```python
# 2: Load dataset
df = pd.read_csv('survey.csv')
print("Dataset shape:", df.shape)
df.head()
```

[23] Python

```
Dataset shape: (1259, 27)
```

	Timestamp	Age	Gender	Country	state	self_employed	family_history	treatment	work_interfere	no_employees	...	leave	mental_health_consequence	phys_healtl
0	2014-08-27 11:29:31	37	Female	United States	IL	NaN	No	Yes	Often	6-25	...	Somewhat easy	No	
1	2014-08-27 11:29:37	44	M	United States	IN	NaN	No	No	Rarely	More than 1000	...	Don't know	Maybe	
2	2014-08-27 11:29:44	32	Male	Canada	NaN	NaN	No	No	Rarely	6-25	...	Somewhat difficult	No	
3	2014-08-27 11:29:46	31	Male	United Kingdom	NaN	NaN	Yes	Yes	Often	26-100	...	Somewhat difficult	Yes	
4	2014-08-27 11:30:22	31	Male	United States	TX	NaN	No	No	Never	100-500	...	Don't know	No	

5 rows × 27 columns

```python
# 3: Select relevant columns and initial inspection
columns = ['Age', 'Gender', 'self_employed', 'family_history', 'treatment', 'work_interfere', 'no_employees', 'remote_work', 'tech_company', 'benefits', 'care
data = df[columns].copy()

print(data.info())
print(data.isnull().sum())
```

[24] Python

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1259 entries, 0 to 1258
Data columns (total 17 columns):
 #   Column                     Non-Null Count  Dtype
---  ------                     --------------  -----
 0   Age                        1259 non-null   int64
 1   Gender                     1259 non-null   object
 2   self_employed              1241 non-null   object
 3   family_history             1259 non-null   object
 4   treatment                  1259 non-null   object
 5   work_interfere             995 non-null    object
 6   no_employees               1259 non-null   object
 7   remote_work                1259 non-null   object
 8   tech_company               1259 non-null   object
 9   benefits                   1259 non-null   object
 10  care_options               1259 non-null   object
 11  wellness_program           1259 non-null   object
 12  seek_help                  1259 non-null   object
 13  anonymity                  1259 non-null   object
 14  leave                      1259 non-null   object
 15  mental_health_consequence  1259 non-null   object
 16  phys_health_consequence    1259 non-null   object
dtypes: int64(1), object(16)
memory usage: 167.3+ KB
None
```

```python
# 6: Define features and target
X = data.drop('treatment', axis=1)
y = data['treatment']
```

[27] Python

```python
# 7: Split the dataset and scale features
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)
```

[28] Python

```python
# 8: Train Random Forest Classifier
rfc = RandomForestClassifier(random_state=42)
rfc.fit(X_train, y_train)
```

[29] Python

RandomForestClassifier

▶ Parameters

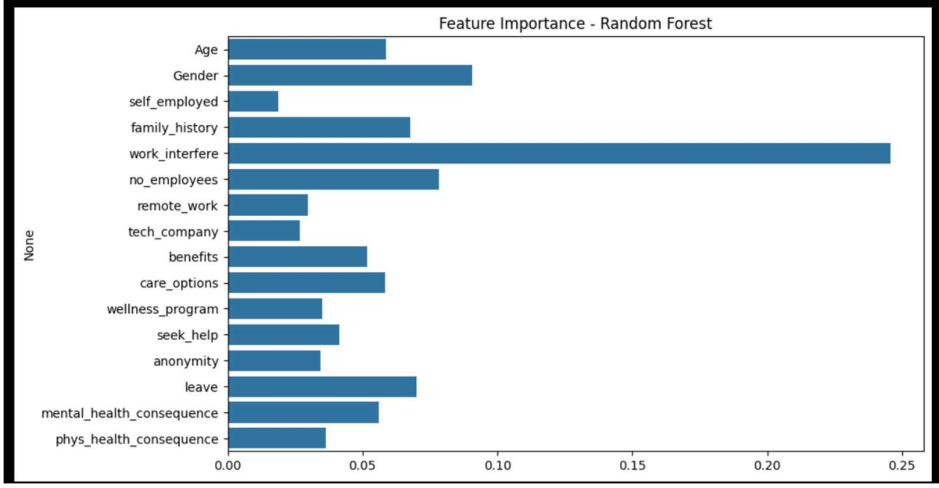
```python
# 9: Predict and evaluate model
y_pred = rfc.predict(X_test)
print("Accuracy:", accuracy_score(y_test, y_pred))
print("Classification Report:\n", classification_report(y_test, y_pred))
```

Python

```
Accuracy: 0.7806122448979592
Classification Report:
              precision    recall  f1-score   support

           0       0.74      0.57      0.64        68
           1       0.80      0.89      0.84       128

    accuracy                           0.78       196
   macro avg       0.77      0.73      0.74       196
weighted avg       0.78      0.78      0.77       196
```

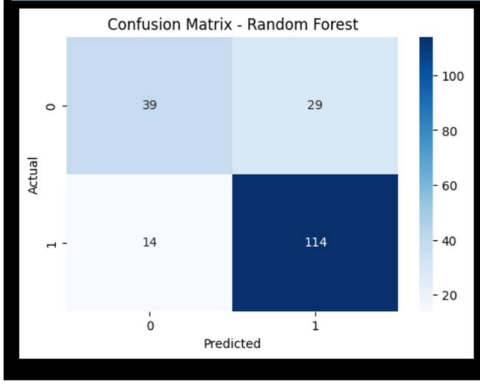
```python
# 11: Plot feature importances
feature_importances = rfc.feature_importances_
features = X.columns

plt.figure(figsize=(10,6))
sns.barplot(x=feature_importances, y=features)
plt.title('Feature Importance - Random Forest')
plt.show()
```

Python




```python
# 10: Plot confusion matrix
cm = confusion_matrix(y_test, y_pred)
plt.figure(figsize=(6,4))
sns.heatmap(cm, annot=True, fmt='d', cmap='Blues')
plt.title('Confusion Matrix - Random Forest')
plt.xlabel('Predicted')
plt.ylabel('Actual')
plt.show()
```

Python



Mental Health Treatment Prediction

Age	**Gender**
25	male
Self Employed	**Family History**
Yes	Yes
Work Interferes with Mental Health	**Company Size**
Rarely	6-25
Remote Work	**Tech Company**
No	Yes
Mental Health Benefits	**Care Options**
Yes	Yes
Wellness Program	**Seek Help**
Yes	No
Anonymity	**Leave for Mental Health**
No	No
Mental Health Consequence	**Physical Health Consequence**
Maybe	No

Predict

Predict

Prediction Result

Will seek treatment? **Yes**

Confidence: **0.80**