Atividade Machine Learning
Raças de Cachorros

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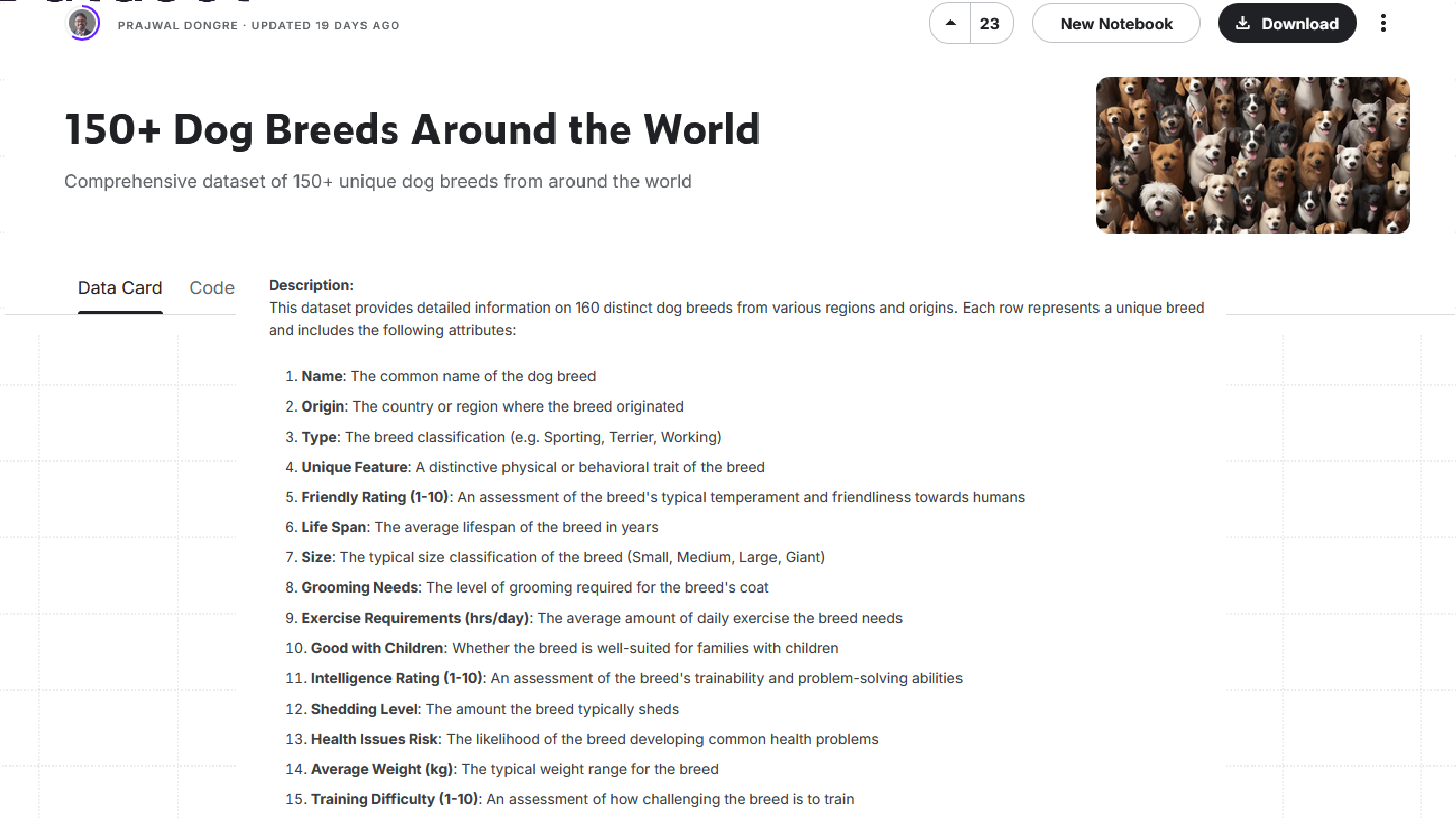
Dataset



PRAJWAL DONGRE · UPDATED 19 DAYS AGO

150+ Dog Breeds Around the World

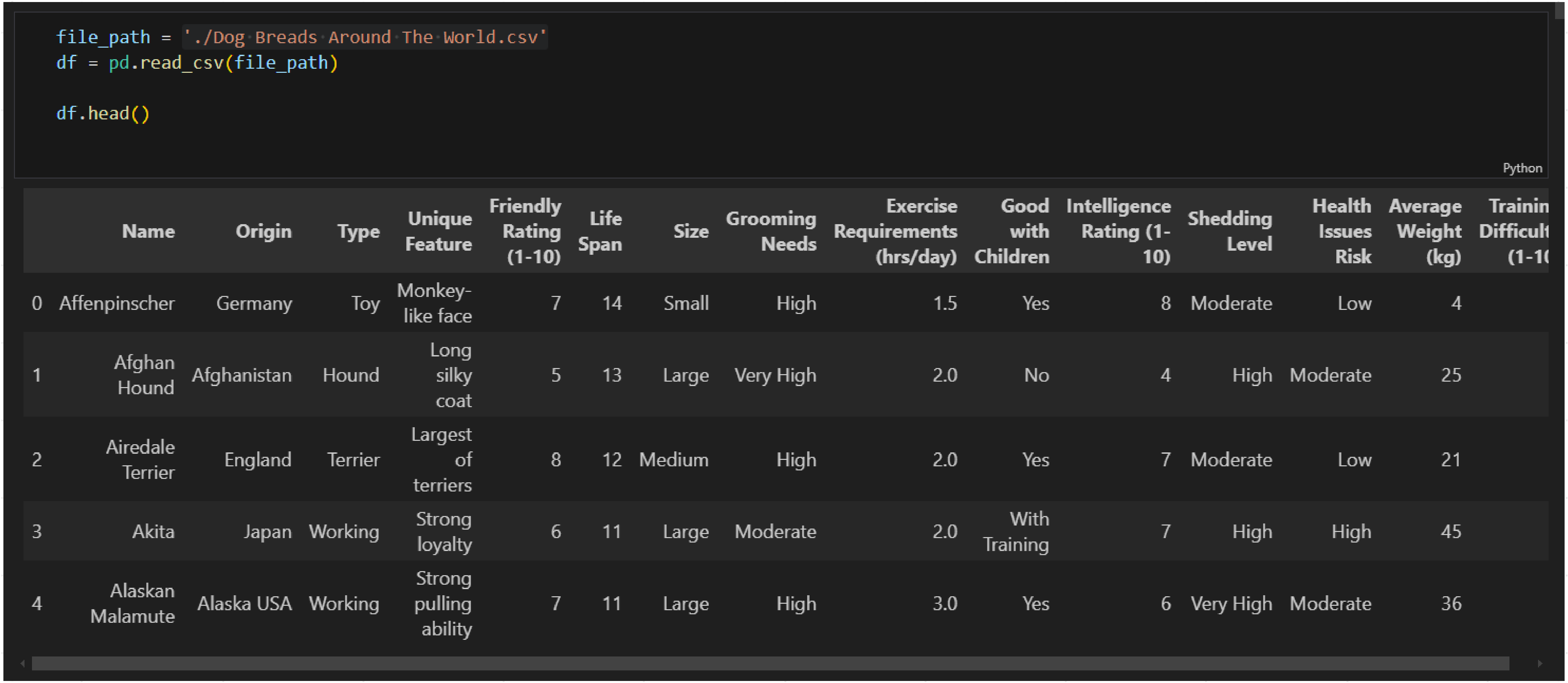
Comprehensive dataset of 150+ unique dog breeds from around the world

Description:
This dataset provides detailed information on 160 distinct dog breeds from various regions and origins. Each row represents a unique breed and includes the following attributes:

1. **Name**: The common name of the dog breed
2. **Origin**: The country or region where the breed originated
3. **Type**: The breed classification (e.g. Sporting, Terrier, Working)
4. **Unique Feature**: A distinctive physical or behavioral trait of the breed
5. **Friendly Rating (1-10)**: An assessment of the breed's typical temperament and friendliness towards humans
6. **Life Span**: The average lifespan of the breed in years
7. **Size**: The typical size classification of the breed (Small, Medium, Large, Giant)
8. **Grooming Needs**: The level of grooming required for the breed's coat
9. **Exercise Requirements (hrs/day)**: The average amount of daily exercise the breed needs
10. **Good with Children**: Whether the breed is well-suited for families with children
11. **Intelligence Rating (1-10)**: An assessment of the breed's trainability and problem-solving abilities
12. **Shedding Level**: The amount the breed typically sheds
13. **Health Issues Risk**: The likelihood of the breed developing common health problems
14. **Average Weight (kg)**: The typical weight range for the breed
15. **Training Difficulty (1-10)**: An assessment of how challenging the breed is to train

https://www.kaggle.com/datasets/prajwaldongre/top-dog-breeds-around-the-world

Importando e Visualizando

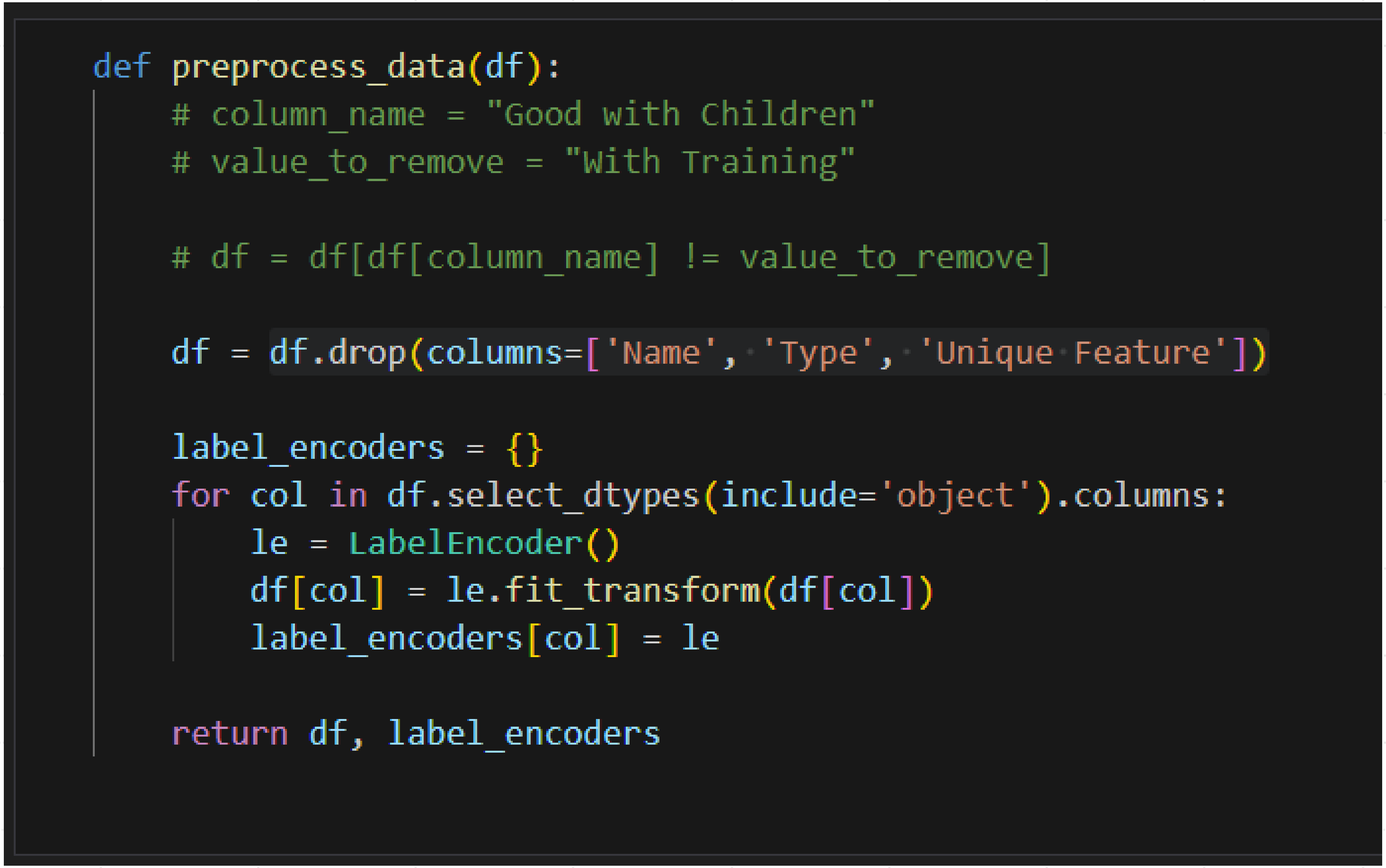


```python
file_path = './Dog Breads Around The World.csv'
df = pd.read_csv(file_path)

df.head()
```

Python

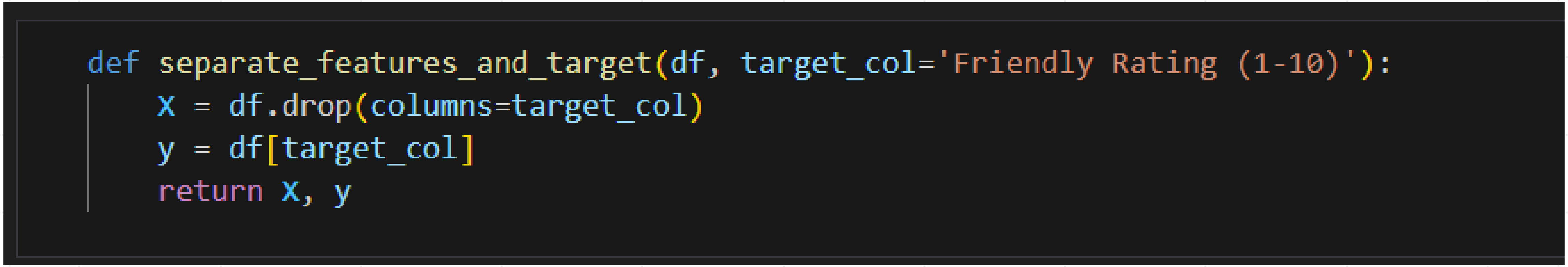
	Name	Origin	Type	Unique Feature	Friendly Rating (1-10)	Life Span	Size	Grooming Needs	Exercise Requirements (hrs/day)	Good with Children	Intelligence Rating (1-10)	Shedding Level	Health Issues Risk	Average Weight (kg)	Trainin Difficult (1-1(
0	Affenpinscher	Germany	Toy	Monkey-like face	7	14	Small	High	1.5	Yes	8	Moderate	Low	4	
1	Afghan Hound	Afghanistan	Hound	Long silky coat	5	13	Large	Very High	2.0	No	4	High	Moderate	25	
2	Airedale Terrier	England	Terrier	Largest of terriers	8	12	Medium	High	2.0	Yes	7	Moderate	Low	21	
3	Akita	Japan	Working	Strong loyalty	6	11	Large	Moderate	2.0	With Training	7	High	High	45	
4	Alaskan Malamute	Alaska USA	Working	Strong pulling ability	7	11	Large	High	3.0	Yes	6	Very High	Moderate	36	

Pré-processamento



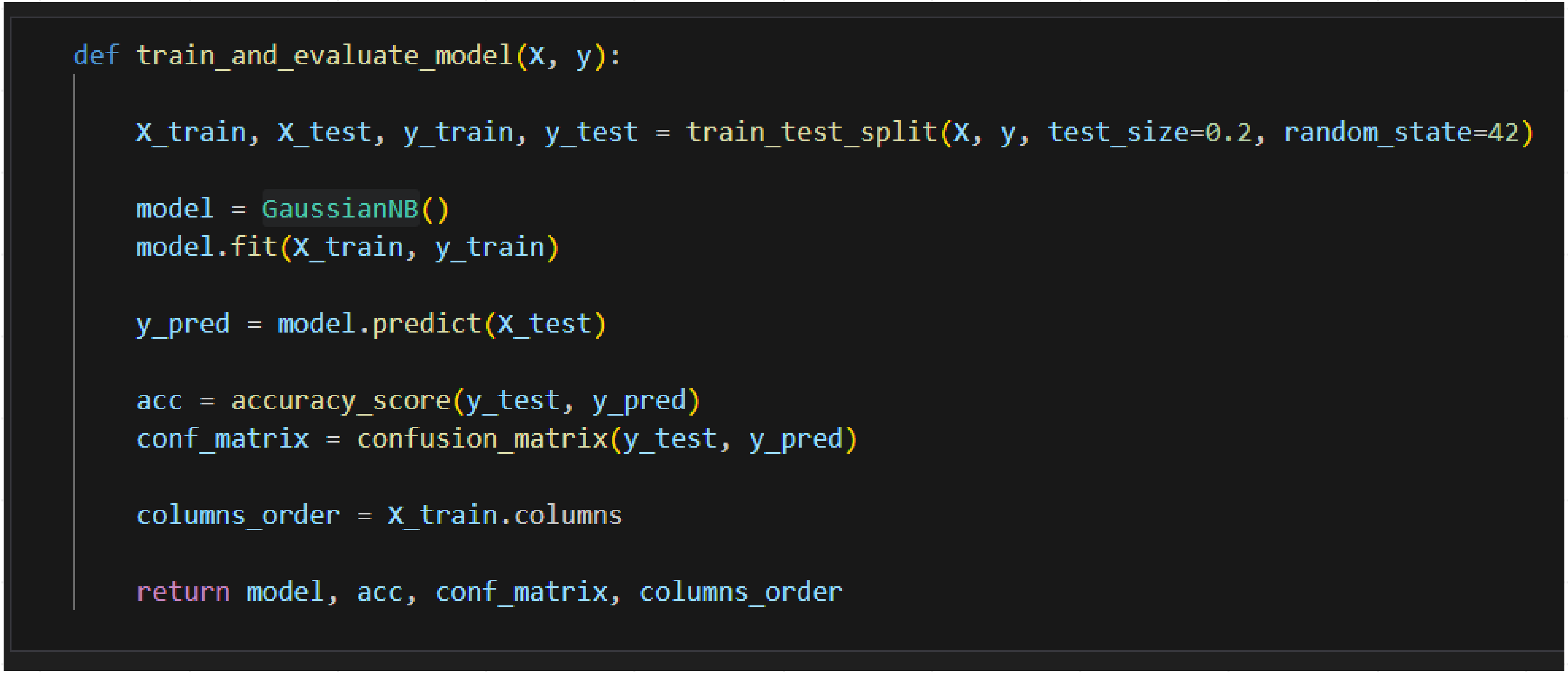
```python
def preprocess_data(df):
    # column_name = "Good with Children"
    # value_to_remove = "With Training"

    # df = df[df[column_name] != value_to_remove]

    df = df.drop(columns=['Name', 'Type', 'Unique Feature'])

    label_encoders = {}
    for col in df.select_dtypes(include='object').columns:
        le = LabelEncoder()
        df[col] = le.fit_transform(df[col])
        label_encoders[col] = le

    return df, label_encoders
```

Separando coluna de Target



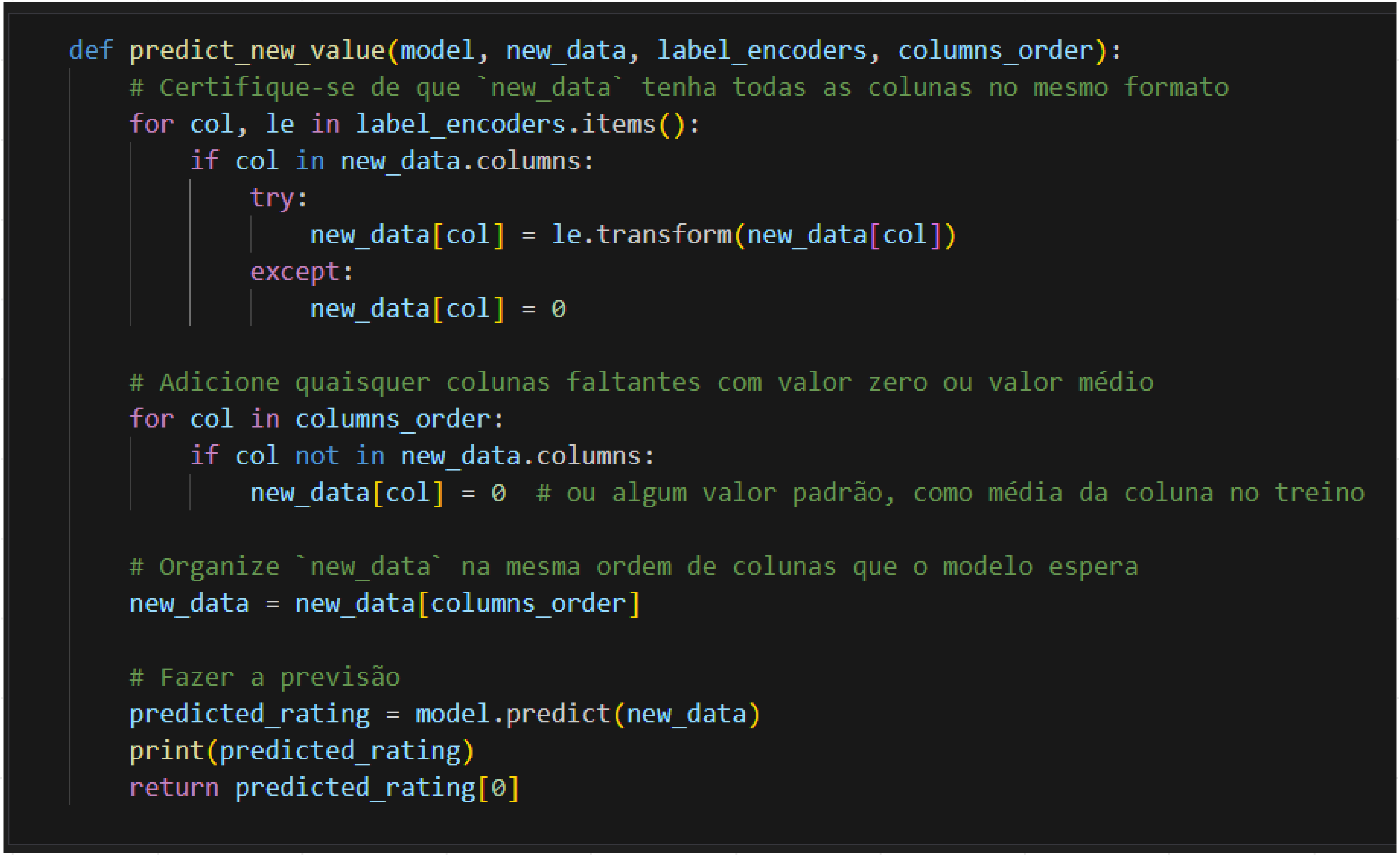
```python
def separate_features_and_target(df, target_col='Friendly Rating (1-10)'):
    X = df.drop(columns=target_col)
    y = df[target_col]
    return X, y
```

Treinando e Avaliando



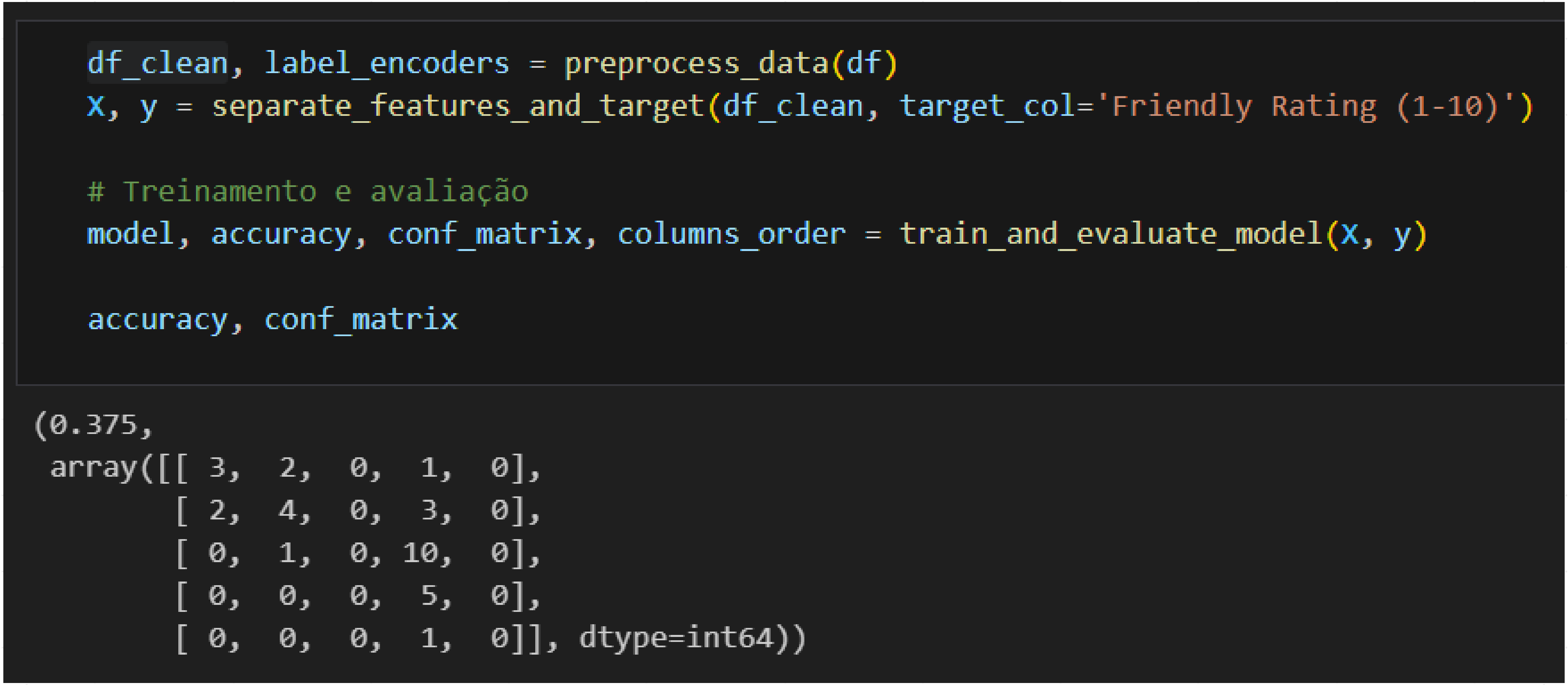
```python
def train_and_evaluate_model(X, y):

    X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

    model = GaussianNB()
    model.fit(X_train, y_train)

    y_pred = model.predict(X_test)

    acc = accuracy_score(y_test, y_pred)
    conf_matrix = confusion_matrix(y_test, y_pred)

    columns_order = X_train.columns

    return model, acc, conf_matrix, columns_order
```

Prevendo o resultado



```python
def predict_new_value(model, new_data, label_encoders, columns_order):
    # Certifique-se de que `new_data` tenha todas as colunas no mesmo formato
    for col, le in label_encoders.items():
        if col in new_data.columns:
            try:
                new_data[col] = le.transform(new_data[col])
            except:
                new_data[col] = 0

    # Adicione quaisquer colunas faltantes com valor zero ou valor médio
    for col in columns_order:
        if col not in new_data.columns:
            new_data[col] = 0  # ou algum valor padrão, como média da coluna no treino

    # Organize `new_data` na mesma ordem de colunas que o modelo espera
    new_data = new_data[columns_order]

    # Fazer a previsão
    predicted_rating = model.predict(new_data)
    print(predicted_rating)
    return predicted_rating[0]
```

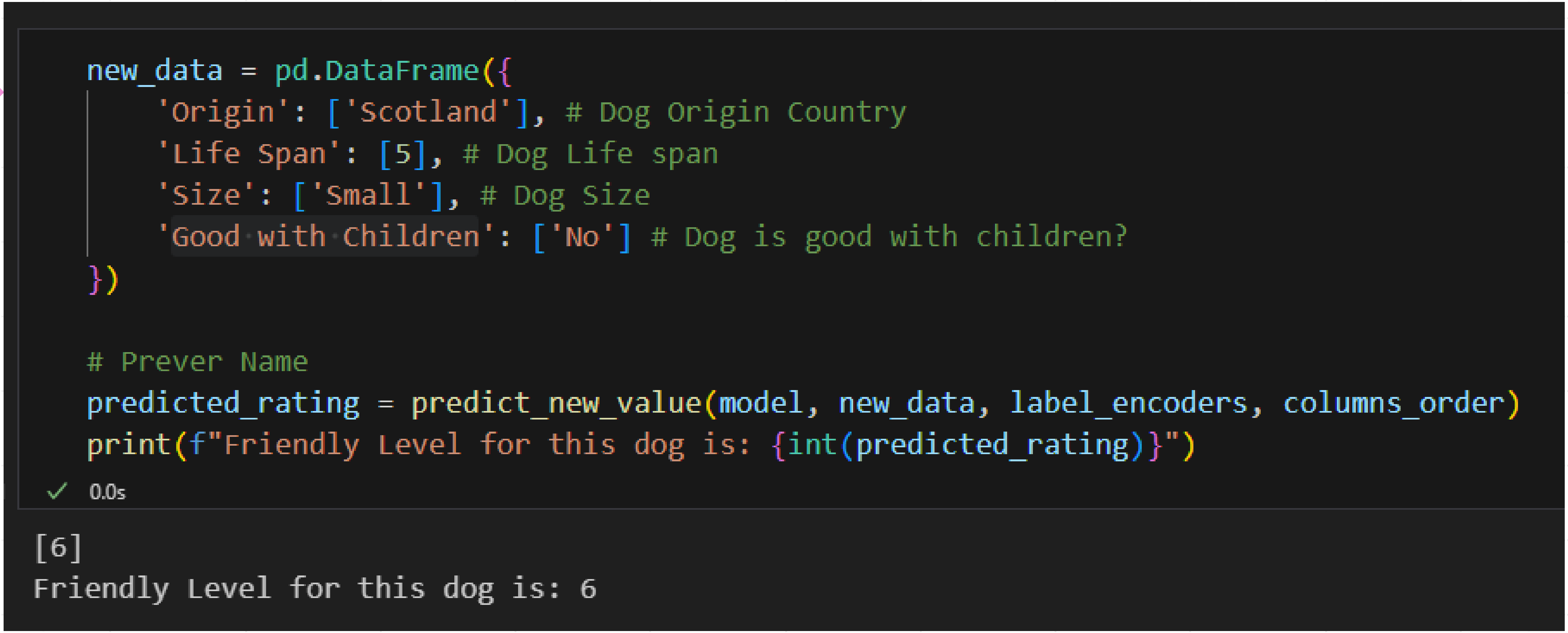
Executando...



```python
df_clean, label_encoders = preprocess_data(df)
X, y = separate_features_and_target(df_clean, target_col='Friendly Rating (1-10)')

# Treinamento e avaliação
model, accuracy, conf_matrix, columns_order = train_and_evaluate_model(X, y)

accuracy, conf_matrix
```

```
(0.375,
 array([[ 3,  2,  0,  1,  0],
        [ 2,  4,  0,  3,  0],
        [ 0,  1,  0, 10,  0],
        [ 0,  0,  0,  5,  0],
        [ 0,  0,  0,  1,  0]], dtype=int64))
```

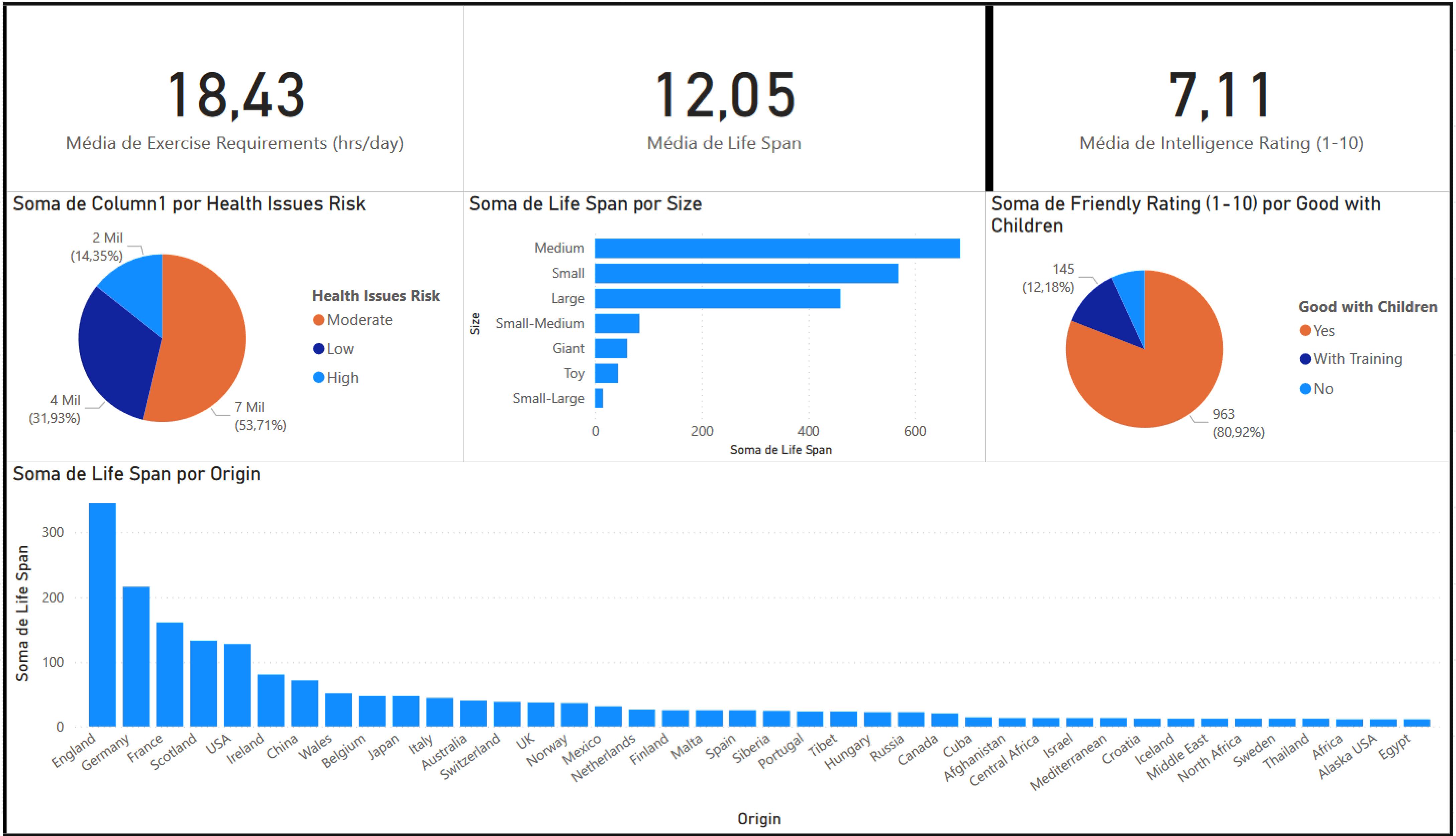
Executando...



```python
new_data = pd.DataFrame({
    'Origin': ['Scotland'], # Dog Origin Country
    'Life Span': [5], # Dog Life span
    'Size': ['Small'], # Dog Size
    'Good with Children': ['No'] # Dog is good with children?
})

# Prever Name
predicted_rating = predict_new_value(model, new_data, label_encoders, columns_order)
print(f"Friendly Level for this dog is: {int(predicted_rating)}")
```

```
[6]
Friendly Level for this dog is: 6
```

Dashboard



18,43

Média de Exercise Requirements (hrs/day)

12,05

Média de Life Span

7,11

Média de Intelligence Rating (1-10)

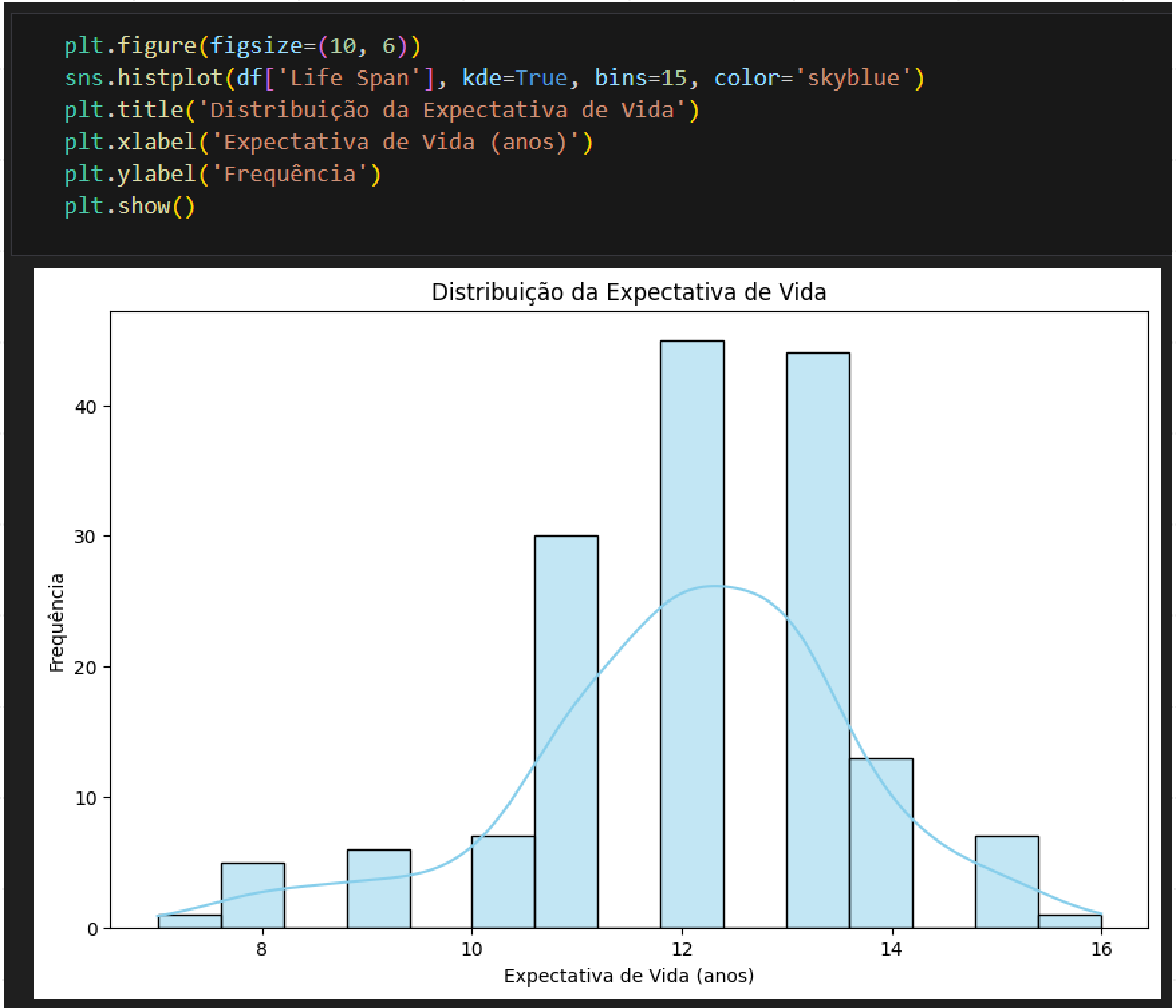
Soma de Column1 por Health Issues Risk

Soma de Life Span por Size

Soma de Friendly Rating (1-10) por Good with Children

Soma de Life Span por Origin

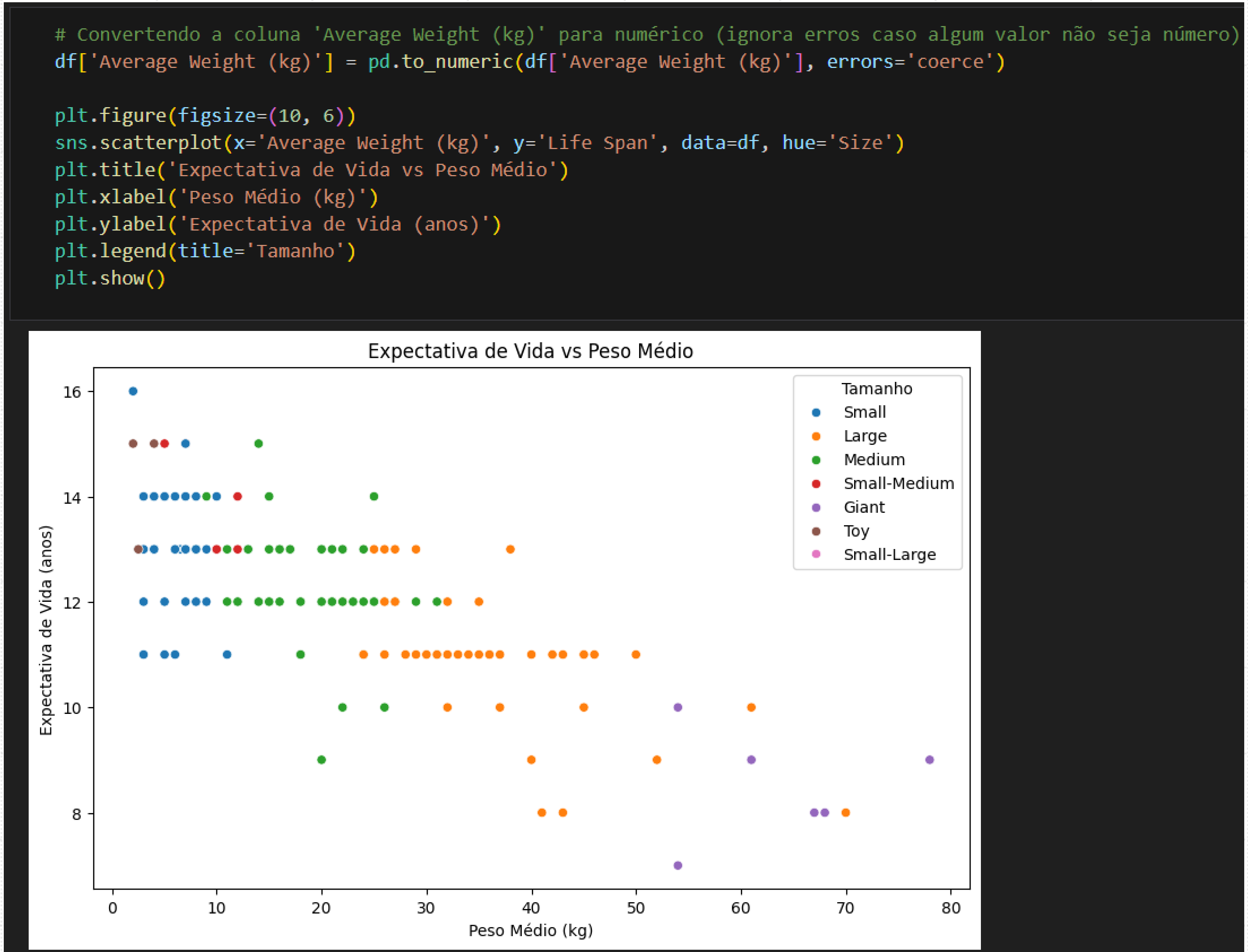
Histplot



```
plt.figure(figsize=(10, 6))
sns.histplot(df['Life Span'], kde=True, bins=15, color='skyblue')
plt.title('Distribuição da Expectativa de Vida')
plt.xlabel('Expectativa de Vida (anos)')
plt.ylabel('Frequência')
plt.show()
```

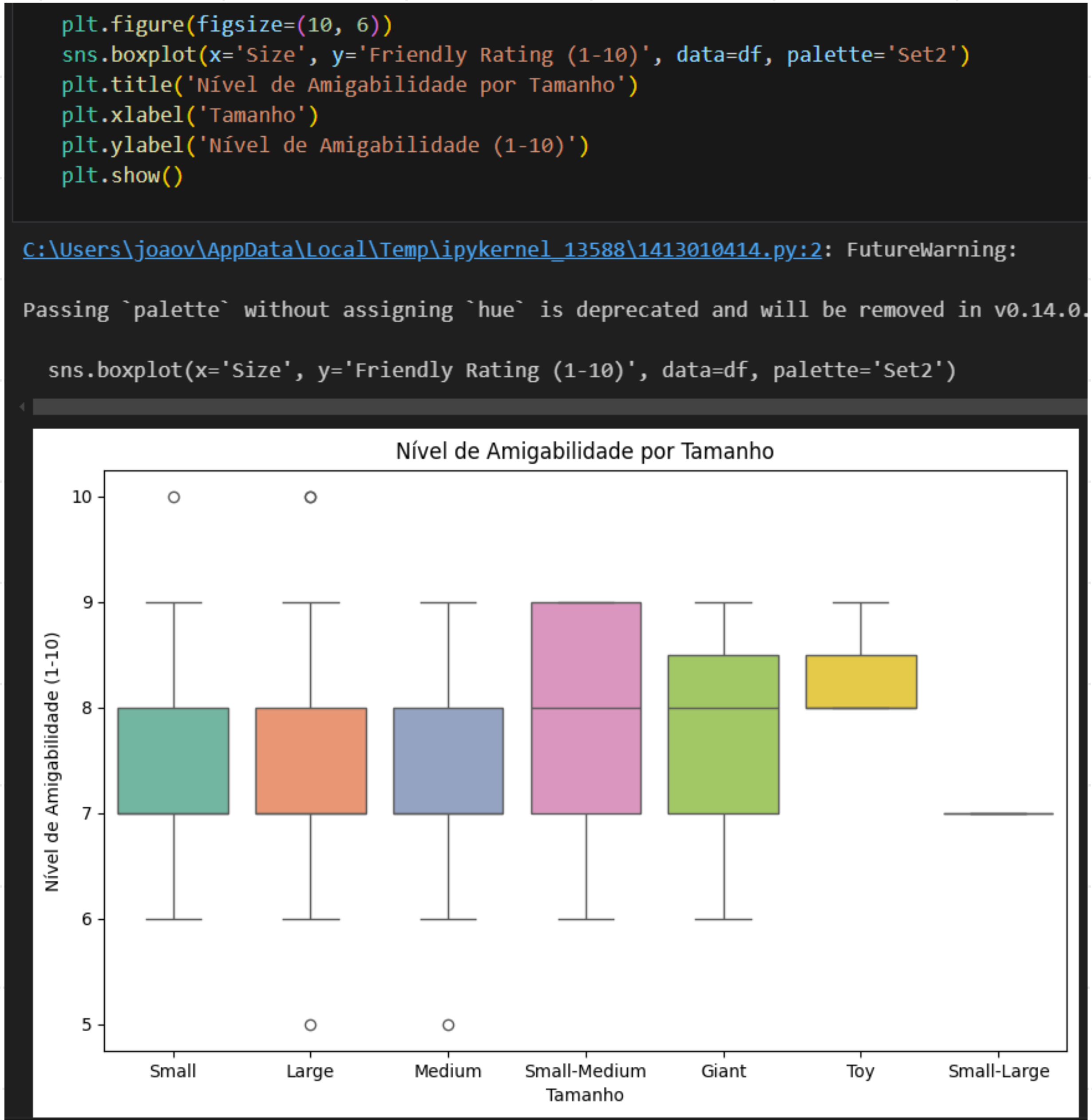
Distribuição da Expectativa de Vida
Frequência
0
10
20
30
40
8
10
12
14
16
Expectativa de Vida (anos)

Scatterplot



```python
# Convertendo a coluna 'Average Weight (kg)' para numérico (ignora erros caso algum valor não seja número)
df['Average Weight (kg)'] = pd.to_numeric(df['Average Weight (kg)'], errors='coerce')

plt.figure(figsize=(10, 6))
sns.scatterplot(x='Average Weight (kg)', y='Life Span', data=df, hue='Size')
plt.title('Expectativa de Vida vs Peso Médio')
plt.xlabel('Peso Médio (kg)')
plt.ylabel('Expectativa de Vida (anos)')
plt.legend(title='Tamanho')
plt.show()
```

Boxplot

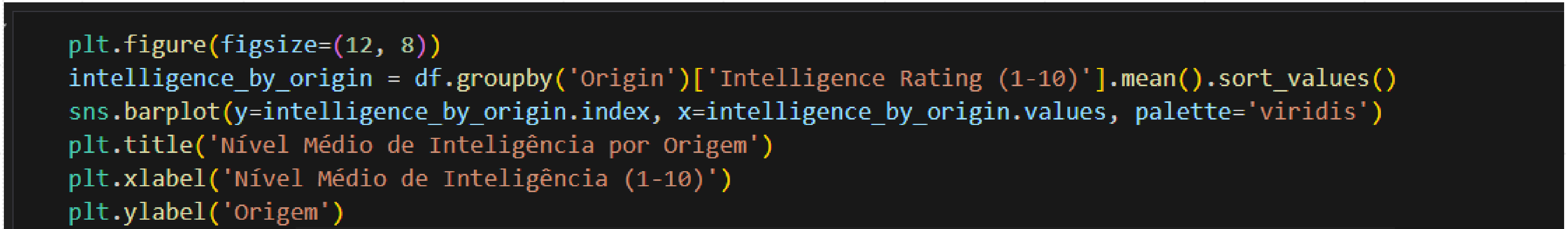


```
plt.figure(figsize=(10, 6))
sns.boxplot(x='Size', y='Friendly Rating (1-10)', data=df, palette='Set2')
plt.title('Nível de Amigabilidade por Tamanho')
plt.xlabel('Tamanho')
plt.ylabel('Nível de Amigabilidade (1-10)')
plt.show()
```

```
C:\Users\joaov\AppData\Local\Temp\ipykernel_13588\1413010414.py:2: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0.

  sns.boxplot(x='Size', y='Friendly Rating (1-10)', data=df, palette='Set2')
```

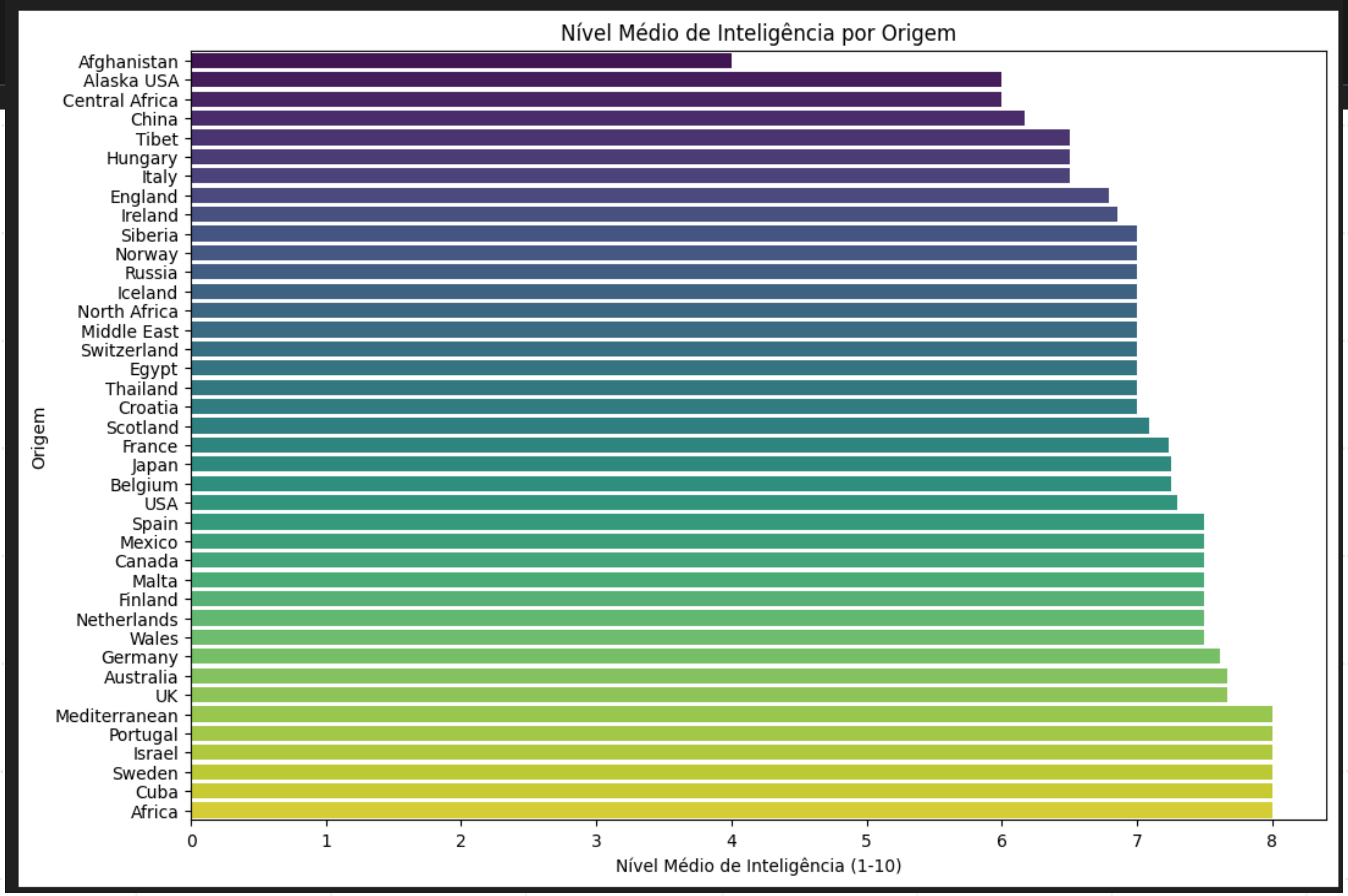
Nível de Amigabilidade por Tamanho
Nível de Amigabilidade (1-10)
10
9
8
7
6
5
Small
Large
Medium
Small-Medium
Giant
Toy
Small-Large
Tamanho

Barplot



```
plt.figure(figsize=(12, 8))
intelligence_by_origin = df.groupby('Origin')['Intelligence Rating (1-10)'].mean().sort_values()
sns.barplot(y=intelligence_by_origin.index, x=intelligence_by_origin.values, palette='viridis')
plt.title('Nível Médio de Inteligência por Origem')
plt.xlabel('Nível Médio de Inteligência (1-10)')
plt.ylabel('Origem')
plt.show()
```

✓ 0.3s



Obrigado!