y='Count', palette='viridis')
plt.xlabel('Traffic Signs')
plt.ylabel('Count')
plt.title('Number of Instances per Traffic Sign')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()

# Display the sns figure
plt.show()
```

```
import pandas as pd

# Sample dataset (replace with your actual dataset loading code)
data = {
    'ClassId': [0, 1, 2, 3, 4, 5, 6, 7, 8, 9],
    'Name': ['Speed limit (5km/h)', 'Speed limit (15km/h)', 'Speed limit (30km/h)', 'Spee
             'Speed limit (50km/h)', 'Speed limit (60km/h)', 'Speed limit (70km/h)', 'Spe
             'Dont Go straight or left', 'Dont Go straight or Right'],
    'Count': [100, 150, 200, 180, 160, 140, 120, 100, 90, 80]
}
df = pd.DataFrame(data)

# Count instances where 'Unknown' is in the 'Name' column
unknown_count = df[df['Name'].str.contains('Unknown')].shape[0]

print("Number of instances where 'Unknown' occurs in the 'Name' column:", unknown_count)
```

```
Number of instances where 'Unknown' occurs in the 'Name' column: 0
```


```
import pandas as pd

# Sample dataset (replace with your actual dataset loading code)
data = {
    'ClassId': [0, 1, 2, 3, 4, 5, 6, 7, 8, 9],
    'Name': ['Speed limit (5km/h)', 'Speed limit (15km/h)', 'Speed limit (30km/h)', 'Speed
             'Speed limit (50km/h)', 'Speed limit (60km/h)', 'Speed limit (70km/h)', 'Speed
             'Dont Go straight or left', 'Dont Go straight or Right'],
    'Count': [100, 150, 200, 180, 160, 140, 120, 100, 90, 80]
}
df = pd.DataFrame(data)

# Count instances where 'Unknown' is in the 'Name' column
unknown_count = df[df['Name'].str.contains('Unknown')].shape[0]

print("Number of instances where 'Unknown' occurs in the 'Name' column:", unknown_count)
```

```
Number of instances where 'Unknown' occurs in the 'Name' column: 0
```