Importing the file

```
from google.colab import files
uploaded = files.upload()
```

Choose Files Indian_Kids…n_Time.csv

Indian_Kids_Screen_Time.csv(text/csv) - 499126 bytes, last modified: 21/9/2025 - 100% done

```
Saving Indian_Kids_Screen_Time.csv to Indian_Kids_Screen_Time.csv
```

Load the dataset

Verified successful loading using df.head() and df.info().

```
from google.colab import files
uploaded = files.upload()
import pandas as pd

df = pd.read_csv(list(uploaded.keys())[0])
df.head()
```

Choose Files Indian_Kids…n_Time.csv

Indian_Kids_Screen_Time.csv(text/csv) - 499126 bytes, last modified: 21/9/2025 - 100% done

```
Saving Indian_Kids_Screen_Time.csv to Indian_Kids_Screen_Time (1).csv
```

	Age	Gender	Avg_Daily_Screen_Time_hr	Primary_Device	Exceeded_Recommended_Limit	Educational_to_Recreational_Ratio	Health_
0	14	Male	3.99	Smartphone	True	0.42	Poor Sle
1	11	Female	4.61	Laptop	True	0.30	Po
2	18	Female	3.73	TV	True	0.32	Po
3	15	Female	1.21	Laptop	False	0.39	

Next steps: Generate code with df New interactive sheet

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9712 entries, 0 to 9711
Data columns (total 8 columns):
 #   Column                             Non-Null Count  Dtype  
---  ------                             --------------  -----  
 0   Age                                9712 non-null   int64  
 1   Gender                             9712 non-null   object 
 2   Avg_Daily_Screen_Time_hr           9712 non-null   float64
 3   Primary_Device                     9712 non-null   object 
 4   Exceeded_Recommended_Limit         9712 non-null   bool   
 5   Educational_to_Recreational_Ratio  9712 non-null   float64
 6   Health_Impacts                     6494 non-null   object 
 7   Urban_or_Rural                     9712 non-null   object 
dtypes: bool(1), float64(2), int64(1), object(4)
memory usage: 540.7+ KB
```

Checking null values

Used df.isnull().sum() to identify missing values in each column.

Learned that handling null values is important before applying ML models.

```
df.isnull().sum()
```

	0
Age	0
Gender	0
Avg_Daily_Screen_Time_hr	0
Primary_Device	0
Exceeded_Recommended_Limit	0
Educational_to_Recreational_Ratio	0
Urban_or_Rural	0

dtype: int64

Checking duplicate rows

Used df.duplicated().sum() to find duplicate rows.

Understood that duplicates can lead to data bias and wrong model training.

```
df.duplicated().sum()
```

```
np.int64(44)
```

Correlation matrix

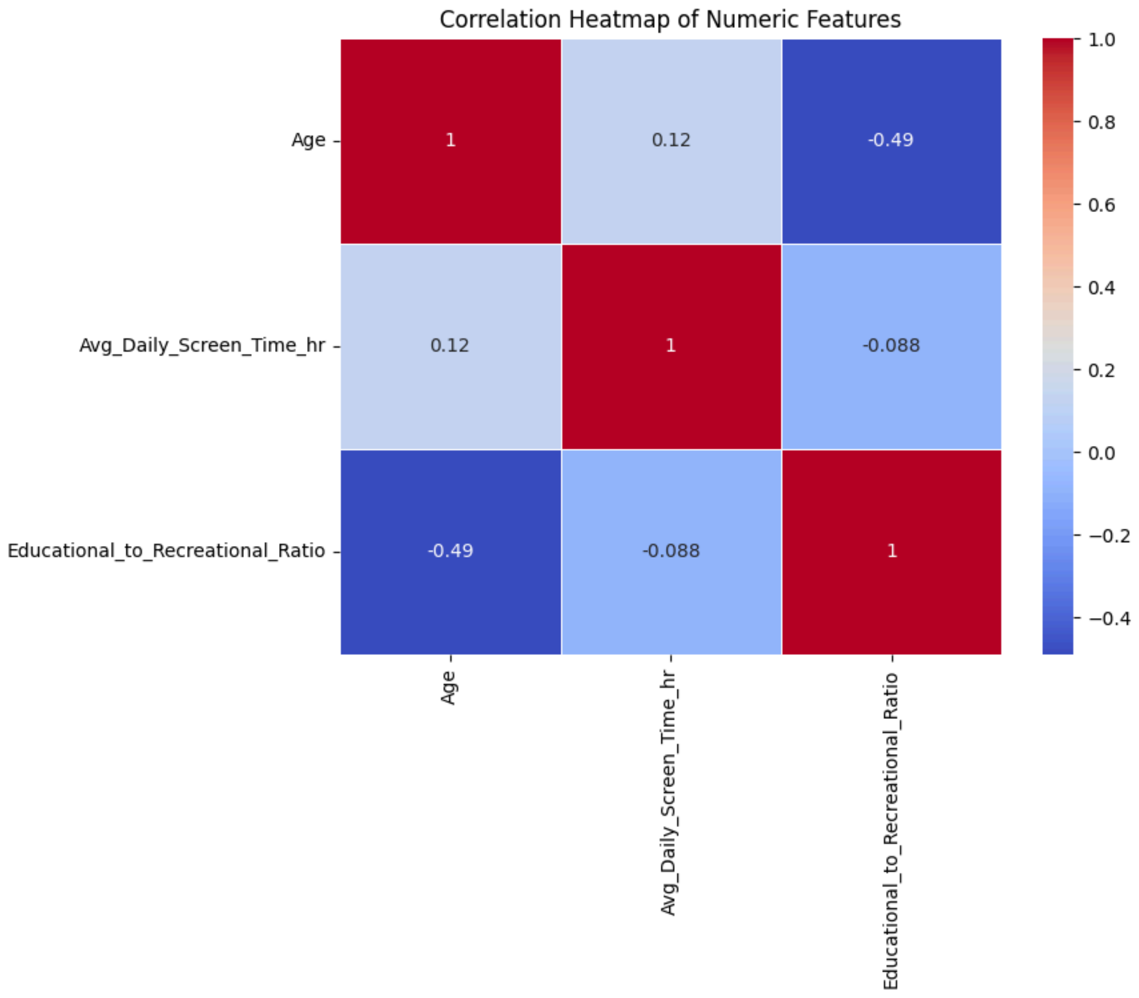
Applied df.corr() to see relationships between numerical features.

Positive correlation- one increases, the other also increases.

Negative correlation- one increases, the other decreases.

Helps in feature selection and reducing multicollinearity.

```
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
num_df = df.select_dtypes(include=[np.number])
corr_matrix = num_df.corr()
plt.figure(figsize=(8,6))
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm', linewidths=0.5)
plt.title("Correlation Heatmap of Numeric Features")
plt.show()
```



Columns datatypes

Confirmed data types with df.dtypes.

Important step because wrong datatypes (e.g., numbers stored as strings) affect analysis.

```
pd.DataFrame(df.dtypes, columns=['dtype']).reset_index().rename(columns={'index':'column'})
```

	column	dtype
0	Age	int64
1	Gender	object
2	Avg_Daily_Screen_Time_hr	float64
3	Primary_Device	object
4	Exceeded_Recommended_Limit	bool
5	Educational_to_Recreational_Ratio	float64
6	Health_Impacts	object
7	Urban_or_Rural	object

IQR

Applied Interquartile Range (IQR) method to detect outliers.

Formula:

Q1 = 25th percentile, Q3 = 75th percentile

IQR = Q3 − Q1

Outlier Range = [Q1 − 1.5IQR, Q3 + 1.5IQR]

```
numerical_data = df.select_dtypes(include='number')
Q1 = numerical_data.quantile(0.25)
Q3 = numerical_data.quantile(0.75)
IQR = Q3 - Q1
print("Q1:\n", Q1)
print("Q3:\n", Q3)
print("IQR:\n", IQR)
```

```
Q1:
 Age                                 10.00
Avg_Daily_Screen_Time_hr             3.41
Educational_to_Recreational_Ratio    0.37
Name: 0.25, dtype: float64
Q3:
 Age                                 16.00
Avg_Daily_Screen_Time_hr             5.38
Educational_to_Recreational_Ratio    0.48
Name: 0.75, dtype: float64
IQR:
 Age                                 6.00
Avg_Daily_Screen_Time_hr            1.97
Educational_to_Recreational_Ratio   0.11
dtype: float64
```

OBSERVATIONS

The dataset has 9712 rows and 8 columns.

The Health_Impacts column has missing values.

Other columns are complete with no missing data.

There are 44 duplicate rows in the dataset.

Outliers are detected using the IQR method in numeric columns.

Some values of Screen Time and Educational to Recreational Ratio may be outliers.

Before modeling, we need to handle missing values, remove duplicates, and manage outliers.