

Fitness Consumer Analysis with Python

Problem Statement Embark on a captivating data-driven journey exploring the profound impact of fitness wearables on consumer behavior. This project, conducted through a comprehensive survey with 30 participants, meticulously examines 21 insightful questions, capturing the essence of users' experiences with wearable technology in the realm of fitness. Delving into educational backgrounds, occupational landscapes, exercise frequencies, and the duration of wearable adoption, the dataset promises to unveil correlations and trends. Using Python within Jupyter Notebooks, this exploration employs Pandas, Matplotlib, and Seaborn to craft visualizations that bring to life the nuanced connections between technology and fitness. From the motivational influence of wearables to their role in decision-making regarding exercise, product purchases, and dietary changes, each facet is meticulously examined. Join this expedition into the fusion of technology and well-being, allowing the visualizations to narrate compelling stories hidden within the data.

Import Library

```
In [1]: import pandas as pd
```

```
In [2]: import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import seaborn as sns
```

```
C:\Users\Syed Arif\anaconda3\lib\site-packages\scipy\__init__.py:146: UserWarning: A NumPy version >=1.16.5 and <1.23.0 is required for this version of SciPy (detected version 1.25.1
  warnings.warn(f"A NumPy version >={np_minversion} and <{np_maxversion}")
```

Uploading Csv file

```
In [3]: df = pd.read_csv(r"C:\Users\Syed Arif\Desktop\Fitness Consumer.csv")
```

Data Preprocessing

.head()

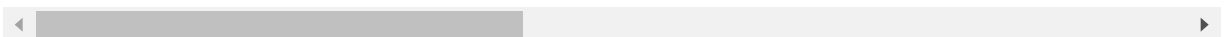
head is used show to the By default = 5 rows in the dataset

```
In [4]: df.head()
```

```
Out[4]:
```

	Timestamp	What is your age?	What is your gender?	What is your highest level of education?	What is your current occupation?	How often do you exercise in a week?	How long have you been using a fitness wearable?	How frequently do you use your fitness wearable?	How often do you track your fitness?
0	2023/03/30 9:43:19 PM GMT+5:30	18-24	Male	Some college or associate degree	Student	5 or more times a week	Less than 6 months	Daily	Every
1	2023/03/31 5:07:46 PM GMT+5:30	Under 18	Male	Bachelor's degree	Student	5 or more times a week	Less than 6 months	3-4 times a week	Once a week
2	2023/03/31 7:44:46 PM GMT+5:30	18-24	Female	Bachelor's degree	Student	Less than once a week	Less than 6 months	Rarely	Rarely
3	2023/03/31 9:36:07 PM GMT+5:30	25-34	Female	Some college or associate degree	Employed part-time	3-4 times a week	6-12 months	3-4 times a week	Every
4	2023/03/31 9:37:32 PM GMT+5:30	18-24	Male	Bachelor's degree	Student	1-2 times a week	Less than 6 months	Daily	Every other

5 rows × 22 columns



.tail()

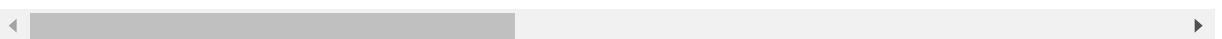
tail is used to show rows by Descending order

```
In [5]: df.tail()
```

```
Out[5]:
```

	Timestamp	What is your age?	What is your gender?	What is your highest level of education?	What is your current occupation?	How often do you exercise in a week?	How long have you been using a fitness wearable?	How frequently do you use your fitness wearable?	How often do you use your fitness wearable?
25	2023/04/07 12:22:25 PM GMT+5:30	Under 18	Female	Master's degree	Employed part-time	3-4 times a week	6-12 months	1-2 times a week	Once a week
26	2023/04/07 12:23:16 PM GMT+5:30	35-44	Female	Doctorate or professional degree	Self-employed	3-4 times a week	6-12 months	3-4 times a week	Every other day
27	2023/04/07 12:23:59 PM GMT+5:30	Under 18	Male	High school diploma	Student	5 or more times a week	More than 2 years	Daily	Every day
28	2023/04/07 12:25:16 PM GMT+5:30	18-24	Male	Less than high school	Employed full-time	1-2 times a week	Less than 6 months	Rarely	Every other day
29	2023/04/07 12:26:47 PM GMT+5:30	Under 18	Male	High school diploma	Student	1-2 times a week	1-2 years	1-2 times a week	Every other day

5 rows × 22 columns



.shape

It show the total no of rows & Column in the dataset

```
In [6]: df.shape
```

```
Out[6]: (30, 22)
```

.Columns

It show the no of each Column

```
In [7]: df.columns
```

```
Out[7]: Index(['Timestamp', 'What is your age?', 'What is your gender?',  
              'What is your highest level of education?',  
              'What is your current occupation?',  
              'How often do you exercise in a week?',  
              'How long have you been using a fitness wearable?',  
              'How frequently do you use your fitness wearable?',  
              'How often do you track fitness data using wearable?',  
              'How has the fitness wearable impacted your fitness routine?',  
              'Has the fitness wearable helped you stay motivated to exercise?',  
              'Do you think that the fitness wearable has made exercising more enjoy  
able?',  
              'How engaged do you feel with your fitness wearable?',  
              'Does using a fitness wearable make you feel more connected to the fit  
ness community?',  
              'How has the fitness wearable helped you achieve your fitness goals?',  
              'How has the fitness wearable impacted your overall health?',  
              'Has the fitness wearable improved your sleep patterns?',  
              'Do you feel that the fitness wearable has improved your overall well-  
being?',  
              'Has using a fitness wearable influenced your decision? [To exercise m  
ore?]',  
              'Has using a fitness wearable influenced your decision? [To purchase o  
ther fitness-related products?]',  
              'Has using a fitness wearable influenced your decision? [To join a gym  
or fitness class?]',  
              'Has using a fitness wearable influenced your decision? [To change you  
r diet?]' ],  
             dtype='object')
```

.dtypes

This Attribute show the data type of each column

```
In [8]: df.dtypes
```

```
Out[8]: Timestamp
object
What is your age?
object
What is your gender?
object
What is your highest level of education?
object
What is your current occupation?
object
How often do you exercise in a week?
object
How long have you been using a fitness wearable?
object
How frequently do you use your fitness wearable?
object
How often do you track fitness data using wearable?
object
How has the fitness wearable impacted your fitness routine?
object
Has the fitness wearable helped you stay motivated to exercise?
object
Do you think that the fitness wearable has made exercising more enjoyable?
object
How engaged do you feel with your fitness wearable?
object
Does using a fitness wearable make you feel more connected to the fitness community?
object
How has the fitness wearable helped you achieve your fitness goals?
object
How has the fitness wearable impacted your overall health?
object
Has the fitness wearable improved your sleep patterns?
object
Do you feel that the fitness wearable has improved your overall well-being?
object
Has using a fitness wearable influenced your decision? [To exercise more?]
object
Has using a fitness wearable influenced your decision? [To purchase other fitness-related products?]
object
Has using a fitness wearable influenced your decision? [To join a gym or fitness class?]
object
Has using a fitness wearable influenced your decision? [To change your diet?]
object
dtype: object
```

.unique()

In a column, It show the unique value of specific column.

```
In [9]: df["What is your gender?"].unique()
```

```
Out[9]: array(['Male', 'Female', 'Prefer not to say'], dtype=object)
```

.nuique()

It will show the total no of unque value from whole data frame

```
In [10]: df.nunique()
```

```
Out[10]: Timestamp
30
What is your age?
6
What is your gender?
3
What is your highest level of education?
6
What is your current occupation?
6
How often do you exercise in a week?
4
How long have you been using a fitness wearable?
4
How frequently do you use your fitness wearable?
4
How often do you track fitness data using wearable?
5
How has the fitness wearable impacted your fitness routine?
4
Has the fitness wearable helped you stay motivated to exercise?
4
Do you think that the fitness wearable has made exercising more enjoyable?
4
How engaged do you feel with your fitness wearable?
4
Does using a fitness wearable make you feel more connected to the fitness community?
3
How has the fitness wearable helped you achieve your fitness goals?
3
How has the fitness wearable impacted your overall health?
4
Has the fitness wearable improved your sleep patterns?
4
Do you feel that the fitness wearable has improved your overall well-being?
4
Has using a fitness wearable influenced your decision? [To exercise more?]
3
Has using a fitness wearable influenced your decision? [To purchase other fitness-related products?]
4
Has using a fitness wearable influenced your decision? [To join a gym or fitness class?]
3
Has using a fitness wearable influenced your decision? [To change your diet?]
3
dtype: int64
```

.describe()

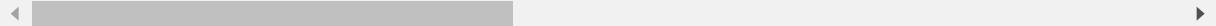
It show the Count, mean , median etc

```
In [11]: df.describe()
```

```
Out[11]:
```

	Timestamp	What is your age?	What is your gender?	What is your highest level of education?	What is your current occupation?	How often do you exercise in a week?	How long have you been using a fitness wearable?	How frequently do you use your fitness wearable?	H
count	30	30	30	30	30	30	30	30	
unique	30	6	3	6	6	4	4	4	
top	2023/03/30 9:43:19 PM GMT+5:30	18-24	Female	Bachelor's degree	Student	3-4 times a week	Less than 6 months	3-4 times a week	E
freq	1	10	15	8	9	9	13	11	

4 rows × 22 columns



.value_counts

It Shows all the unique values with their count

```
In [12]: df["What is your gender?"].value_counts()
```

```
Out[12]: Female          15
Male          13
Prefer not to say      2
Name: What is your gender?, dtype: int64
```

.isnull()

It shows the how many null values


```
In [13]: df.isnull()
```

Out[13]:

[illegible]

30 rows × 22 columns

```
In [14]: sns.heatmap(df.isnull())
```

```
Out[14]: <AxesSubplot:>
```



```
In [15]: # Renaming columns to short and simple name
short_column_name = {'What is your age?' : 'age',
                     'What is your gender?' : 'Gender',
                     'What is your highest level of education?' : 'Education',
                     'What is your current occupation?' : 'Occupation',
                     'How often do you exercise in a week?' : 'Exercise_in_week',
                     'How long have you been using a fitness wearable?' : 'Ftns_Using_durati',
                     'How frequently do you use your fitness wearable?' : 'Frequency_Ftns_U',
                     'How often do you track fitness data using wearable?' : 'Tracking_Ftns_C',
                     'How has the fitness wearable impacted your fitness routine?' : 'Impact_F',
                     'Has the fitness wearable helped you stay motivated to exercise?' : 'Mot',
                     'Do you think that the fitness wearable has made exercising',
                     'How engaged do you feel with your fitness wearable?' : 'Engagement_Ft',
                     'Does using a fitness wearable make you feel more connected to the fitne',
                     'How has the fitness wearable helped you achieve your fitness goals?' : ,
                     'How has the fitness wearable impacted your overall health?' : 'In',
                     'Has the fitness wearable improved your sleep patterns?' : 'Improv',
                     'Do you feel that the fitness wearable has improved your overall well-be',
                     'Has using a fitness wearable influenced your decision? [To purchase oth',
                     'Has using a fitness wearable influenced your decision? [To join a gym o',
                     'Has using a fitness wearable influenced your decision? [To change your',

df.rename(columns = short_column_name, inplace = True)
```

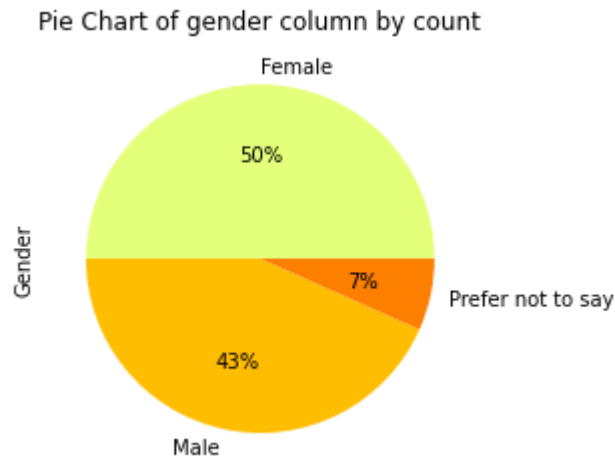
```
In [16]: df.head()
```

```
Out[16]:
```

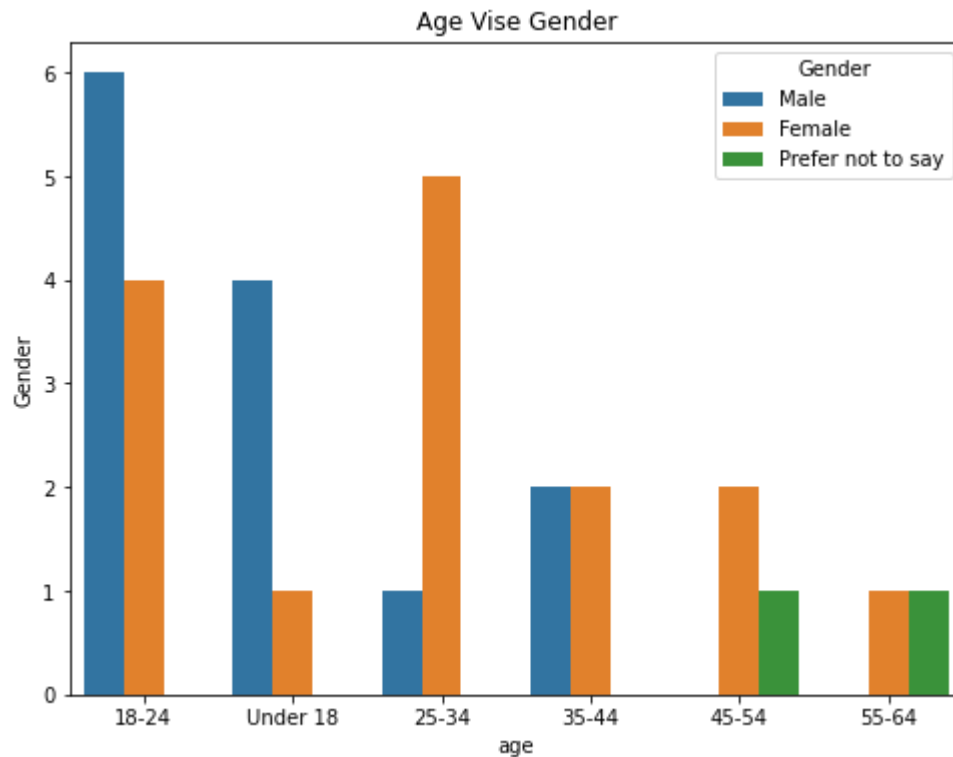
proved_sleep_pattern	Overall_impact_well_being	Influenced_to_exercise	Influenced_to_purchase_FTN
Agree	Neutral	Strongly agree	
Agree	Strongly agree	Agree	
Strongly agree	Strongly agree	Agree	
Agree	Strongly agree	Agree	
Agree	Strongly agree	Agree	

```
In [18]: df['Gender'].value_counts().plot(kind = 'pie' , title = 'Pie Chart of gender co
        autopct="%.0f%%", colormap='Wistia')
```

```
Out[18]: <AxesSubplot:title={'center':'Pie Chart of gender column by count'}, ylabel
        ='Gender'>
```

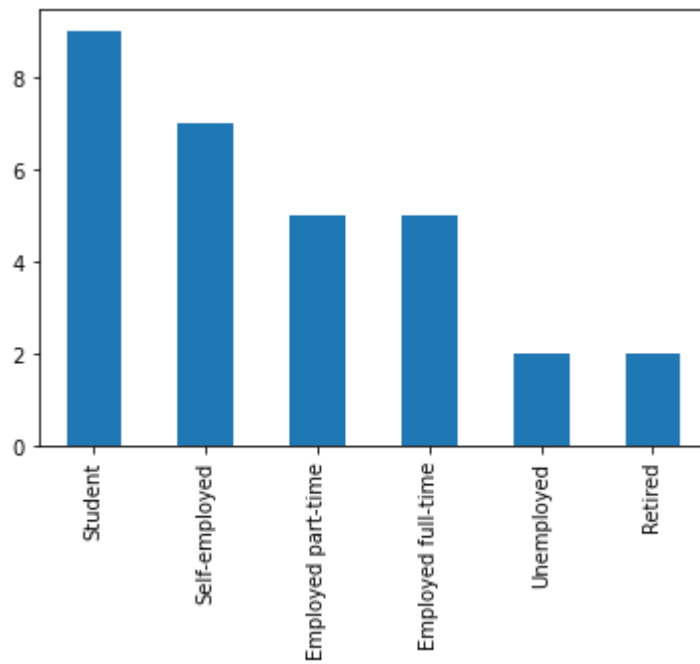


```
In [21]: plt.figure(figsize=(8, 6))
sns.countplot(data=df, x='age', hue='Gender')
plt.xlabel('age')
plt.ylabel('Gender')
plt.title('Age Vise Gender')
plt.show()
```



```
In [27]: df['Occupation'].value_counts().plot(kind='bar')
```

```
Out[27]: <AxesSubplot:>
```

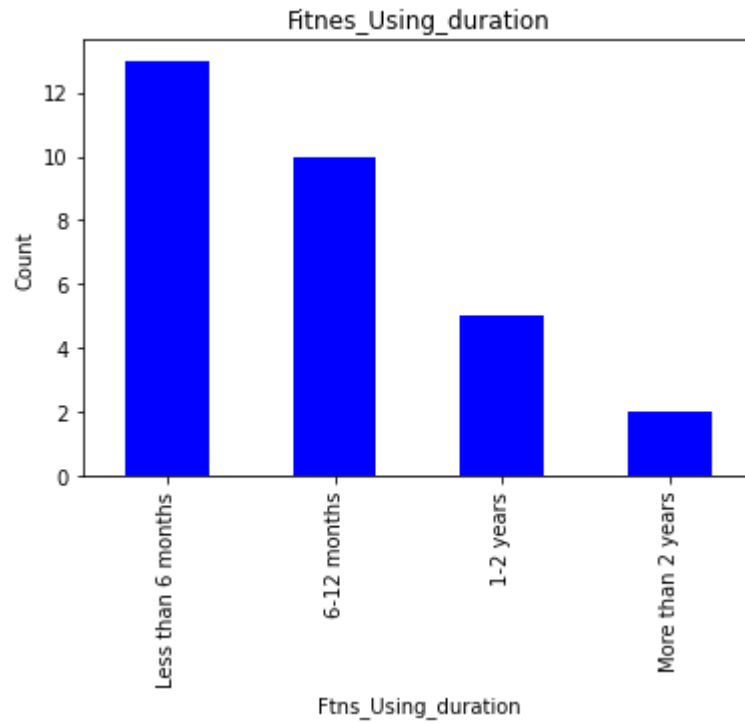


```
In [29]: plt.figure(figsize=(8, 6))
sns.countplot(data=df, x='Gender', hue = "Occupation")
plt.xlabel('Gender')
plt.ylabel('Occupation')
plt.title('Gender Vise Occupation')
plt.show()
```



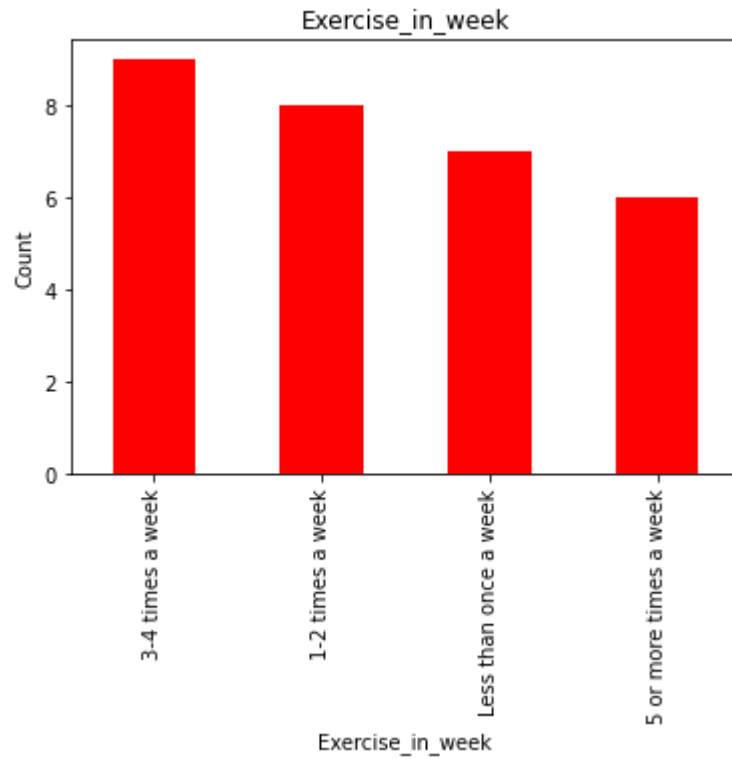
```
In [32]: usage_duration = df['Ftns_Using_duration'].value_counts()
usage_duration.plot(kind='bar', color='blue')
plt.xlabel('Ftns_Using_duration')
plt.ylabel('Count')
plt.title('Fitnes_Using_duration')
```

```
Out[32]: Text(0.5, 1.0, 'Fitnes_Using_duration')
```



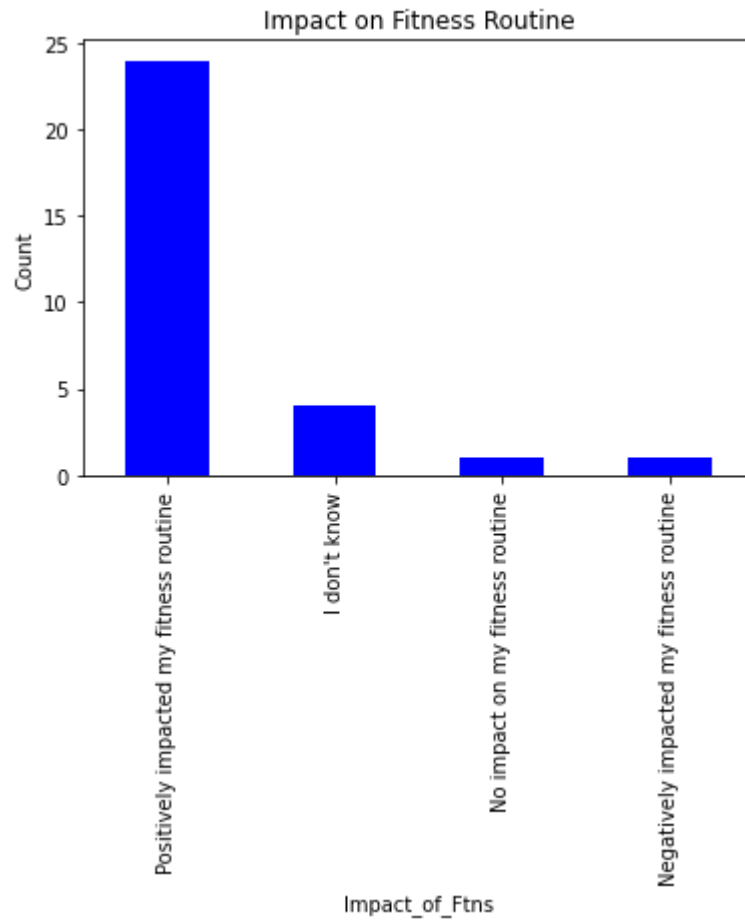
```
In [33]: usage_duration = df['Exercise_in_week'].value_counts()
usage_duration.plot(kind='bar', color='red')
plt.xlabel('Exercise_in_week')
plt.ylabel('Count')
plt.title('Exercise_in_week')
```

```
Out[33]: Text(0.5, 1.0, 'Exercise_in_week')
```



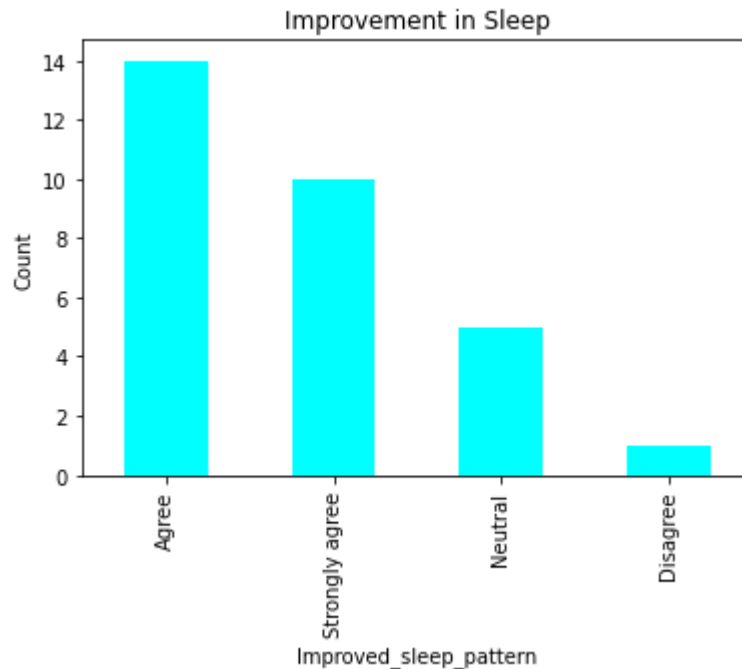

```
In [35]: fitness_routine = df['Impact_of_Ftns'].value_counts()
fitness_routine.plot(kind='bar', color='blue')
plt.xlabel('Impact_of_Ftns')
plt.ylabel('Count')
plt.title('Impact on Fitness Routine')
```

```
Out[35]: Text(0.5, 1.0, 'Impact on Fitness Routine')
```



```
In [38]: sleep = df['Improved_sleep_pattern'].value_counts()
sleep.plot(kind='bar', color='cyan')
plt.xlabel('Improved_sleep_pattern')
plt.ylabel('Count')
plt.title('Improvement in Sleep')
```

```
Out[38]: Text(0.5, 1.0, 'Improvement in Sleep')
```



```
In [44]: df['Overall_impact_well_being'].value_counts().plot(kind = 'pie' , title = 'Pie
                                                autopct="%.0f%%", colormap='nipy_spectral_r')
```

```
Out[44]: <AxesSubplot:title={'center':'Pie Chart of Overall impact well being'}, ylabel='Overall_impact_well_being'>
```

