```
# This Python 3 environment comes with many helpful analytics libraries installed
# It is defined by the kaggle/python Docker image: https://github.com/kaggle/docker-python
# For example, here's several helpful packages to load

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)

# Input data files are available in the read-only "../input/" directory
# For example, running this (by clicking run or pressing Shift+Enter) will list all files under the input directory

import os
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))

# You can write up to 20GB to the current directory (/kaggle/working/) that gets preserved as output when you create a version using "Save & Run All"
# You can also write temporary files to /kaggle/temp/, but they won't be saved outside of the current session
```

```
/kaggle/input/global-mental-health-and-lifestyle-survey-dataset/mental_health.csv
```

```
df = pd.read_csv('/kaggle/input/global-mental-health-and-lifestyle-survey-dataset/mental_health.csv')

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

from IPython.display import display, HTML

display(HTML("""
<a id="2"></a>

<h1 style="
  background-color:#2ec4c6;
  font-family:'Times New Roman', Georgia, serif;
  color:#0f172a;
  font-size:2.2rem;
  text-align:center;
  border-radius:18px;
  padding:18px;
">
  Analysis of Global Mental Health Dataset
```

```
</h1>
"""))
```

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

```
import pandas as pd

df.head()
df.columns
```

```
Index(['Age', 'Gender', 'Country', 'Education', 'Marital_Status',
       'Income_Level', 'Employment_Status', 'Work_Hours_Per_Week',
       'Remote_Work', 'Job_Satisfaction', 'Work_Stress_Level',
       'Work_Life_Balance', 'Ever_Bullied_At_Work',
       'Company_Mental_Health_Support', 'Exercise_Per_Week',
       'Sleep_Hours_Night', 'Caffeine_Drinks_Day',
'Alcohol_Frequency',
       'Smoking', 'Screen_Time_Hours_Day', 'Social_Media_Hours_Day',
       'Hobby_Time_Hours_Week', 'Diet_Quality', 'Financial_Stress',
       'Feeling_Sad_Down', 'Loss_Of_Interest', 'Sleep_Trouble',
'Fatigue',
       'Poor_Appetite_Or_Overeating', 'Feeling_Worthless',
       'Concentration_Difficulty', 'Anxious_Nervous', 'Panic_Attacks',
       'Mood_Swings', 'Irritability', 'Obsessive_Thoughts',
       'Compulsive_Behavior', 'Self_Harm_Thoughts',
'Suicidal_Thoughts',
       'Family_History_Mental_Illness', 'Previously_Diagnosed',
       'Ever_Sought_Treatment', 'On_Therapy_Now', 'On_Medication',
       'Trauma_History', 'Social_Support', 'Close_Friends_Count',
       'Feel_Understood', 'Loneliness', 'Discuss_Mental_Health',
       'Has_Mental_Health_Issue'],
      dtype='object')
```

```
df = pd.read_csv("/kaggle/input/global-mental-health-and-lifestyle-
survey-dataset/mental_health.csv")
df.head()
```

```
   Age  Gender  Country     Education Marital_Status Income_Level  \
0   40    Male      USA  Some College         Single       Middle
1   33    Male    India      Bachelor        Married       Middle
2   42    Male    Other   High School         Single          Low
3   53    Male  Germany      Bachelor         Single       Middle
4   32  Female    India      Bachelor         Single         High

  Employment_Status  Work_Hours_Per_Week Remote_Work  Job_Satisfaction
...  \
0         Full-time                   27          No                 6
...
1       Unemployed                    47          No                 6
...
2         Full-time                   53          No                 1
```

```
...
3       Unemployed                   42          No                  10
...
4          Student                   13          No                   4
...

   Ever_Sought_Treatment  On_Therapy_Now  On_Medication Trauma_History
\
0                      1               0              0              0

1                      0               0              0              0

2                      1               0              0              1

3                      0               1              0              0

4                      0               0              0              0


  Social_Support  Close_Friends_Count  Feel_Understood Loneliness  \
0              9                    3                4          6
1              3                    2                7          7
2              5                    3                6          9
3              1                    3               10          5
4              1                    5                1          6

  Discuss_Mental_Health  Has_Mental_Health_Issue
0             Sometimes                       1
1             Sometimes                       1
2             Sometimes                       1
3                 Never                       1
4             Sometimes                       1

[5 rows x 51 columns]
```

```
df.describe(include='all').T
```

```
                                 count unique        top  freq
mean  \
Age                            10000.0    NaN        NaN   NaN
34.9479
Gender                           10000      4     Female  4892
NaN
Country                          10000      6        USA  2519
NaN
Education                        10000      5   Bachelor  3493
NaN
Marital_Status                   10000      4     Single  4523
NaN
Income_Level                     10000      3     Middle  5059
NaN
```

Employment_Status	10000	5	Full-time	4473	NaN	
Work_Hours_Per_Week	10000.0	NaN	NaN	NaN	39.6579	
Remote_Work	10000	3	No	4958	NaN	
Job_Satisfaction	10000.0	NaN	NaN	NaN	5.5027	
Work_Stress_Level	10000.0	NaN	NaN	NaN	5.4939	
Work_Life_Balance	10000.0	NaN	NaN	NaN	5.4894	
Ever_Bullied_At_Work	10000.0	NaN	NaN	NaN	0.2474	
Company_Mental_Health_Support	10000	3	No	5526	NaN	
Exercise_Per_Week	10000	4	1-2 times	3493	NaN	
Sleep_Hours_Night	10000.0	NaN	NaN	NaN	6.81545	
Caffeine_Drinks_Day	10000.0	NaN	NaN	NaN	2.0233	
Alcohol_Frequency	10000	4	Rarely	3984	NaN	
Smoking	10000	3	Never	5934	NaN	
Screen_Time_Hours_Day	10000.0	NaN	NaN	NaN	7.06459	
Social_Media_Hours_Day	10000.0	NaN	NaN	NaN	3.14181	
Hobby_Time_Hours_Week	10000.0	NaN	NaN	NaN	4.7803	
Diet_Quality	10000	4	Average	4060	NaN	
Financial_Stress	10000.0	NaN	NaN	NaN	5.4826	
Feeling_Sad_Down	10000.0	NaN	NaN	NaN	4.9896	
Loss_Of_Interest	10000.0	NaN	NaN	NaN	5.0182	
Sleep_Trouble	10000.0	NaN	NaN	NaN	5.0008	
Fatigue	10000.0	NaN	NaN	NaN	5.0033	
Poor_Appetite_Or_Overeating	10000.0	NaN	NaN	NaN	4.9684	
Feeling_Worthless	10000.0	NaN	NaN	NaN	4.9842	
Concentration_Difficulty	10000.0	NaN	NaN	NaN		

```
4.951
Anxious_Nervous                  10000.0    NaN        NaN   NaN
4.9874
Panic_Attacks                    10000.0    NaN        NaN   NaN
0.5469
Mood_Swings                      10000.0    NaN        NaN   NaN
5.0421
Irritability                     10000.0    NaN        NaN   NaN
5.0322
Obsessive_Thoughts               10000.0    NaN        NaN   NaN
4.9422
Compulsive_Behavior              10000.0    NaN        NaN   NaN
4.9599
Self_Harm_Thoughts               10000.0    NaN        NaN   NaN
0.0781
Suicidal_Thoughts                10000.0    NaN        NaN   NaN
0.0952
Family_History_Mental_Illness    10000.0    NaN        NaN   NaN
0.3044
Previously_Diagnosed             10000.0    NaN        NaN   NaN
0.248
Ever_Sought_Treatment            10000.0    NaN        NaN   NaN
0.3622
On_Therapy_Now                   10000.0    NaN        NaN   NaN
0.191
On_Medication                    10000.0    NaN        NaN   NaN
0.1843
Trauma_History                   10000.0    NaN        NaN   NaN
0.2506
Social_Support                   10000.0    NaN        NaN   NaN
5.4597
Close_Friends_Count              10000.0    NaN        NaN   NaN
4.0193
Feel_Understood                  10000.0    NaN        NaN   NaN
5.4697
Loneliness                       10000.0    NaN        NaN   NaN
5.4497
Discuss_Mental_Health              10000      4  Sometimes  3574
NaN
Has_Mental_Health_Issue          10000.0    NaN        NaN   NaN
0.9216

                                      std   min   25%   50%   75%   max

Age                               11.15639  18.0  26.0  34.0  43.0  75.0

Gender                                 NaN   NaN   NaN   NaN   NaN   NaN

Country                                NaN   NaN   NaN   NaN   NaN   NaN
```

Education	NaN	NaN	NaN	NaN	NaN	NaN
Marital_Status	NaN	NaN	NaN	NaN	NaN	NaN
Income_Level	NaN	NaN	NaN	NaN	NaN	NaN
Employment_Status	NaN	NaN	NaN	NaN	NaN	NaN
Work_Hours_Per_Week	10.016711	0.0	33.0	40.0	46.0	74.0
Remote_Work	NaN	NaN	NaN	NaN	NaN	NaN
Job_Satisfaction	2.884341	1.0	3.0	6.0	8.0	10.0
Work_Stress_Level	2.88163	1.0	3.0	6.0	8.0	10.0
Work_Life_Balance	2.875572	1.0	3.0	5.0	8.0	10.0
Ever_Bullied_At_Work	0.431523	0.0	0.0	0.0	0.0	1.0
Company_Mental_Health_Support	NaN	NaN	NaN	NaN	NaN	NaN
Exercise_Per_Week	NaN	NaN	NaN	NaN	NaN	NaN
Sleep_Hours_Night	1.377975	3.0	5.9	6.8	7.7	11.0
Caffeine_Drinks_Day	1.427432	0.0	1.0	2.0	3.0	8.0
Alcohol_Frequency	NaN	NaN	NaN	NaN	NaN	NaN
Smoking	NaN	NaN	NaN	NaN	NaN	NaN
Screen_Time_Hours_Day	2.955874	1.0	5.0	7.0	9.1	16.0
Social_Media_Hours_Day	2.254204	0.0	1.3	3.0	4.7	12.0
Hobby_Time_Hours_Week	3.563552	0.0	2.0	5.0	7.0	19.0
Diet_Quality	NaN	NaN	NaN	NaN	NaN	NaN
Financial_Stress	2.886231	1.0	3.0	5.0	8.0	10.0
Feeling_Sad_Down	3.156468	0.0	2.0	5.0	8.0	10.0
Loss_Of_Interest	3.148342	0.0	2.0	5.0	8.0	10.0
Sleep_Trouble	3.164459	0.0	2.0	5.0	8.0	10.0
Fatigue	3.133189	0.0	2.0	5.0	8.0	10.0
Poor_Appetite_Or_Overeating	3.150967	0.0	2.0	5.0	8.0	10.0

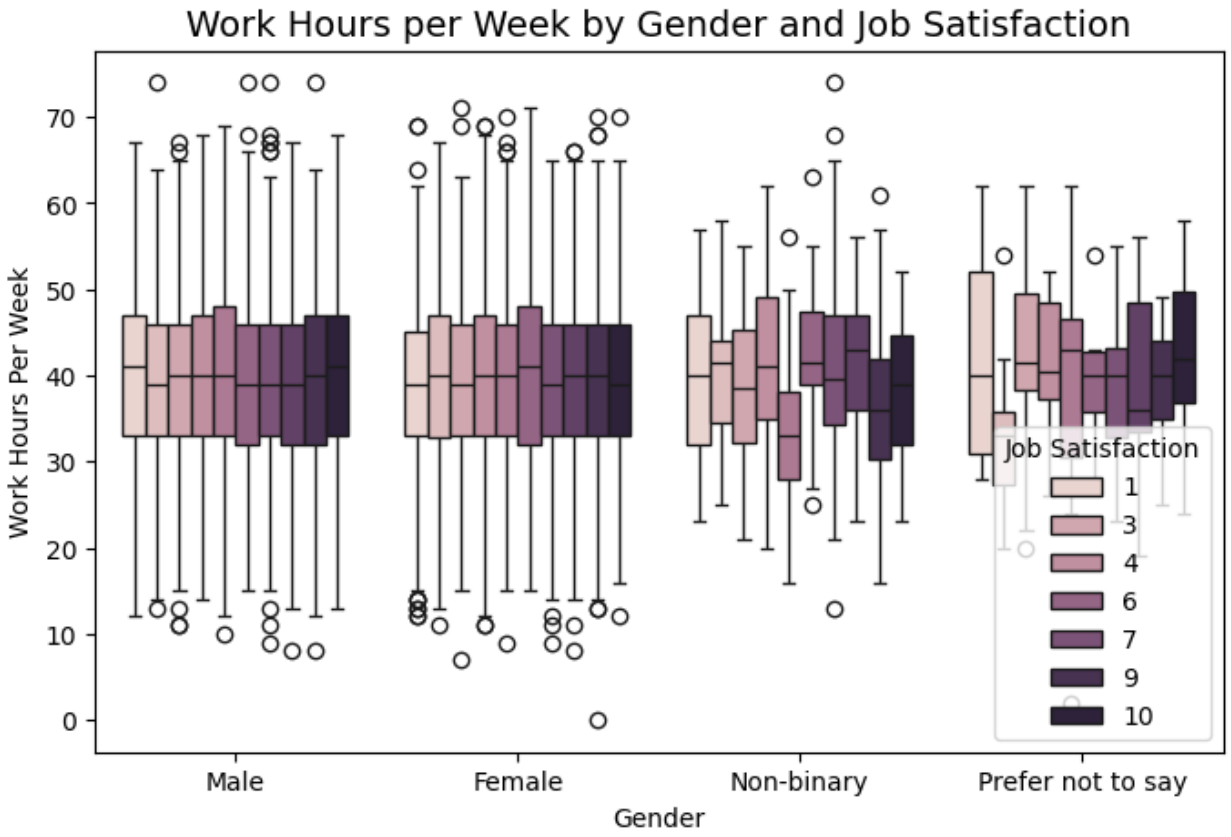
Feeling_Worthless	3.171207	0.0	2.0	5.0	8.0	10.0
Concentration_Difficulty	3.155376	0.0	2.0	5.0	8.0	10.0
Anxious_Nervous	3.156111	0.0	2.0	5.0	8.0	10.0
Panic_Attacks	0.980967	0.0	0.0	0.0	1.0	4.0
Mood_Swings	3.165964	0.0	2.0	5.0	8.0	10.0
Irritability	3.147055	0.0	2.0	5.0	8.0	10.0
Obsessive_Thoughts	3.180043	0.0	2.0	5.0	8.0	10.0
Compulsive_Behavior	3.154598	0.0	2.0	5.0	8.0	10.0
Self_Harm_Thoughts	0.268342	0.0	0.0	0.0	0.0	1.0
Suicidal_Thoughts	0.293506	0.0	0.0	0.0	0.0	1.0
Family_History_Mental_Illness	0.460176	0.0	0.0	0.0	1.0	1.0
Previously_Diagnosed	0.431873	0.0	0.0	0.0	0.0	1.0
Ever_Sought_Treatment	0.48066	0.0	0.0	0.0	1.0	1.0
On_Therapy_Now	0.393109	0.0	0.0	0.0	0.0	1.0
On_Medication	0.387748	0.0	0.0	0.0	0.0	1.0
Trauma_History	0.43338	0.0	0.0	0.0	1.0	1.0
Social_Support	2.882986	1.0	3.0	5.0	8.0	10.0
Close_Friends_Count	1.998431	0.0	3.0	4.0	5.0	13.0
Feel_Understood	2.872021	1.0	3.0	5.0	8.0	10.0
Loneliness	2.862322	1.0	3.0	5.0	8.0	10.0
Discuss_Mental_Health	NaN	NaN	NaN	NaN	NaN	NaN
Has_Mental_Health_Issue	0.268813	0.0	1.0	1.0	1.0	1.0

```
mental_health_vars = [
    "Feeling_Sad_Down", "Loss_Of_Interest", "Sleep_Trouble",
"Fatigue",
    "Feeling_Worthless", "Concentration_Difficulty",
    "Anxious_Nervous", "Panic_Attacks", "Mood_Swings",
    "Obsessive_Thoughts", "Compulsive_Behavior",
    "Self_Harm_Thoughts", "Suicidal_Thoughts"
```

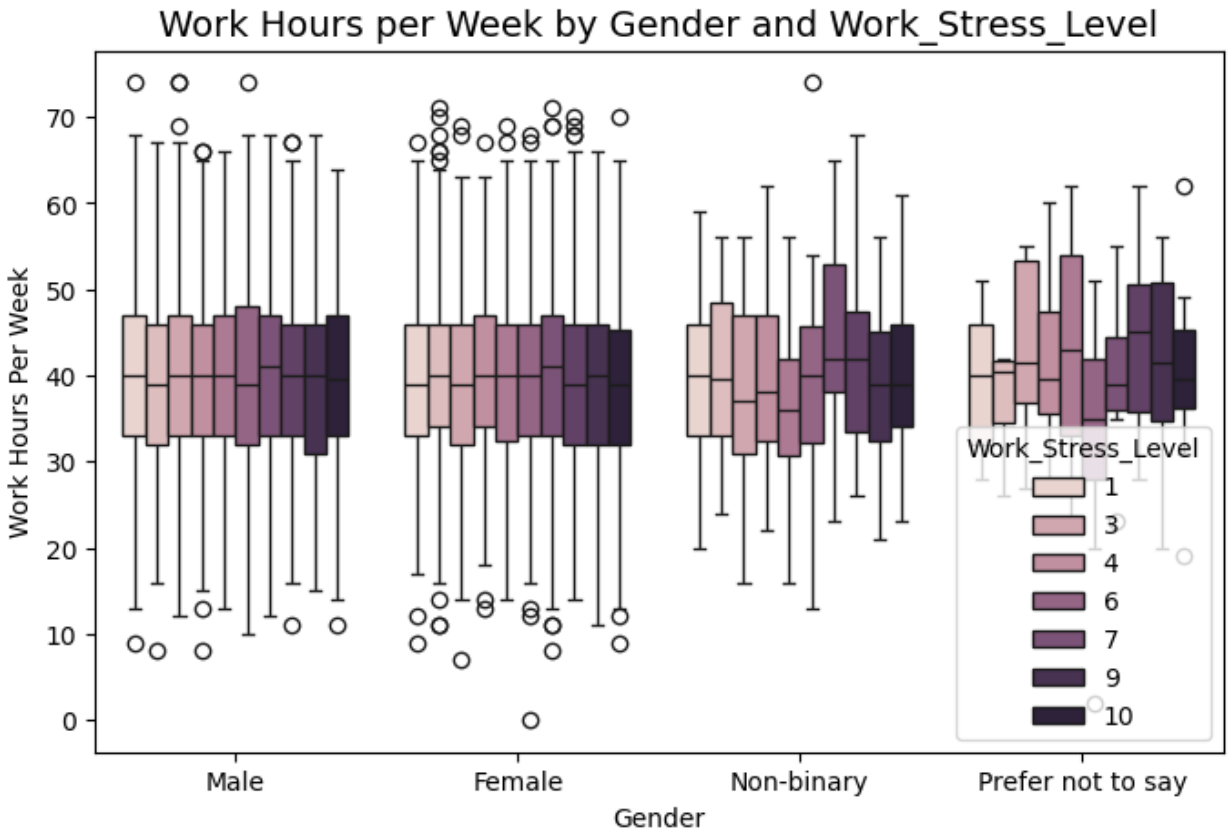
```
]

table_mental = pd.DataFrame({
    "Mean": df[mental_health_vars].mean(),
    "Std": df[mental_health_vars].std(),
    "Yes (%)": df[mental_health_vars].mean() * 100
})

table_mental
```

	Mean	Std	Yes (%)
Feeling_Sad_Down	4.9896	3.156468	498.96
Loss_Of_Interest	5.0182	3.148342	501.82
Sleep_Trouble	5.0008	3.164459	500.08
Fatigue	5.0033	3.133189	500.33
Feeling_Worthless	4.9842	3.171207	498.42
Concentration_Difficulty	4.9510	3.155376	495.10
Anxious_Nervous	4.9874	3.156111	498.74
Panic_Attacks	0.5469	0.980967	54.69
Mood_Swings	5.0421	3.165964	504.21
Obsessive_Thoughts	4.9422	3.180043	494.22
Compulsive_Behavior	4.9599	3.154598	495.99
Self_Harm_Thoughts	0.0781	0.268342	7.81
Suicidal_Thoughts	0.0952	0.293506	9.52

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

plt.figure(figsize=(8, 5))

sns.boxplot(
    x='Gender',
    y='Work_Hours_Per_Week',
    hue='Job_Satisfaction',
    data=df
)

plt.title('Work Hours per Week by Gender and Job Satisfaction',
fontsize=14)
plt.xlabel('Gender')
plt.ylabel('Work Hours Per Week')
plt.legend(title='Job Satisfaction')

plt.show()
```

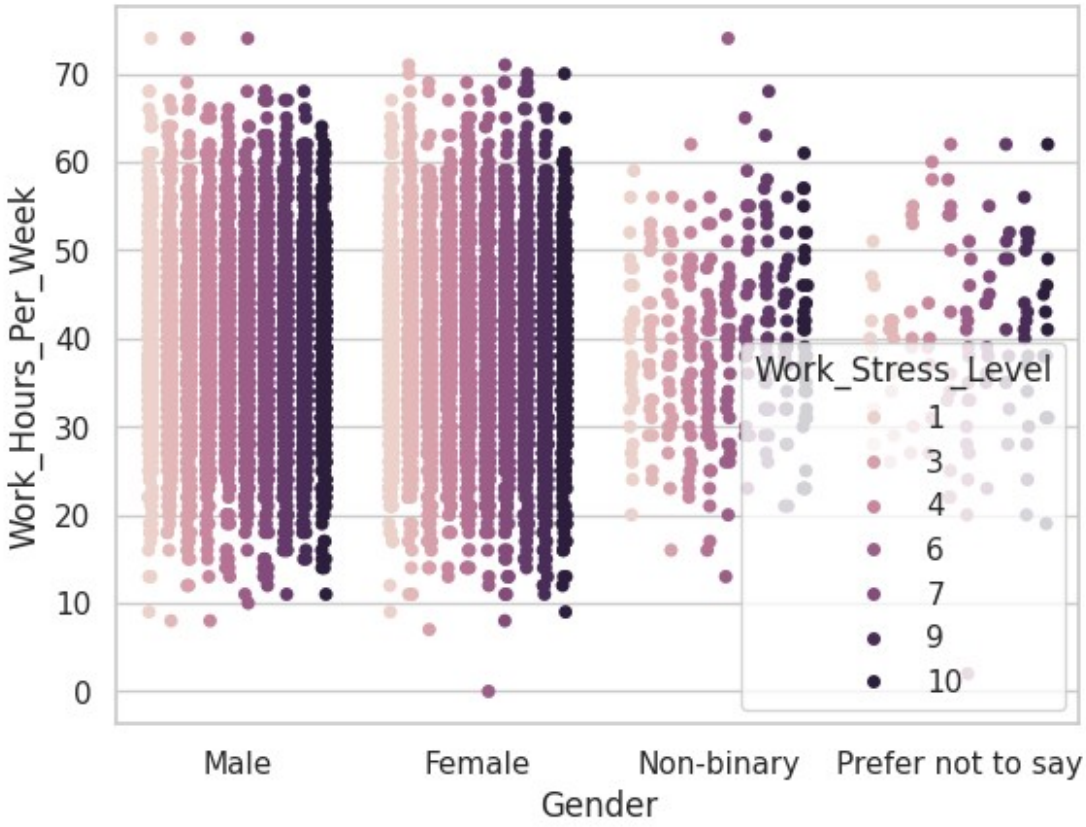



```
import seaborn as sns
import matplotlib.pyplot as plt

plt.figure(figsize=(8, 5))

sns.boxplot(
    x='Gender',
    y='Work_Hours_Per_Week',
    hue='Work_Stress_Level',
    data=df
)

plt.title('Work Hours per Week by Gender and Work_Stress_Level',
fontsize=14)
plt.xlabel('Gender')
plt.ylabel('Work Hours Per Week')
plt.legend(title='Work_Stress_Level')

plt.show()
```

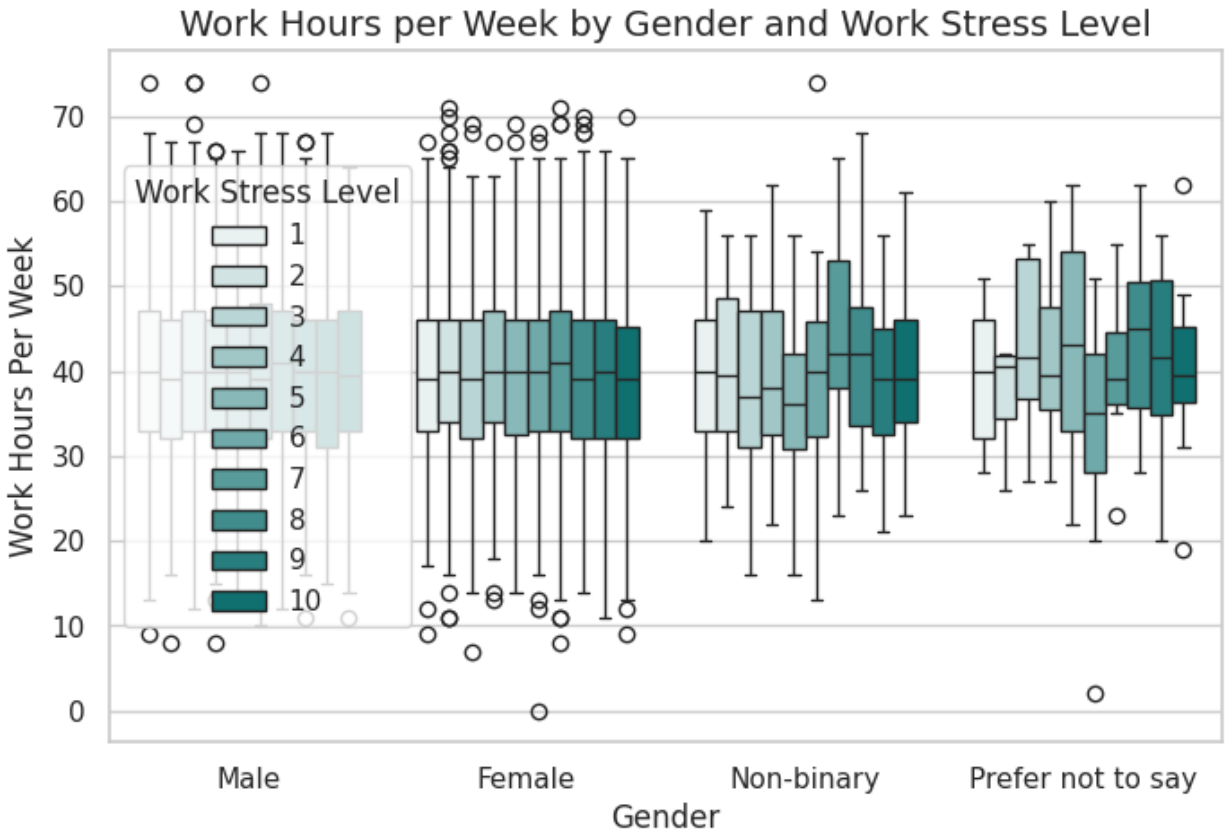



```
sns.stripplot(
    data=df,
    x="Gender",
    y="Work_Hours_Per_Week",
    hue="Work_Stress_Level",
    jitter=True,
    dodge=True
)
```

```
<Axes: xlabel='Gender', ylabel='Work_Hours_Per_Week'>
```




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

palette = sns.light_palette("teal",
n_colors=df["Work_Stress_Level"].nunique())

plt.figure(figsize=(8, 5))

sns.boxplot(
    x="Gender",
    y="Work_Hours_Per_Week",
    hue="Work_Stress_Level",
    data=df,
    palette=palette
)

plt.title("Work Hours per Week by Gender and Work Stress Level",
fontsize=14)
plt.xlabel("Gender")
plt.ylabel("Work Hours Per Week")
plt.legend(title="Work Stress Level")

plt.show()
```

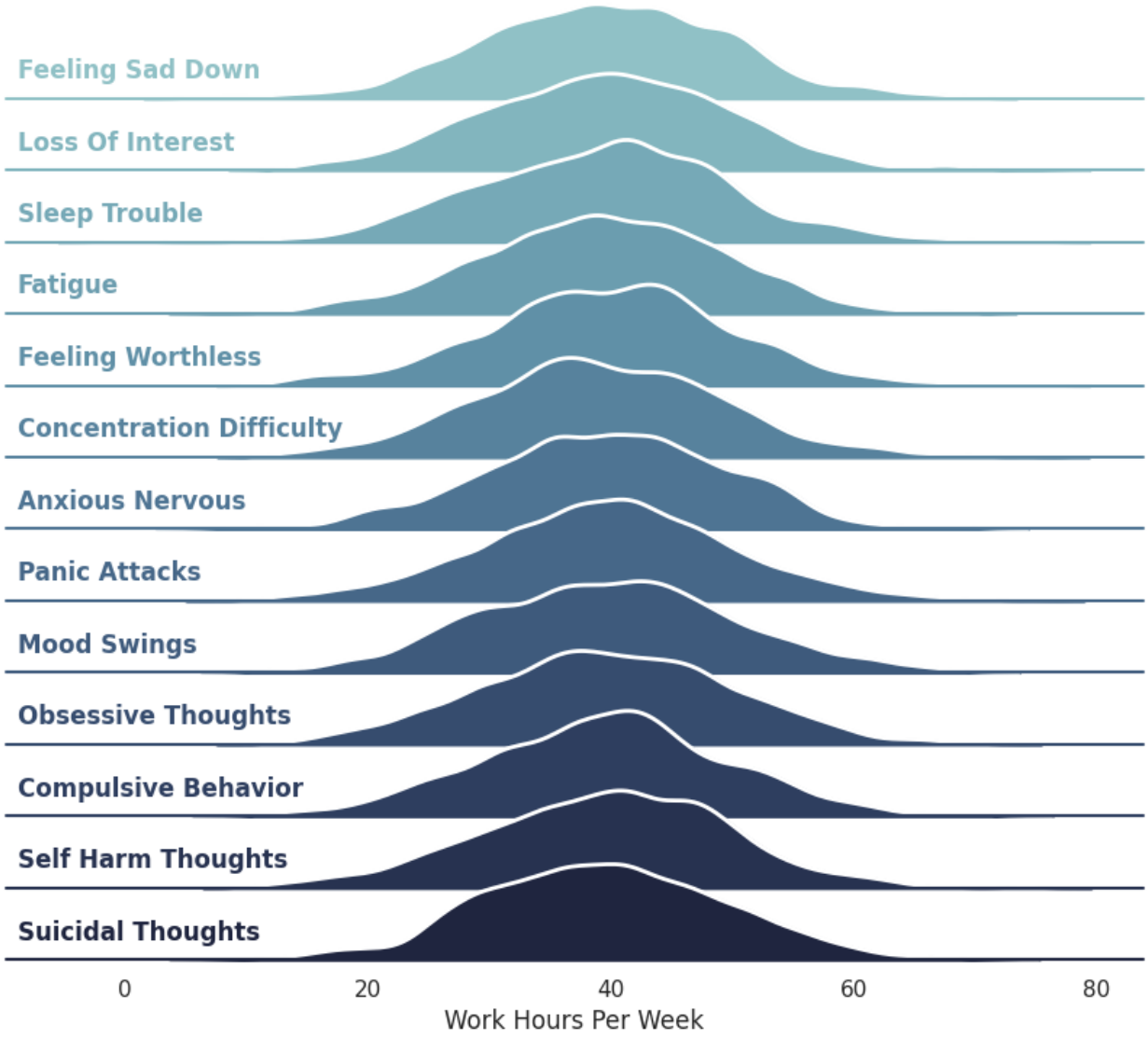



```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

sns.set_theme(style="white", rc={"axes.facecolor": (0, 0, 0, 0)})

mental_health_vars = [
    "Feeling_Sad_Down", "Loss_Of_Interest", "Sleep_Trouble",
"Fatigue",
    "Feeling_Worthless", "Concentration_Difficulty",
    "Anxious_Nervous", "Panic_Attacks", "Mood_Swings",
    "Obsessive_Thoughts", "Compulsive_Behavior",
    "Self_Harm_Thoughts", "Suicidal_Thoughts"
]

# Convert to long format
df_long = df.melt(
    id_vars="Work_Hours_Per_Week",
    value_vars=mental_health_vars,
    var_name="Emotion",
    value_name="Value"
)

# Keep only "Yes" cases (1 = symptom present)
```

```
df_long = df_long[df_long["Value"] == 1]

# Color palette
pal = sns.cubehelix_palette(len(mental_health_vars), rot=-.25,
light=.7)

# FacetGrid
g = sns.FacetGrid(
    df_long,
    row="Emotion",
    hue="Emotion",
    aspect=15,
    height=0.6,
    palette=pal
)

# Main KDE (filled)
g.map(
    sns.kdeplot,
    "Work_Hours_Per_Week",
    bw_adjust=0.7,
    clip_on=False,
    fill=True,
    alpha=1,
    linewidth=1.5
)

# Contour line
g.map(
    sns.kdeplot,
    "Work_Hours_Per_Week",
    clip_on=False,
    color="white",
    lw=2,
    bw_adjust=0.7
)

# Reference line
g.refline(y=0, linewidth=1.5, linestyle="-", color=None,
clip_on=False)

def label(x, color, label):
    ax = plt.gca()
    ax.text(
        0.01, 0.25,
        label.replace("_", " "),
        fontweight="bold",
        color=color,
        ha="left",
        va="center",
```

```
        transform=ax.transAxes
    )

g.map(label, "Work_Hours_Per_Week")

# Disable tight_layout intentionally
g.figure.set_tight_layout(False)

# Overlap subplots
g.figure.subplots_adjust(hspace=-0.35)

# Clean axes
g.set_titles("")
g.set(yticks=[], ylabel="", xlabel="Work Hours Per Week")
g.despine(bottom=True, left=True)
```

```
<seaborn.axisgrid.FacetGrid at 0x7d6f235f6630>
```

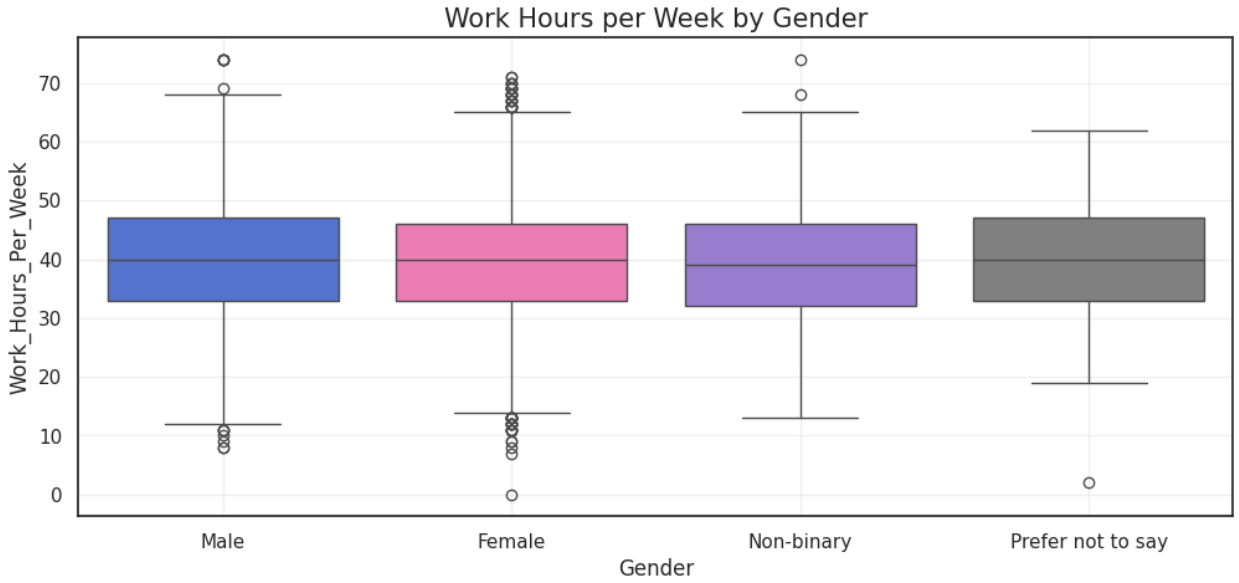


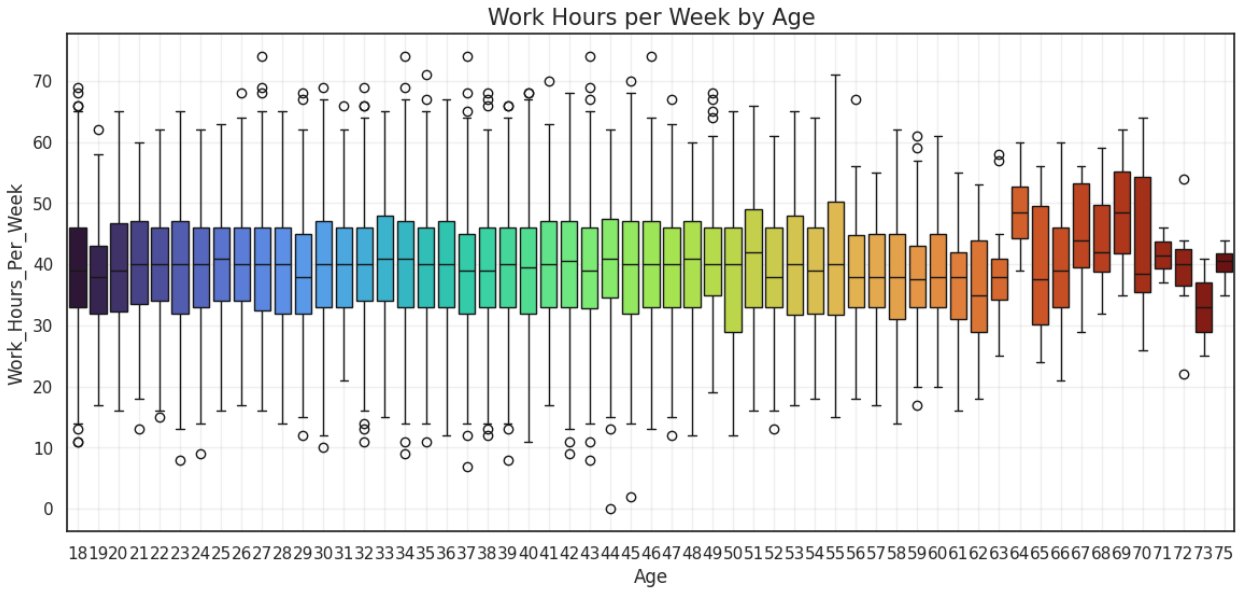

```
import seaborn as sns
import matplotlib.pyplot as plt

df_long = df.melt(
    id_vars="Work_Hours_Per_Week",
    value_vars=["Job_Satisfaction", "Feeling_Worthless"],
    var_name="Outcome",
    value_name="Score"
)

palette = {
    "Job_Satisfaction": "#A8E6CF",     # pastel green
    "Feeling_Worthless": "#F4B6C2"     # pastel pink
}
```

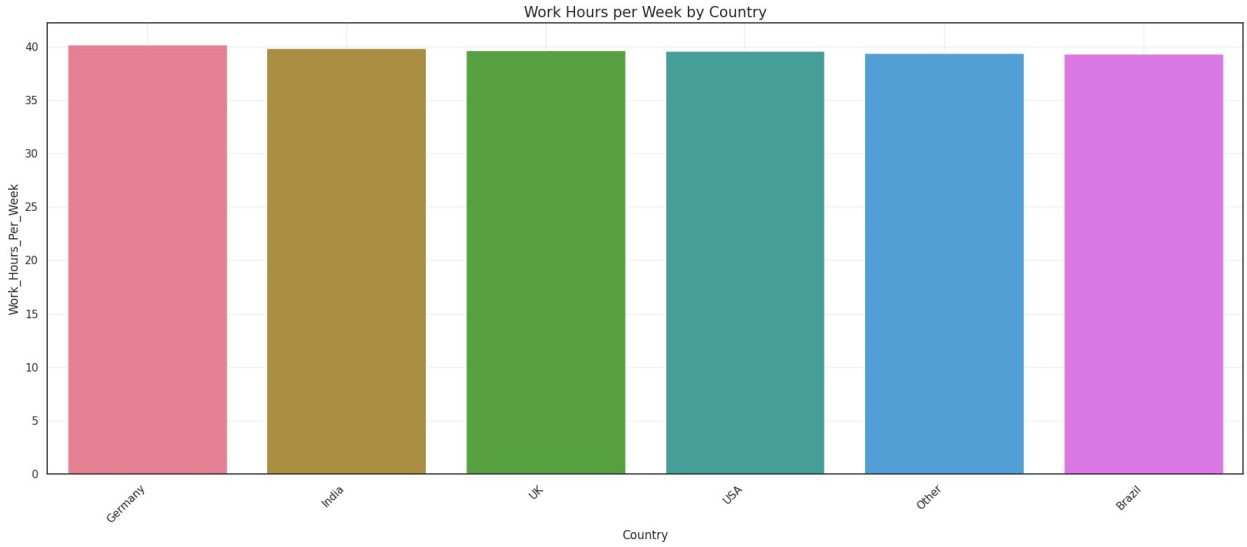
```
g = sns.lmplot(
    data=df_long,
    x="Work_Hours_Per_Week",
    y="Score",
    col="Outcome",
    hue="Outcome",
    palette=palette,
    height=4,
    aspect=1,
    scatter_kws={"alpha": 0.4},
    line_kws={"linewidth": 2},
    legend=False
)

g.set_axis_labels("Work Hours per Week", "Level")
g.set_titles("{col_name}")

plt.tight_layout()
plt.show()
```


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

# --- 1. Work Hours per Week by Gender (Custom Colors for 4
Categories) ---
plt.figure(figsize=(12, 5))

# Defining colors for all gender categories
gender_palette = {
    'Male': 'royalblue',
```

```
    'Female': 'hotpink',
    'Non-binary': 'mediumpurple',
    'Prefer not to say': 'gray'
}

# Using hue and legend=False to apply palette and avoid warnings
sns.boxplot(x='Gender', y='Work_Hours_Per_Week', data=df,
            palette=gender_palette, hue='Gender', legend=False)

plt.title('Work Hours per Week by Gender', fontsize=15)
plt.grid(True, alpha=0.3)
plt.show()

# --- 2. Work Hours per Week by Age (Colorful) ---
plt.figure(figsize=(14, 6))
# 'turbo' palette provides a vivid spectrum for a high number of age
categories
sns.boxplot(x='Age', y='Work_Hours_Per_Week', data=df,
            palette='turbo', hue='Age', legend=False)

plt.title('Work Hours per Week by Age', fontsize=15)
plt.grid(True, alpha=0.3)
plt.show()

# --- 3. Work Hours per Week by Country (Colorful) ---
plt.figure(figsize=(18, 8))
# Calculating mean values and resetting index to prevent plotting
errors
country_stats = df.groupby('Country')
['Work_Hours_Per_Week'].mean().sort_values(ascending=False).reset_inde
x()

# 'husl' palette gives a unique and bright color to each country
sns.barplot(x='Country', y='Work_Hours_Per_Week', data=country_stats,
            palette='husl', hue='Country', legend=False)

plt.title('Work Hours per Week by Country', fontsize=15)
plt.xticks(rotation=45, ha='right')
plt.grid(True, alpha=0.3)
plt.tight_layout()
plt.show()
```


Work Hours per Week by Gender
Work_Hours_Per_Week
0
10
20
30
40
50
60
70
Male
Female
Non-binary
Prefer not to say
Gender


Work Hours per Week by Age
Work_Hours_Per_Week
0
10
20
30
40
50
60
70
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 75
Age


Work Hours per Week by Country
Work_Hours_Per_Week
0
5
10
15
20
25
30
35
40
Germany
India
UK
USA
Other
Brazil
Country