```
import pandas as pd
import numpy as np
from google.colab import files
import seaborn as sns
import matplotlib.pyplot as plt

# Upload the file to the current session
uploaded = files.upload()

# Get the filename from the uploaded dictionary
filename = list(uploaded.keys())[0]  # Assuming only one file is
uploaded

# Read the CSV file using the uploaded filename
dataset = pd.read_csv(filename)
```

```
<IPython.core.display.HTML object>
```

```
Saving Expanded_data_with_more_features.csv to
Expanded_data_with_more_features.csv
```

```
dataset.head(5)
```


```
{"summary":"{\n  \"name\": \"dataset\",\n  \"rows\": 30641,\n
\"fields\": [\n    {\n      \"column\": \"Unnamed: 0\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
288,\n        \"min\": 0,\n        \"max\": 999,\n
\"num_unique_values\": 1000,\n        \"samples\": [\n          549,\n
773,\n          776\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"Gender\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 2,\n        \"samples\":
[\n          \"male\",\n          \"female\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"EthnicGroup\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 5,\n        \"samples\": [\n          \"group
B\",\n          \"group E\"\n        ],\n        \"semantic_type\":
\"\",\n        \"description\": \"\"\n      }\n    },\n    {\n
\"column\": \"ParentEduc\",\n      \"properties\": {\n
\"dtype\": \"category\",\n        \"num_unique_values\": 6,\n
\"samples\": [\n          \"bachelor's degree\",\n          \"some
college\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"LunchType\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 2,\n        \"samples\":
[\n          \"free/reduced\",\n          \"standard\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"TestPrep\",\n      \"properties\":
{\n        \"dtype\": \"category\",\n        \"num_unique_values\":
```

```
2,\n        \"samples\": [\n          \"completed\",\n
\"none\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"ParentMaritalStatus\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 4,\n        \"samples\":
[\n          \"single\",\n          \"divorced\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"PracticeSport\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 3,\n        \"samples\": [\n
\"regularly\",\n          \"sometimes\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"IsFirstChild\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n          \"no\",\n
\"yes\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"NrSiblings\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 1.4582424759684511,\n        \"min\":
0.0,\n        \"max\": 7.0,\n        \"num_unique_values\": 8,\n
\"samples\": [\n          0.0,\n          5.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"TransportMeans\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n
\"private\",\n          \"school_bus\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"WklyStudyHours\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 3,\n        \"samples\": [\n          \"< 5\",\
n          \"5 - 10\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"MathScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 15,\n        \"min\": 0,\n
\"max\": 100,\n        \"num_unique_values\": 95,\n
\"samples\": [\n          36,\n          70\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"ReadingScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
14,\n        \"min\": 10,\n        \"max\": 100,\n
\"num_unique_values\": 90,\n        \"samples\": [\n          48,\n
65\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"WritingScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 15,\n        \"min\": 4,\n
\"max\": 100,\n        \"num_unique_values\": 93,\n
\"samples\": [\n          10,\n          76\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    }\n  ]\n}","type":"dataframe","variable_name":"dataset"}
```

```
dataset.describe()
```


```
{"summary":"{\n  \"name\": \"dataset\",\n  \"rows\": 8,\n  \"fields\":
[\n    {\n      \"column\": \"Unnamed: 0\",\n      \"properties\": {\n
\"dtype\": \"number\",\n        \"std\": 10671.681928672426,\n
\"min\": 0.0,\n        \"max\": 30641.0,\n
\"num_unique_values\": 8,\n        \"samples\": [\n
499.5566071603407,\n          500.0,\n          30641.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"NrSiblings\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
10276.60508653049,\n        \"min\": 0.0,\n        \"max\": 29069.0,\n
\"num_unique_values\": 8,\n        \"samples\": [\n
2.1458942516082424,\n          2.0,\n          29069.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"MathScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
10813.938124618964,\n        \"min\": 0.0,\n        \"max\": 30641.0,\
n        \"num_unique_values\": 8,\n        \"samples\": [\n
66.5584021409223,\n          67.0,\n          30641.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"ReadingScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
10812.912200605591,\n        \"min\": 10.0,\n        \"max\":
30641.0,\n        \"num_unique_values\": 8,\n        \"samples\": [\n
69.37753337032082,\n          70.0,\n          30641.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"WritingScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
10813.383566214232,\n        \"min\": 4.0,\n        \"max\": 30641.0,\
n        \"num_unique_values\": 8,\n        \"samples\": [\n
68.41862210763357,\n          69.0,\n          30641.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    }\n  ]\n}","type":"dataframe"}
```


```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 30641 entries, 0 to 30640
Data columns (total 15 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   Unnamed: 0           30641 non-null  int64
 1   Gender               30641 non-null  object
 2   EthnicGroup          28801 non-null  object
 3   ParentEduc           28796 non-null  object
 4   LunchType            30641 non-null  object
 5   TestPrep             28811 non-null  object
 6   ParentMaritalStatus  29451 non-null  object
 7   PracticeSport        30010 non-null  object
```

```
 8   IsFirstChild          29737 non-null  object
 9   NrSiblings            29069 non-null  float64
 10  TransportMeans        27507 non-null  object
 11  WklyStudyHours        29686 non-null  object
 12  MathScore             30641 non-null  int64
 13  ReadingScore          30641 non-null  int64
 14  WritingScore          30641 non-null  int64
dtypes: float64(1), int64(4), object(10)
memory usage: 3.5+ MB
```

```
dataset.isnull().sum()
```

```
Unnamed: 0                 0
Gender                     0
EthnicGroup             1840
ParentEduc              1845
LunchType                  0
TestPrep                1830
ParentMaritalStatus     1190
PracticeSport            631
IsFirstChild             904
NrSiblings              1572
TransportMeans          3134
WklyStudyHours           955
MathScore                  0
ReadingScore               0
WritingScore               0
dtype: int64
```

```
dataset = dataset.drop("Unnamed: 0", axis = 1)
dataset.head()
```


```
{"summary":"{\n  \"name\": \"dataset\",\n  \"rows\": 30641,\n
\"fields\": [\n    {\n      \"column\": \"Gender\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n
\"male\",\n          \"female\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"EthnicGroup\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 5,\n        \"samples\": [\n          \"group
B\",\n          \"group E\"\n        ],\n        \"semantic_type\":
\"\",\n        \"description\": \"\"\n      }\n    },\n    {\n
\"column\": \"ParentEduc\",\n      \"properties\": {\n
\"dtype\": \"category\",\n        \"num_unique_values\": 6,\n
\"samples\": [\n          \"bachelor's degree\",\n          \"some
college\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"LunchType\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 2,\n        \"samples\":
```

```
[\n          \"free/reduced\",\n          \"standard\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"TestPrep\",\n      \"properties\":
{\n        \"dtype\": \"category\",\n        \"num_unique_values\":
2,\n        \"samples\": [\n          \"completed\",\n
\"none\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"ParentMaritalStatus\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 4,\n        \"samples\":
[\n          \"single\",\n          \"divorced\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"PracticeSport\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 3,\n        \"samples\": [\n
\"regularly\",\n          \"sometimes\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"IsFirstChild\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n          \"no\",\n
\"yes\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"NrSiblings\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 1.4582424759684511,\n        \"min\":
0.0,\n        \"max\": 7.0,\n        \"num_unique_values\": 8,\n
\"samples\": [\n          0.0,\n          5.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"TransportMeans\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n
\"private\",\n          \"school_bus\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"WklyStudyHours\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 3,\n        \"samples\": [\n          \"< 5\",\
n          \"5 - 10\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"MathScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 15,\n        \"min\": 0,\n
\"max\": 100,\n        \"num_unique_values\": 95,\n
\"samples\": [\n          36,\n          70\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"ReadingScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
14,\n        \"min\": 10,\n        \"max\": 100,\n
\"num_unique_values\": 90,\n        \"samples\": [\n          48,\n
65\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"WritingScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 15,\n        \"min\": 4,\n
```

```
\"max\": 100,\n        \"num_unique_values\": 93,\n
\"samples\": [\n          10,\n          76\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    }\n  ]\n}","type":"dataframe","variable_name":"dataset"}
```


Droped Unnamded column

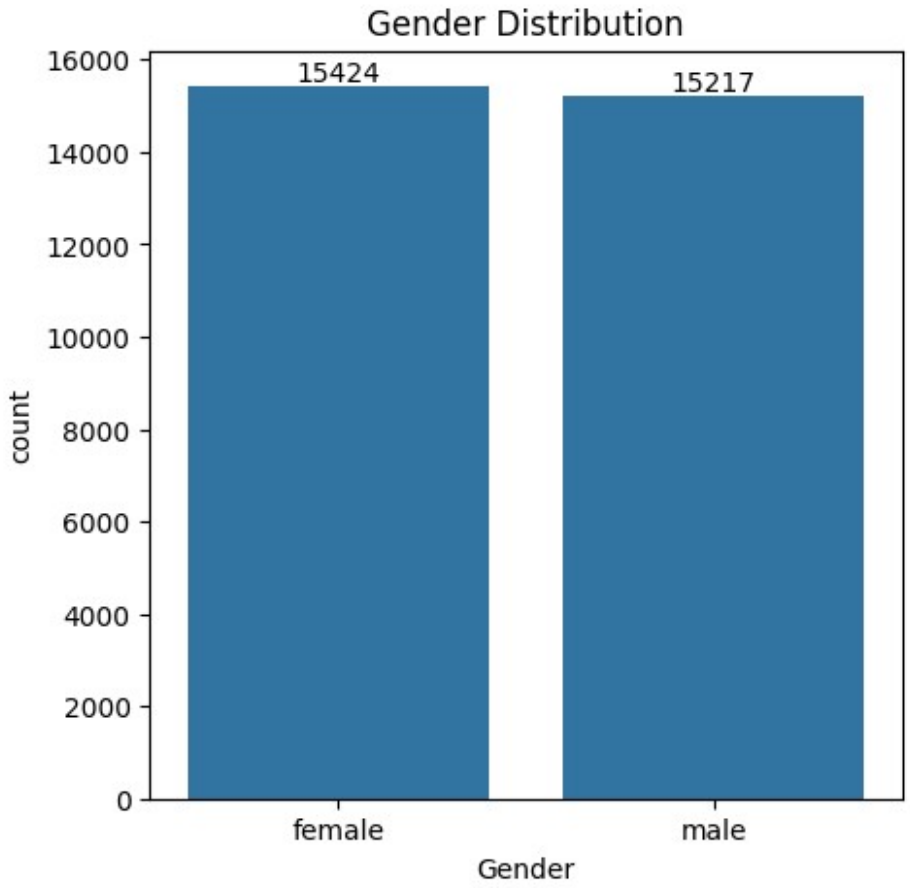
```
dataset["WklyStudyHours"] = dataset["WklyStudyHours"].str.replace("05-
Oct", "5-10")
dataset.head(5)
```


```
{"summary":"{\n  \"name\": \"dataset\",\n  \"rows\": 30641,\n
\"fields\": [\n    {\n      \"column\": \"Gender\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n
\"male\",\n          \"female\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"EthnicGroup\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 5,\n        \"samples\": [\n          \"group
B\",\n          \"group E\"\n        ],\n        \"semantic_type\":
\"\",\n        \"description\": \"\"\n      }\n    },\n    {\n
\"column\": \"ParentEduc\",\n      \"properties\": {\n
\"dtype\": \"category\",\n        \"num_unique_values\": 6,\n
\"samples\": [\n          \"bachelor's degree\",\n          \"some
college\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"LunchType\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 2,\n        \"samples\":
[\n          \"free/reduced\",\n          \"standard\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"TestPrep\",\n      \"properties\":
{\n        \"dtype\": \"category\",\n        \"num_unique_values\":
2,\n        \"samples\": [\n          \"completed\",\n
\"none\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"ParentMaritalStatus\",\n      \"properties\": {\n        \"dtype\":
\"category\",\n        \"num_unique_values\": 4,\n        \"samples\":
[\n          \"single\",\n          \"divorced\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"PracticeSport\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 3,\n        \"samples\": [\n
\"regularly\",\n          \"sometimes\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"IsFirstChild\",\n
\"properties\": {\n        \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n        \"samples\": [\n          \"no\",\n
\"yes\"\n        ],\n        \"semantic_type\": \"\",\n
```

\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"NrSiblings\",\n   \"properties\": {\n   \"dtype\":
\"number\",\n   \"std\": 1.4582424759684511,\n   \"min\":
0.0,\n   \"max\": 7.0,\n   \"num_unique_values\": 8,\n
\"samples\": [\n   0.0,\n   5.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"TransportMeans\",\n
\"properties\": {\n   \"dtype\": \"category\",\n
\"num_unique_values\": 2,\n   \"samples\": [\n
\"private\",\n   \"school_bus\"\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"WklyStudyHours\",\n
\"properties\": {\n   \"dtype\": \"category\",\n
\"num_unique_values\": 3,\n   \"samples\": [\n   \"< 5\",\
n   \"5 - 10\"\n   ],\n   \"semantic_type\": \"\",\n
\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"MathScore\",\n   \"properties\": {\n   \"dtype\":
\"number\",\n   \"std\": 15,\n   \"min\": 0,\n
\"max\": 100,\n   \"num_unique_values\": 95,\n
\"samples\": [\n   36,\n   70\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"ReadingScore\",\n
\"properties\": {\n   \"dtype\": \"number\",\n   \"std\":
14,\n   \"min\": 10,\n   \"max\": 100,\n
\"num_unique_values\": 90,\n   \"samples\": [\n   48,\n
65\n   ],\n   \"semantic_type\": \"\",\n
\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"WritingScore\",\n   \"properties\": {\n   \"dtype\":
\"number\",\n   \"std\": 15,\n   \"min\": 4,\n
\"max\": 100,\n   \"num_unique_values\": 93,\n
\"samples\": [\n   10,\n   76\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   }\n]\n}","type":"dataframe","variable_name":"dataset"}

change weekly study hours column

```
plt.figure(figsize = (5, 5))
ax = sns.countplot(x = "Gender", data = dataset)
ax.bar_label(ax.containers[0])
plt.title("Gender Distribution")
plt.show()
```



gender distribution

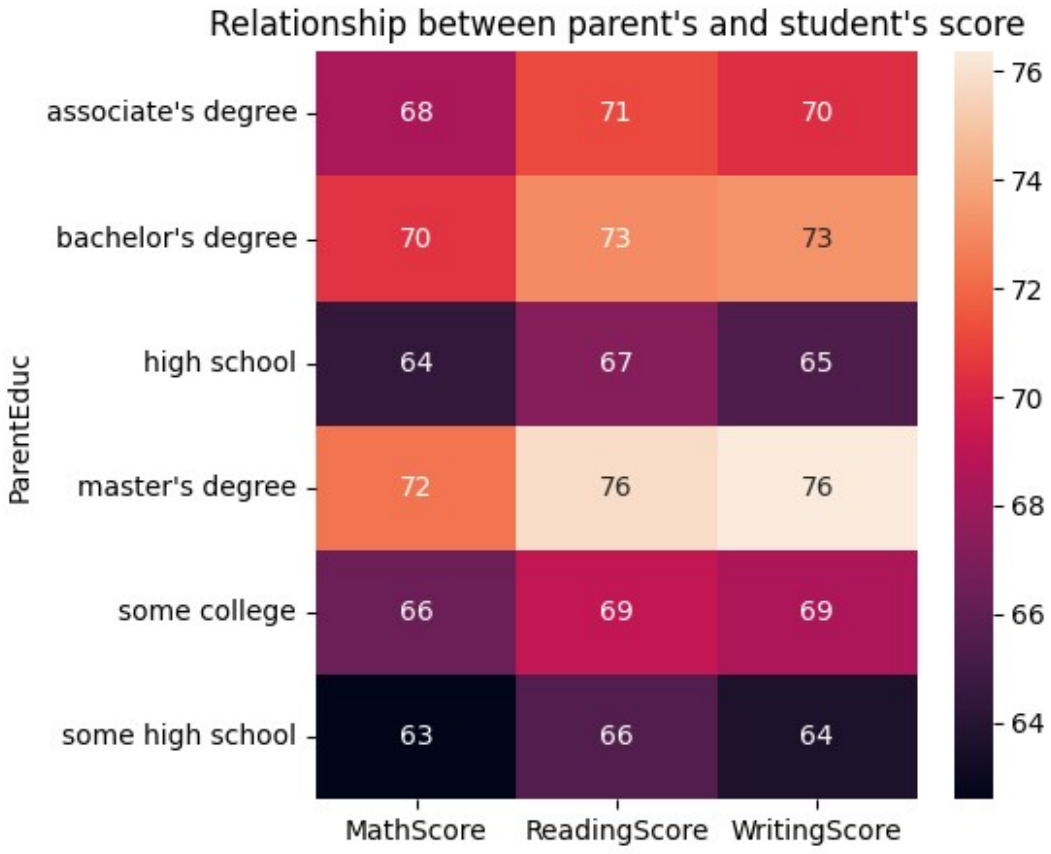
```
gb = dataset.groupby("ParentEduc").agg({"MathScore": "mean",
"ReadingScore": "mean", "WritingScore": "mean"})
gb
```


```
{"summary":"{\n  \"name\": \"gb\",\n  \"rows\": 6,\n  \"fields\": [\n
{\n      \"column\": \"ParentEduc\",\n      \"properties\": {\n
\"dtype\": \"string\",\n        \"num_unique_values\": 6,\n
\"samples\": [\n          \"associate's degree\",\n
\"bachelor's degree\",\n          \"some high school\"\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"MathScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
3.6795770950348223,\n        \"min\": 62.58401305057096,\n
\"max\": 72.33613445378151,\n        \"num_unique_values\": 6,\n
\"samples\": [\n          68.36558558558559,\n
70.46662728883639,\n          62.58401305057096\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"ReadingScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
3.8114035417911296,\n        \"min\": 65.51078484683705,\n
```

```
\"max\": 75.83292140385566,\n        \"num_unique_values\": 6,\n
\"samples\": [\n          71.12432432432432,\n
73.06202008269344,\n          65.51078484683705\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    },\n    {\n      \"column\": \"WritingScore\",\n
\"properties\": {\n        \"dtype\": \"number\",\n        \"std\":
4.782187685280533,\n        \"min\": 63.63240891789016,\n
\"max\": 76.35689569945626,\n        \"num_unique_values\": 6,\n
\"samples\": [\n          70.2990990990991,\n
73.33106910809214,\n          63.63240891789016\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n      }\
n    }\n  ]\n}","type":"dataframe","variable_name":"gb"}
```


from the above chart we ahve analysed that: the number of females in the data is more than the number of males

```
plt.figure(figsize = (5, 5))
sns.heatmap(gb, annot=True)
plt.title("Relationship between parent's and student's score")
plt.show()
```

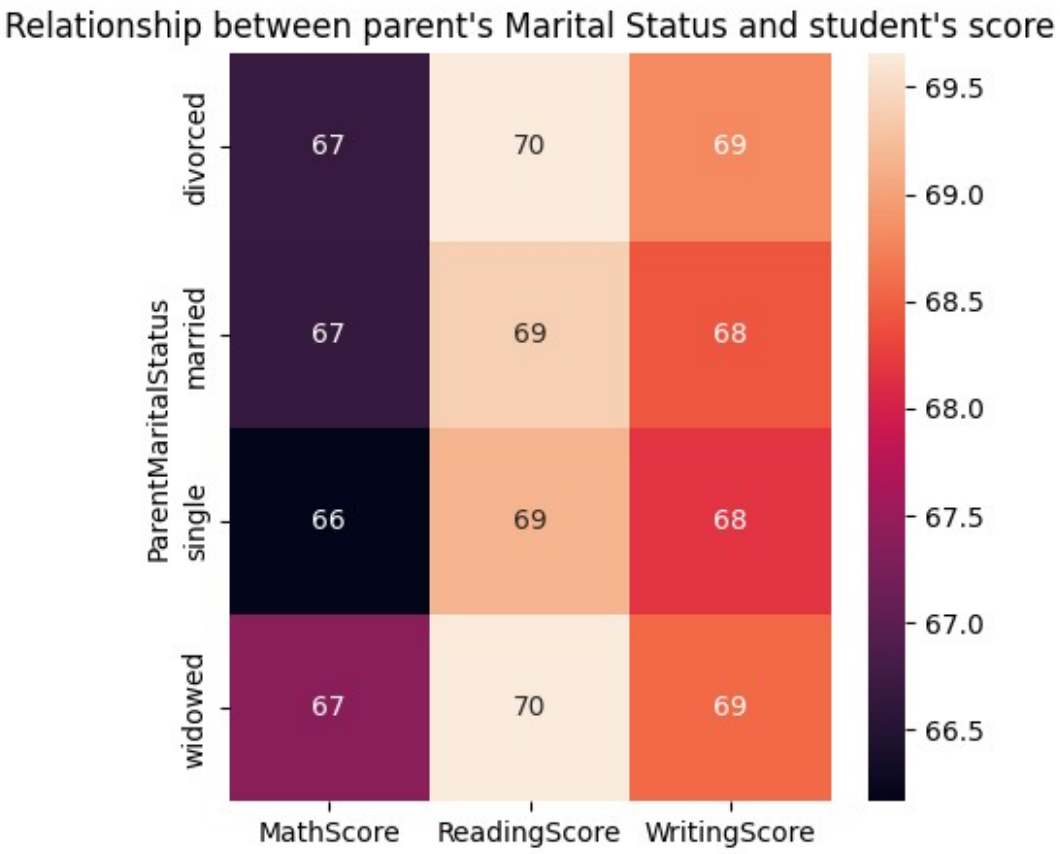


from the above chart we have concluded that use eduction of the parents have a good impact in this course

```
gb1 = dataset.groupby("ParentMaritalStatus").agg({"MathScore": "mean",
"ReadingScore": "mean", "WritingScore": "mean"})
gb1
```

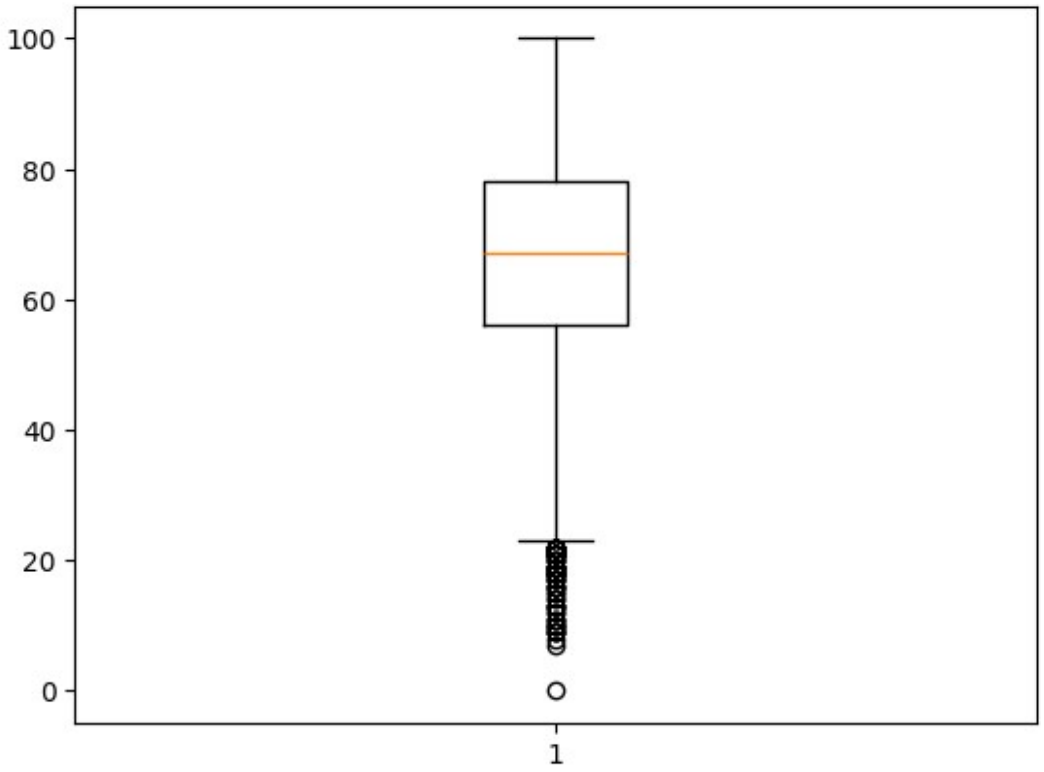

```
{"summary":"{\n  \"name\": \"gb1\",\n  \"rows\": 4,\n  \"fields\": [\n
{\n      \"column\": \"ParentMaritalStatus\",\n      \"properties\":
{\n        \"dtype\": \"string\",\n        \"num_unique_values\": 4,\n
\"samples\": [\n          \"married\",\n          \"widowed\",\n
\"divorced\"\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"MathScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 0.4943099533587517,\n        \"min\":
66.16570381851487,\n        \"max\": 67.3688663282572,\n
\"num_unique_values\": 4,\n        \"samples\": [\n
66.65732605081928,\n          67.3688663282572,\n
66.69119739784509\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"ReadingScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 0.2389221929621977,\n        \"min\":
69.15724954206003,\n        \"max\": 69.65501118113438,\n
\"num_unique_values\": 4,\n        \"samples\": [\n
69.38957492282118,\n          69.65143824027072,\n
69.65501118113438\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    },\n    {\n      \"column\":
\"WritingScore\",\n      \"properties\": {\n        \"dtype\":
\"number\",\n        \"std\": 0.2616023471332318,\n        \"min\":
68.17443990418487,\n        \"max\": 68.79914616792031,\n
\"num_unique_values\": 4,\n        \"samples\": [\n
68.42098076466398,\n          68.56345177664974,\n
68.79914616792031\n        ],\n        \"semantic_type\": \"\",\n
\"description\": \"\"\n      }\n    }\n  ]\
n}","type":"dataframe","variable_name":"gb1"}
```


```
plt.figure(figsize = (5, 5))
sns.heatmap(gb1, annot=True)
plt.title("Relationship between parent's Marital Status and student's
score")
plt.show()
```

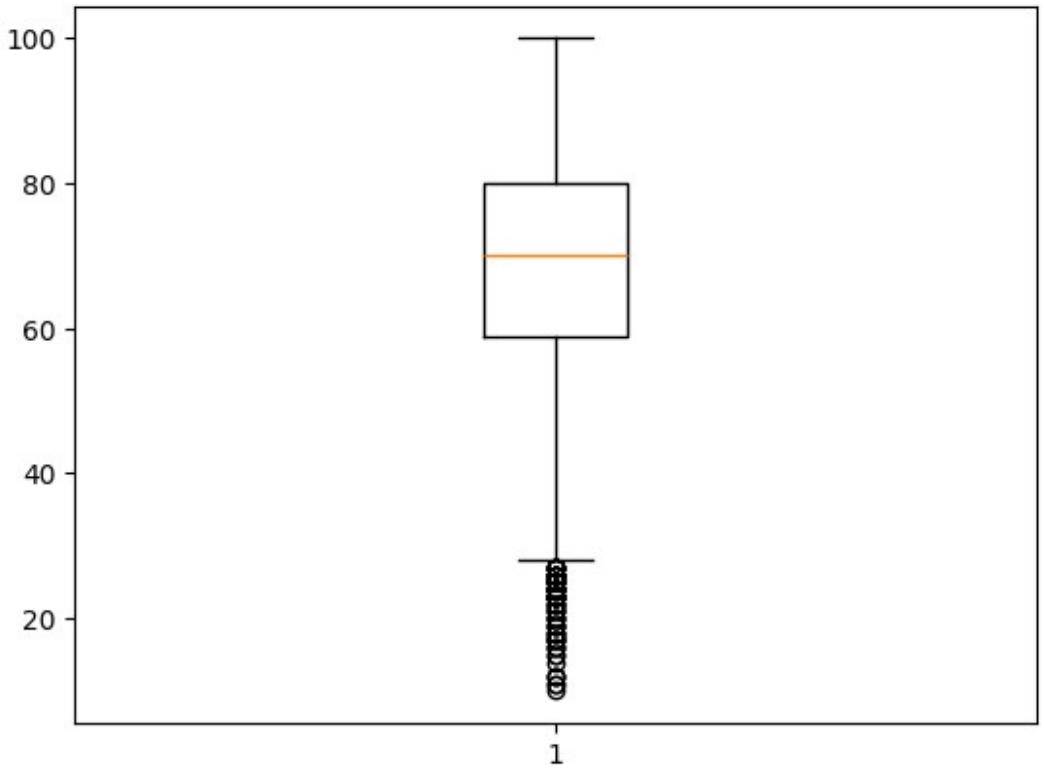


from the above chart we have concluded that there is no/negligible impact on the student's score due tp their parent's marital status

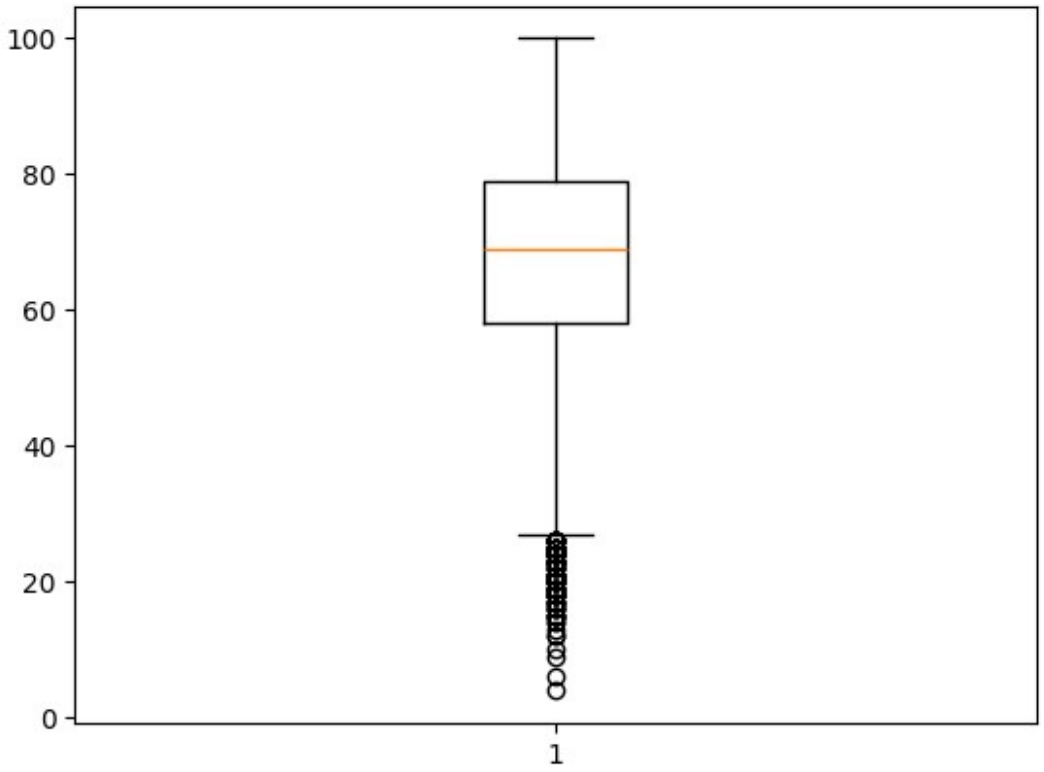
```
plt.boxplot(data = dataset, x = "MathScore")
plt.show()
```




```
plt.boxplot(data = dataset, x = "ReadingScore")
plt.show()
```




```
plt.boxplot(data = dataset, x = "WritingScore")
plt.show()
```

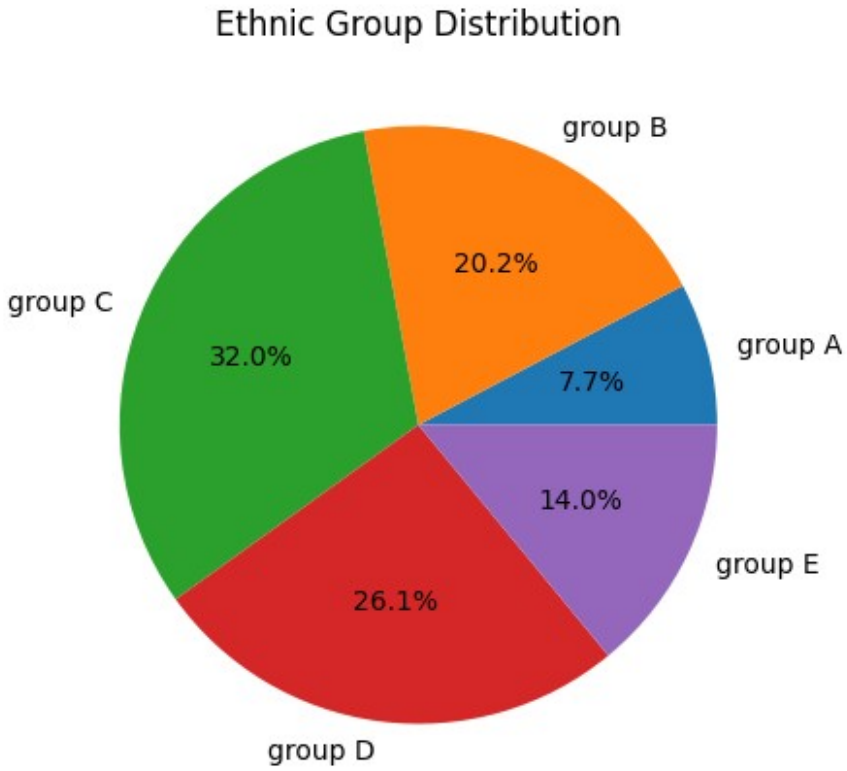



```
dataset['EthnicGroup'].unique()

array([nan, 'group C', 'group B', 'group A', 'group D', 'group E'],
      dtype=object)
```

Distribution of Ethnic Groups

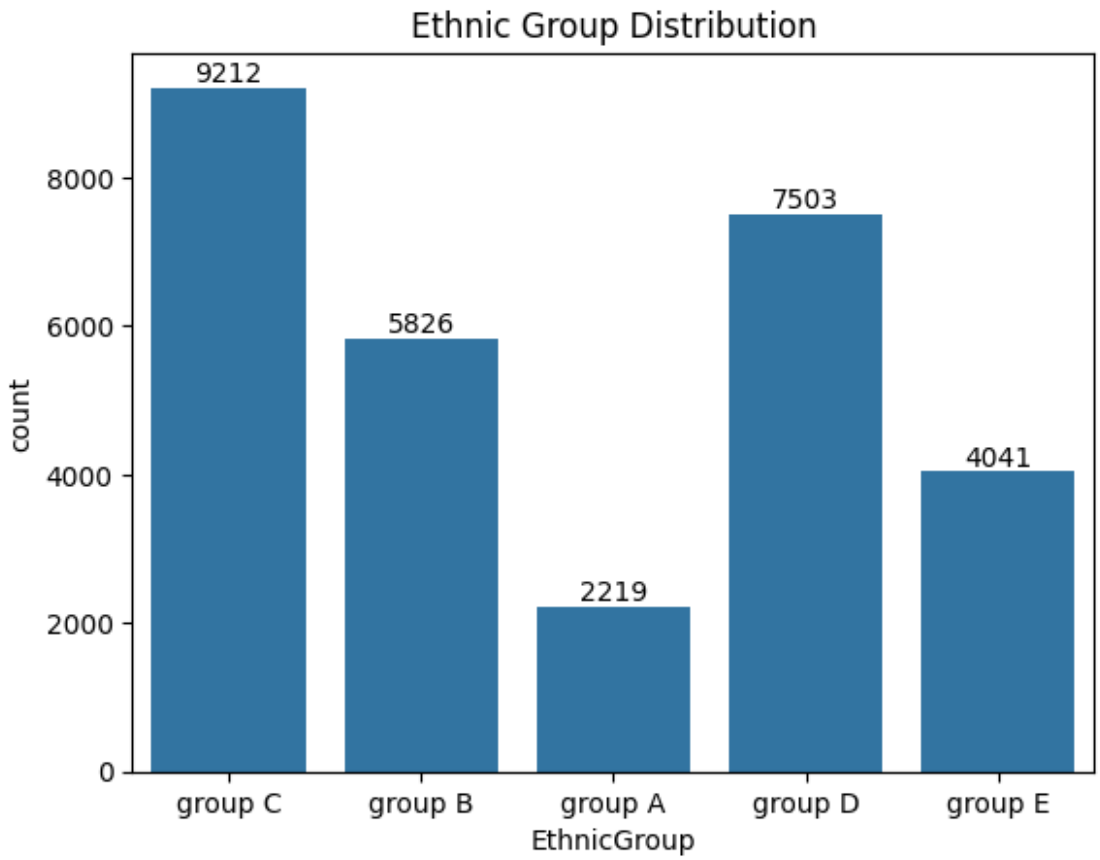
```
groupA = dataset.loc[dataset['EthnicGroup'] == 'group A'].count()
groupB = dataset.loc[dataset['EthnicGroup'] == 'group B'].count()
groupC = dataset.loc[dataset['EthnicGroup'] == 'group C'].count()
groupD = dataset.loc[dataset['EthnicGroup'] == 'group D'].count()
groupE = dataset.loc[dataset['EthnicGroup'] == 'group E'].count()

l = ['group A', 'group B', 'group C', 'group D', 'group E']
mylist =
[groupA["EthnicGroup"],groupB["EthnicGroup"],groupC["EthnicGroup"],gro
upD["EthnicGroup"],groupE["EthnicGroup"]]

print(mylist)
plt.figure(figsize = (5, 5))
plt.pie(mylist, labels = l, autopct = '%1.1f%%')
plt.title("Ethnic Group Distribution")
plt.show()
```

```
[np.int64(2219), np.int64(5826), np.int64(9212), np.int64(7503),
np.int64(4041)]
```




```
ax = sns.countplot(data = dataset, x = "EthnicGroup")
ax.bar_label(ax.containers[0])
plt.title("Ethnic Group Distribution")
plt
```

```
<module 'matplotlib.pyplot' from '/usr/local/lib/python3.11/dist-
packages/matplotlib/pyplot.py'>
```


Ethnic Group Distribution
9212
5826
2219
7503
4041
8000
6000
4000
2000
0
count
group C
group B
group A
group D
group E
EthnicGroup