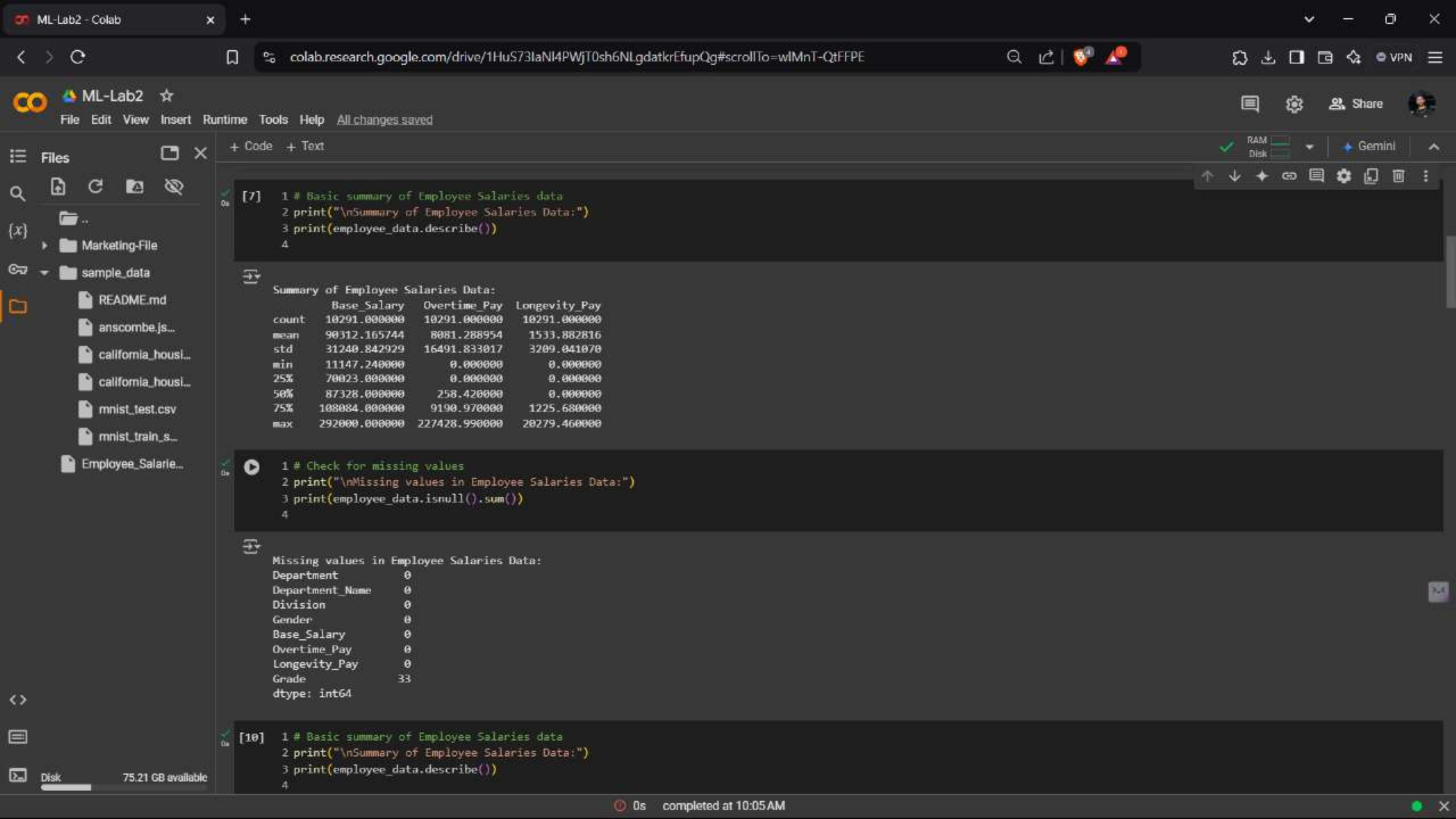


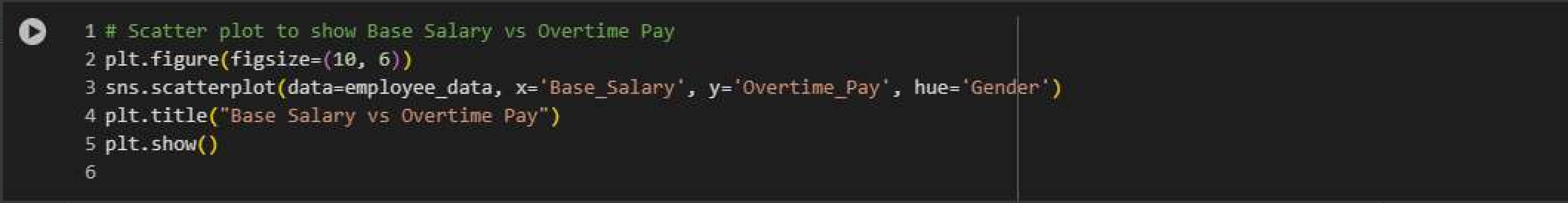
```
[7]
# Basic summary of Employee Salaries data
print("\nSummary of Employee Salaries Data:")
print(employee_data.describe())
```

```
Summary of Employee Salaries Data:
         Base_Salary   Overtime_Pay  Longevity_Pay
count   10291.000000   10291.000000   10291.000000
mean    90312.165744    8081.288954    1533.882816
std     31240.842929   16491.833017    3209.041070
min     11147.240000       0.000000       0.000000
25%     70023.000000       0.000000       0.000000
50%     87328.000000     258.420000       0.000000
75%    108084.000000    9190.970000    1225.680000
max    292000.000000  227428.990000   20279.460000
```

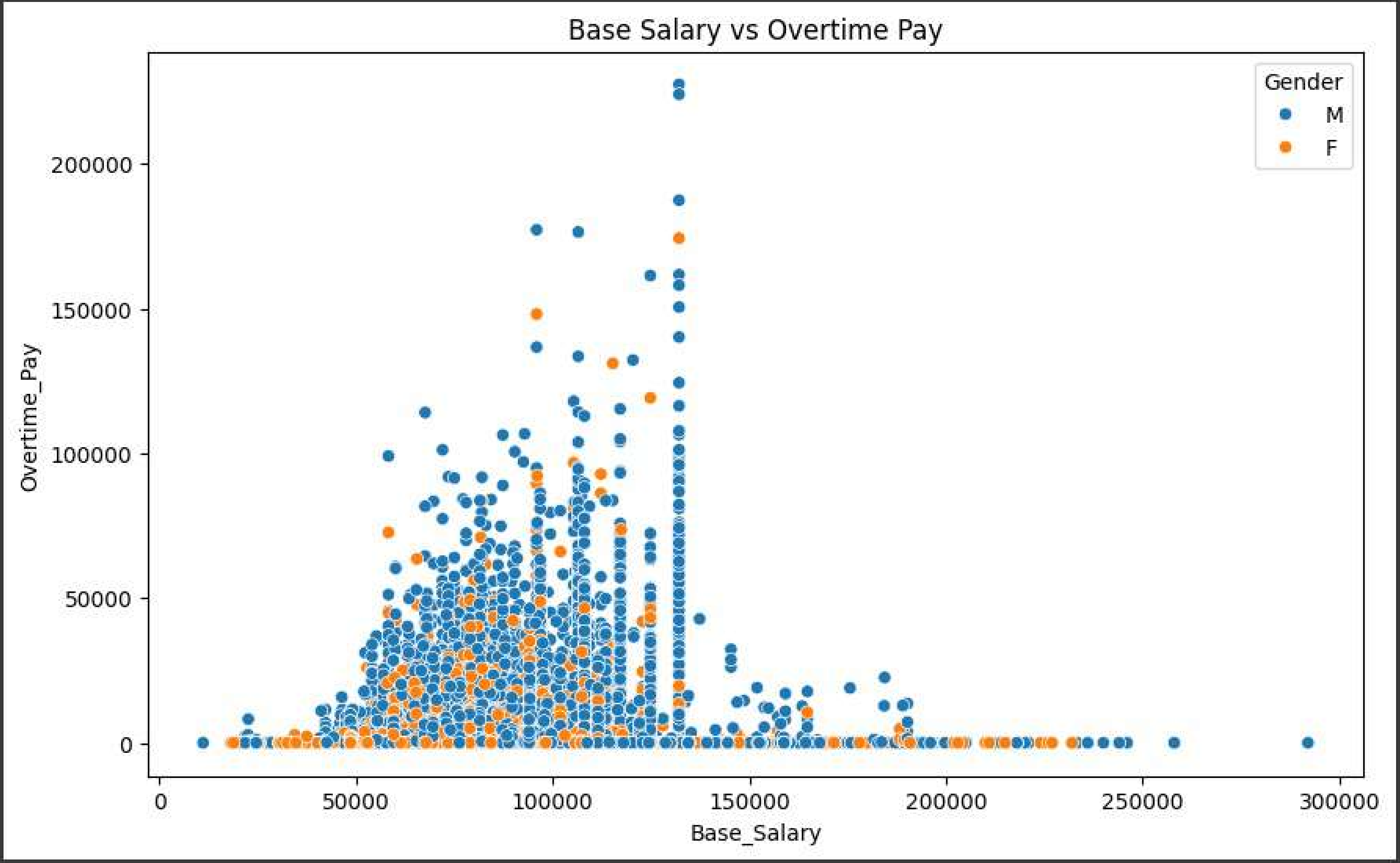
```
# Check for missing values
print("\nMissing values in Employee Salaries Data:")
print(employee_data.isnull().sum())
```

```
Missing values in Employee Salaries Data:
Department          0
Department_Name     0
Division            0
Gender              0
Base_Salary         0
Overtime_Pay        0
Longevity_Pay       0
Grade              33
dtype: int64
```

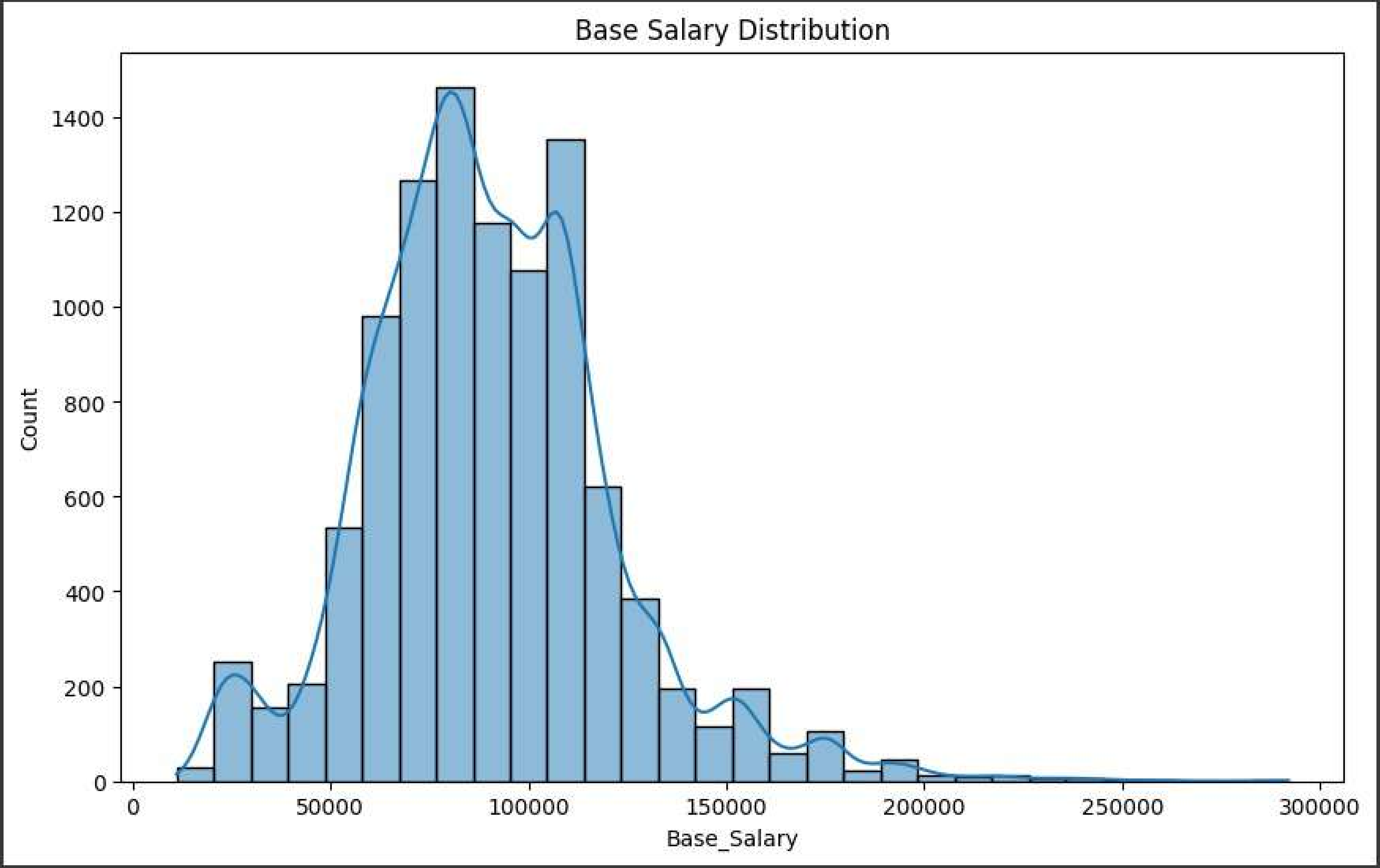
```
[10]
# Basic summary of Employee Salaries data
print("\nSummary of Employee Salaries Data:")
print(employee_data.describe())
```

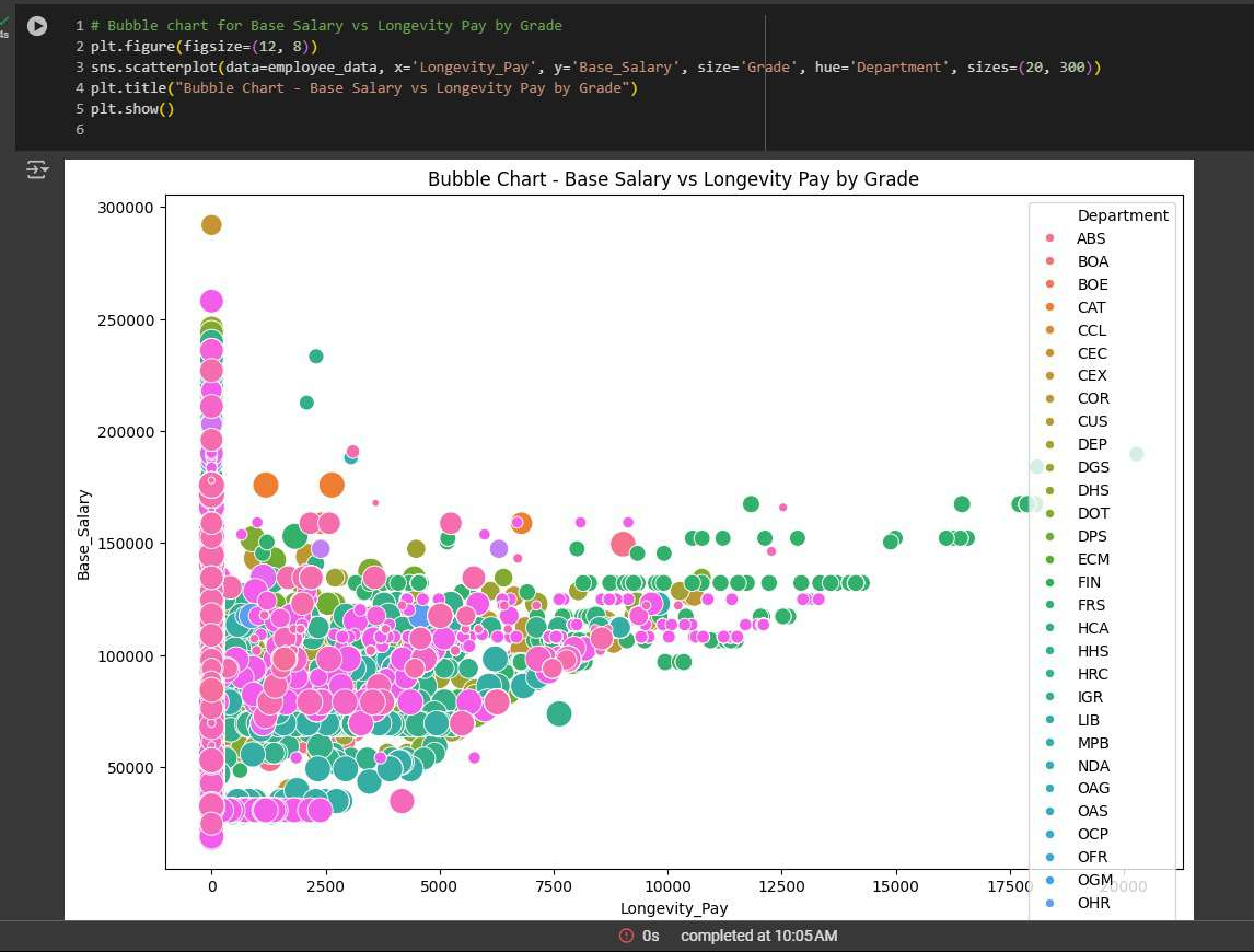


```python
# Scatter plot to show Base Salary vs Overtime Pay
plt.figure(figsize=(10, 6))
sns.scatterplot(data=employee_data, x='Base_Salary', y='Overtime_Pay', hue='Gender')
plt.title("Base Salary vs Overtime Pay")
plt.show()

```

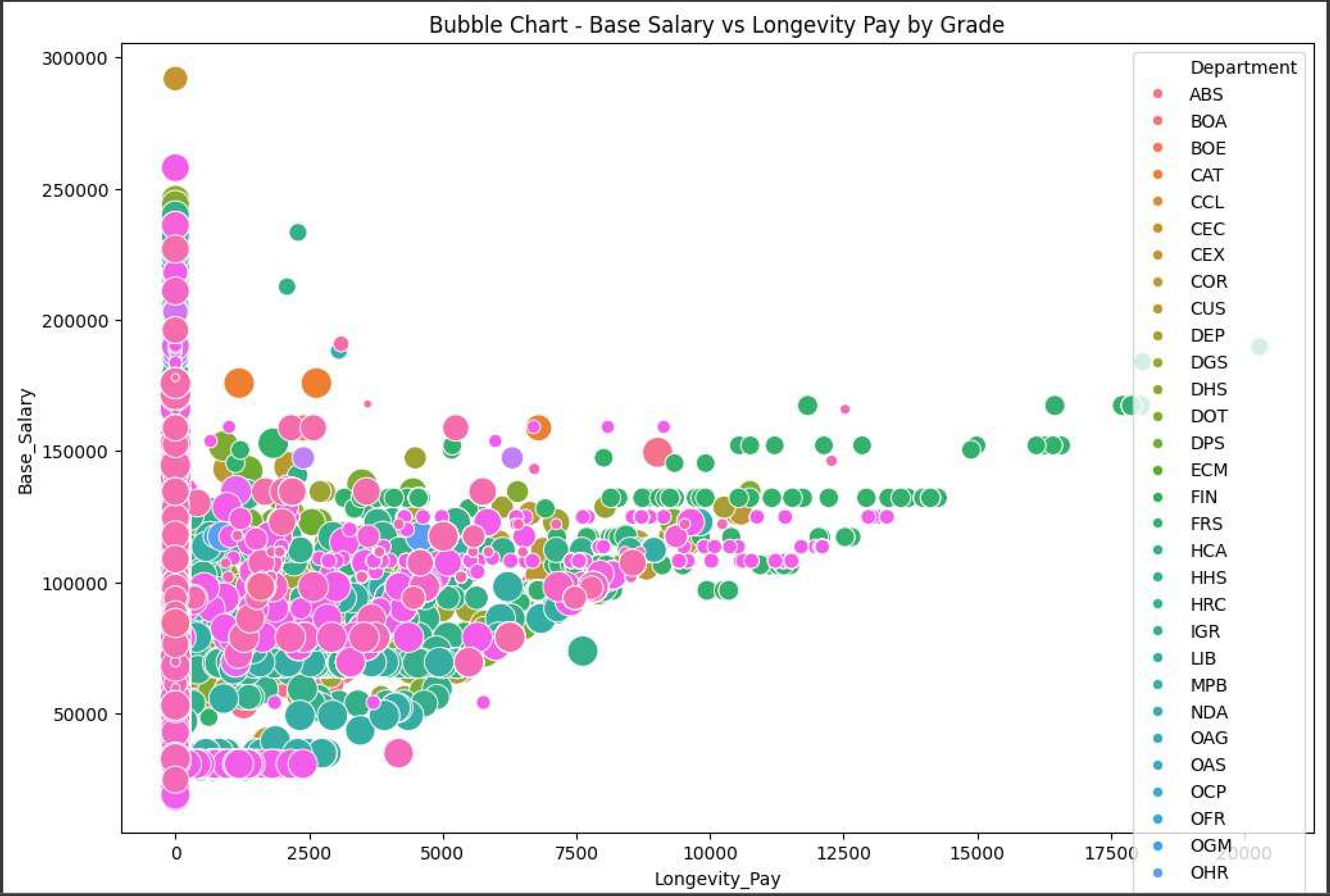


```python
# Histogram to show Base Salary distribution
plt.figure(figsize=(10, 6))
sns.histplot(employee_data['Base_Salary'], kde=True, bins=30)
plt.title("Base Salary Distribution")
plt.show()

```





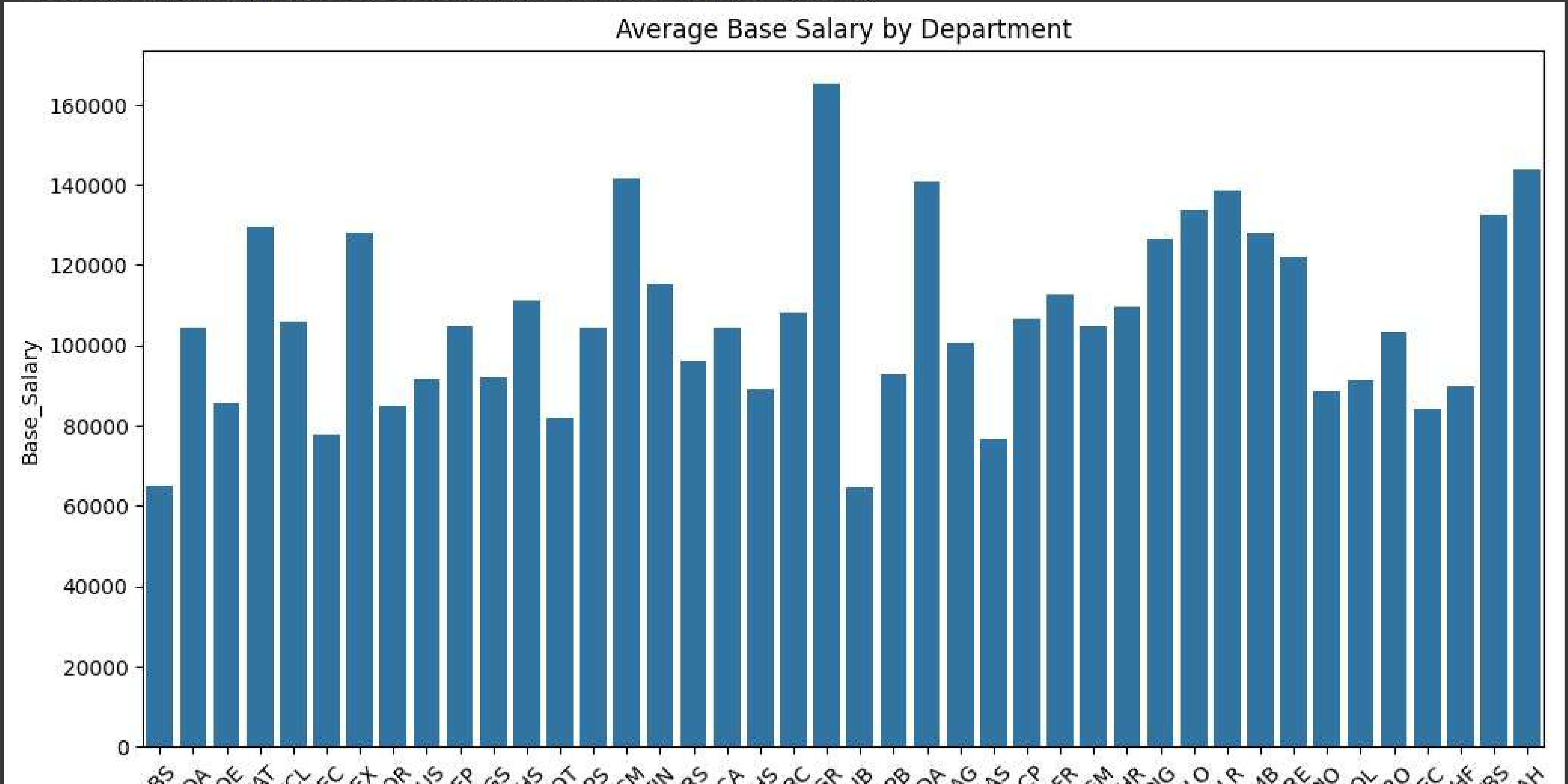
```python
# Bubble chart for Base Salary vs Longevity Pay by Grade
plt.figure(figsize=(12, 8))
sns.scatterplot(data=employee_data, x='Longevity_Pay', y='Base_Salary', size='Grade', hue='Department', sizes=(20, 300))
plt.title("Bubble Chart - Base Salary vs Longevity Pay by Grade")
plt.show()

```



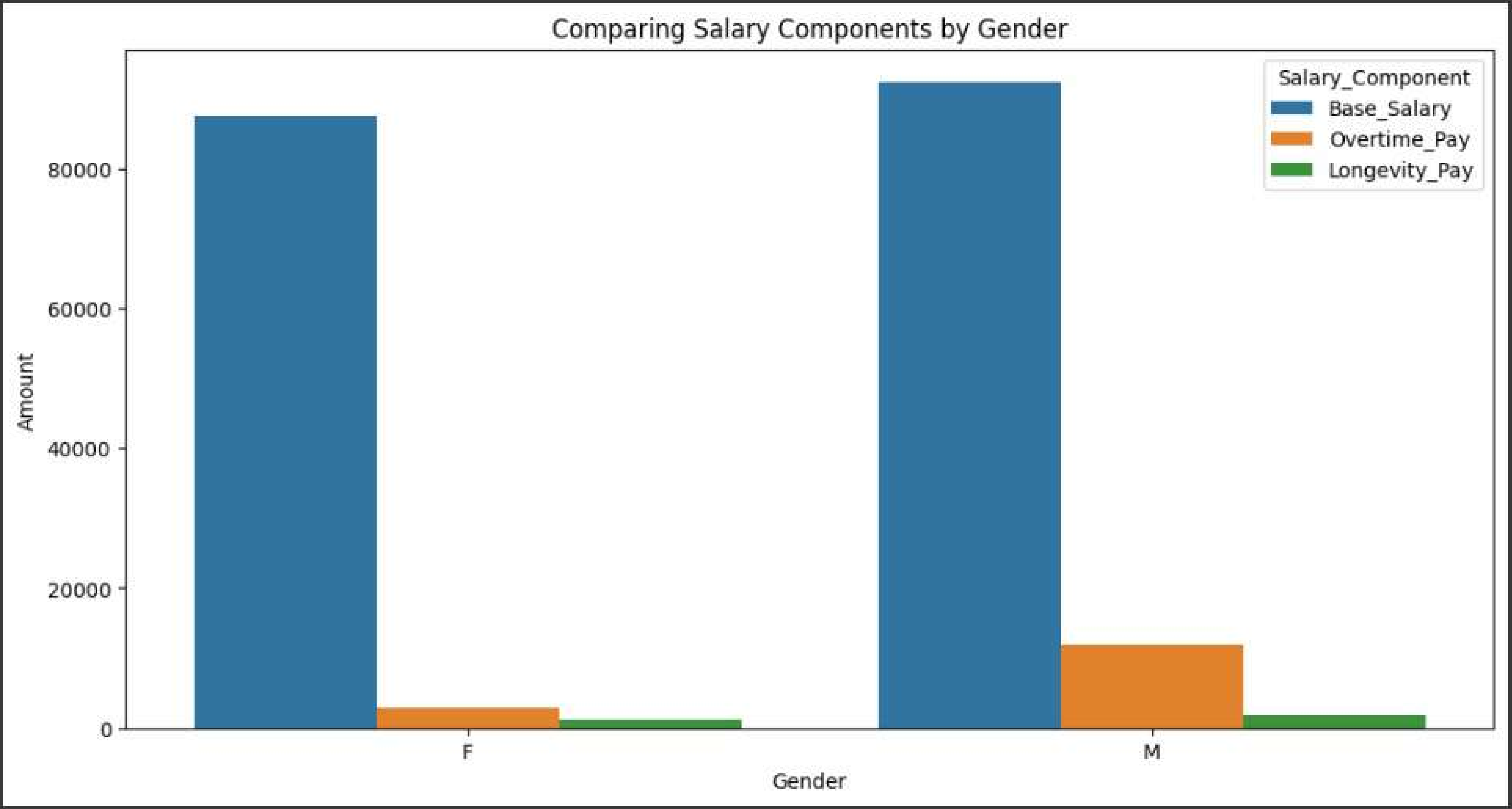
0s completed at 10:05 AM

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

# Bar chart for average Base Salary by Department
plt.figure(figsize=(12, 6))
sns.barplot(data=employee_data, x='Department', y='Base_Salary', ci=None)
plt.title("Average Base Salary by Department")
plt.xticks(rotation=45)
plt.show()

```

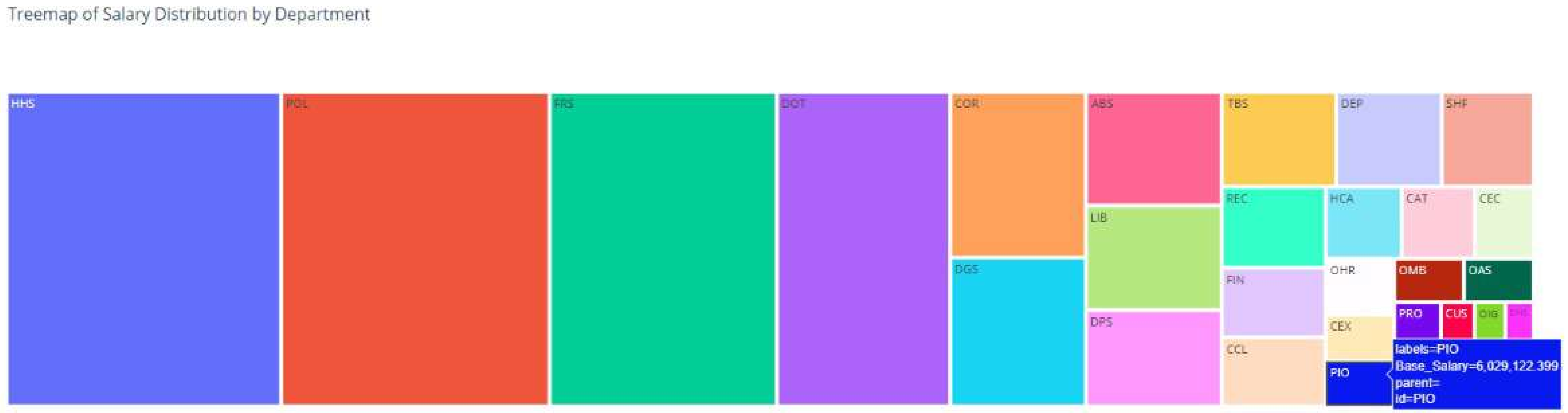
```
<ipython-input-11-d0727e033b0f>:6: FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.

  sns.barplot(data=employee_data, x='Department', y='Base_Salary', ci=None)
```

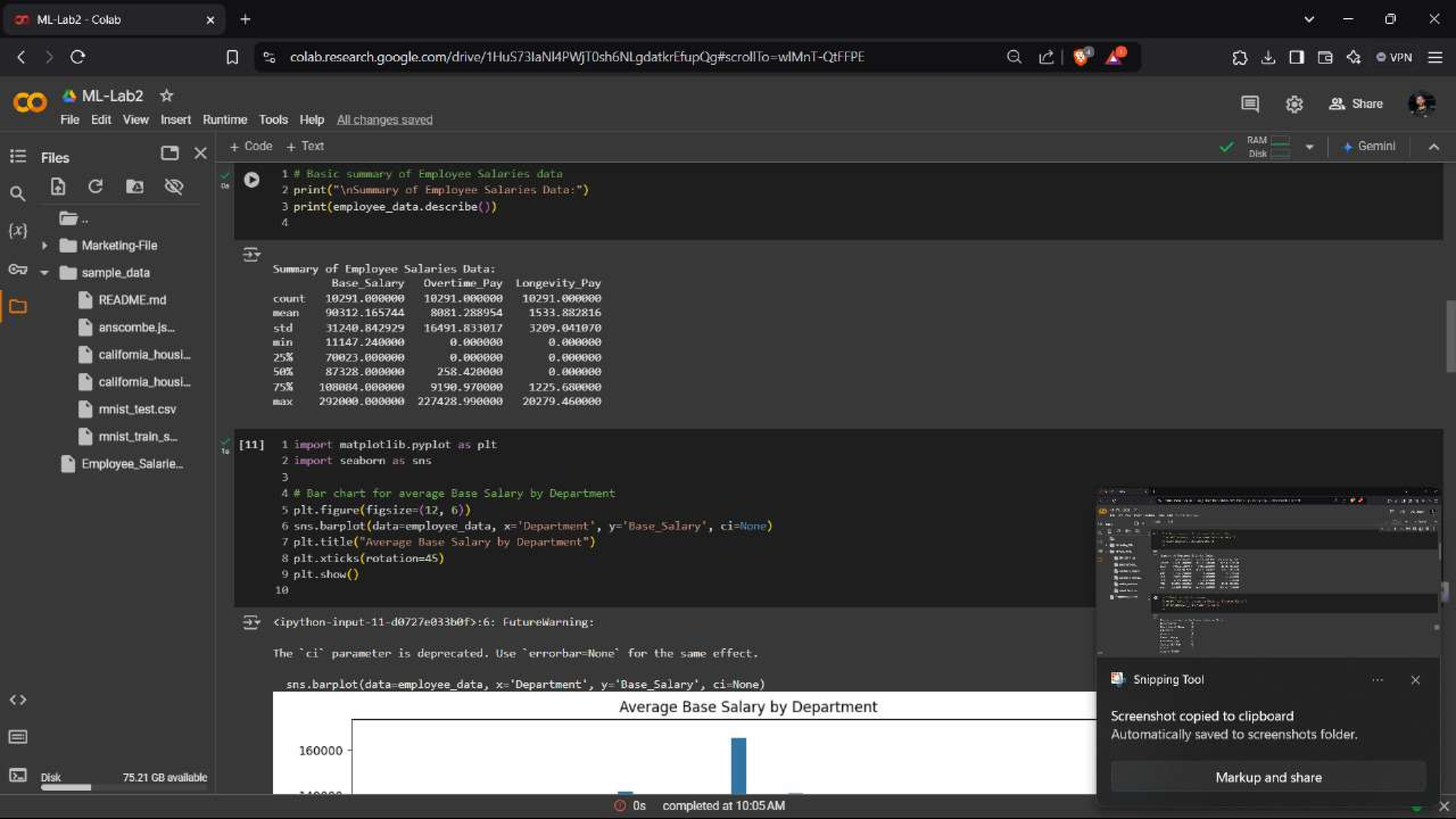


```python
# Grouping by Gender to calculate average Base Salary, Overtime Pay, and Longevity Pay
gender_salary = employee_data.groupby('Gender')[['Base_Salary', 'Overtime_Pay', 'Longevity_Pay']].mean().reset_index()

# Melt the DataFrame for easier plotting
salary_melted = gender_salary.melt(id_vars='Gender', var_name='Salary_Component', value_name='Amount')

# Plot
plt.figure(figsize=(12, 6))
sns.barplot(data=salary_melted, x='Gender', y='Amount', hue='Salary_Component')
plt.title("Comparing Salary Components by Gender")
plt.show()

```



```python
import plotly.express as px

# Group data by Department and sum Base Salary
dept_salary = employee_data.groupby('Department')['Base_Salary'].sum().reset_index()

# Create Treemap Chart
fig = px.treemap(dept_salary, path=['Department'], values='Base_Salary', title="Treemap of Salary Distribution by Department")
fig.show()

```





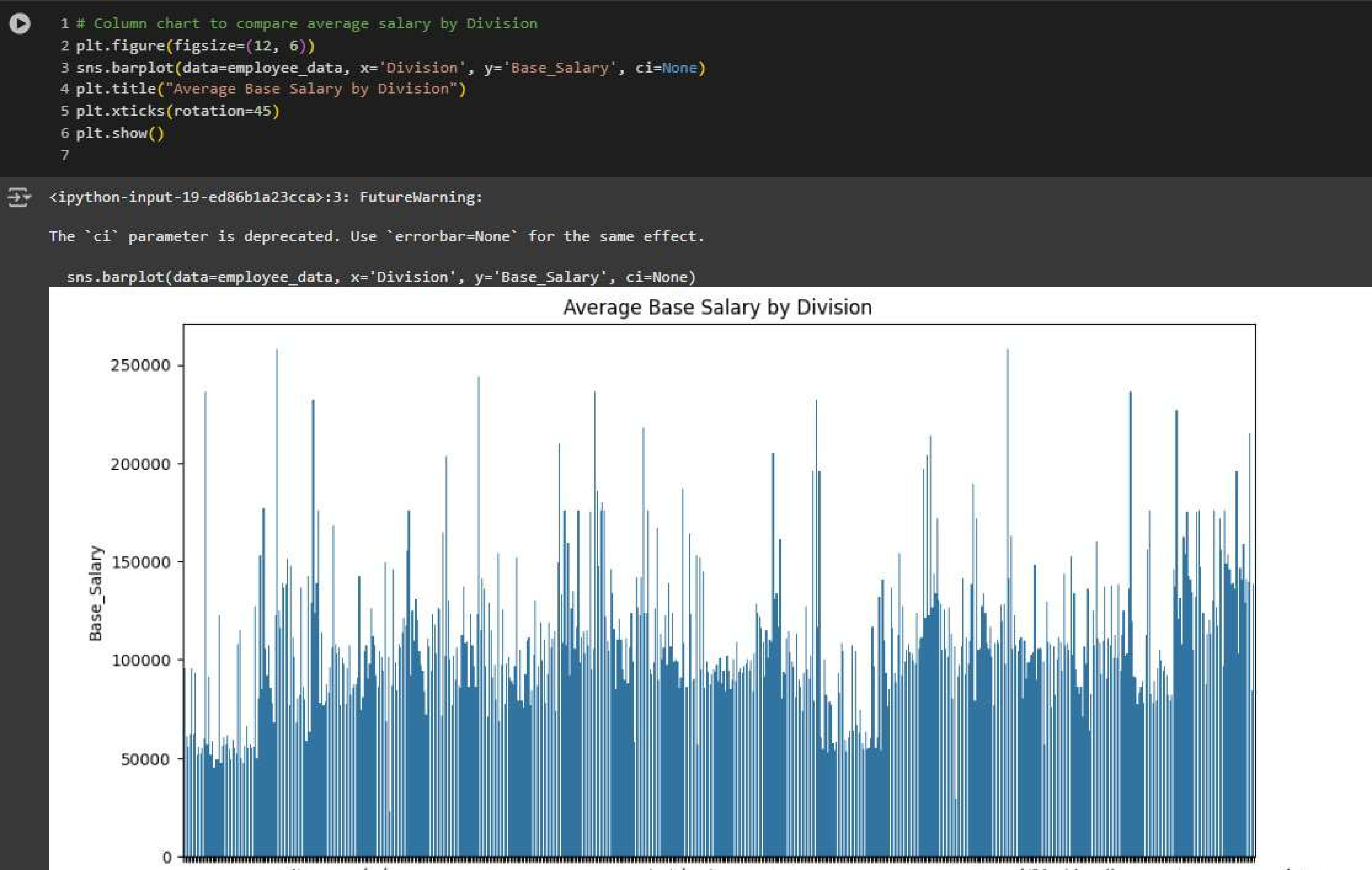
```python
# Basic summary of Employee Salaries data
print("\nSummary of Employee Salaries Data:")
print(employee_data.describe())

```

```
Summary of Employee Salaries Data:
         Base_Salary   Overtime_Pay  Longevity_Pay
count   10291.000000   10291.000000   10291.000000
mean    90312.165744    8081.288954    1533.882816
std     31240.842929   16491.833017    3209.041070
min     11147.240000       0.000000       0.000000
25%     70023.000000       0.000000       0.000000
50%     87328.000000     258.420000       0.000000
75%    108084.000000    9190.970000    1225.680000
max    292000.000000  227428.990000   20279.460000
```

[11]

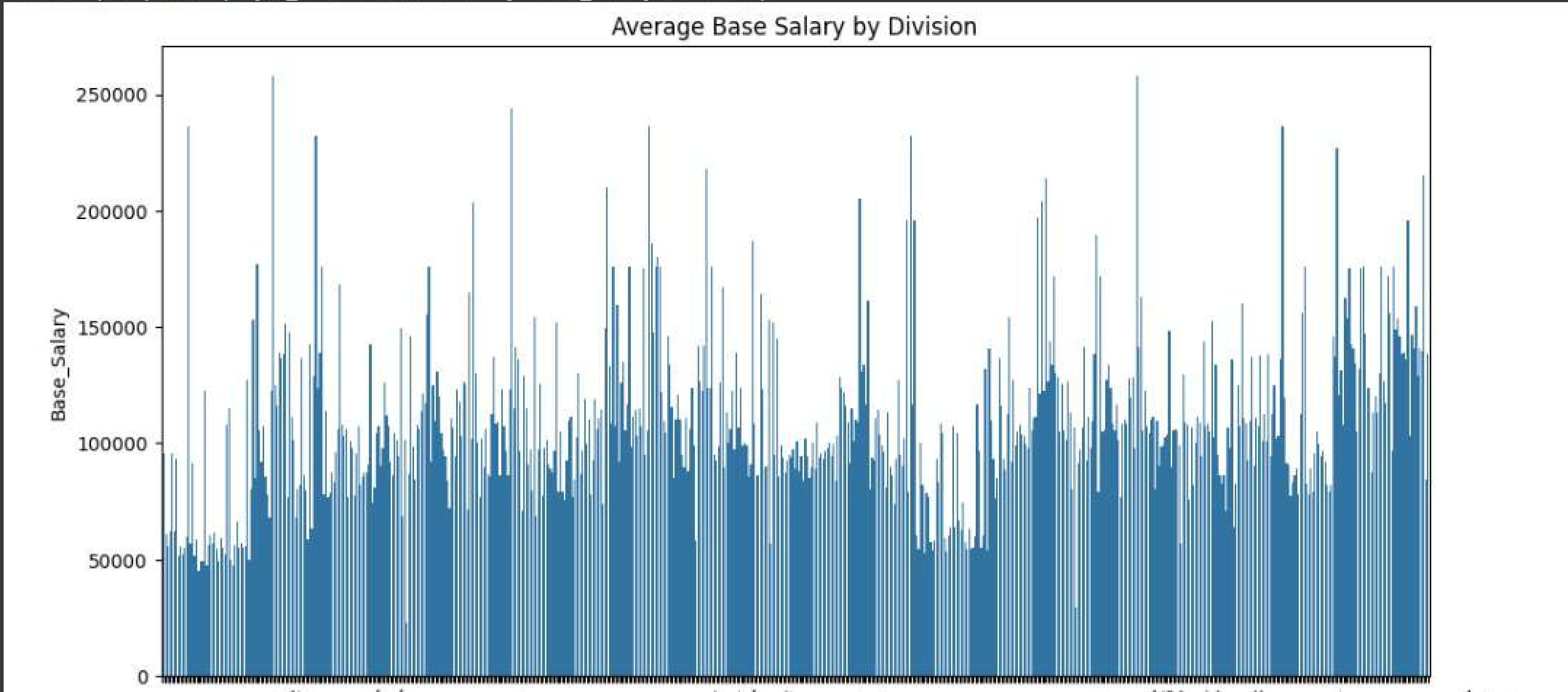
```python
import matplotlib.pyplot as plt
import seaborn as sns

# Bar chart for average Base Salary by Department
plt.figure(figsize=(12, 6))
sns.barplot(data=employee_data, x='Department', y='Base_Salary', ci=None)
plt.title("Average Base Salary by Department")
plt.xticks(rotation=45)
plt.show()

```

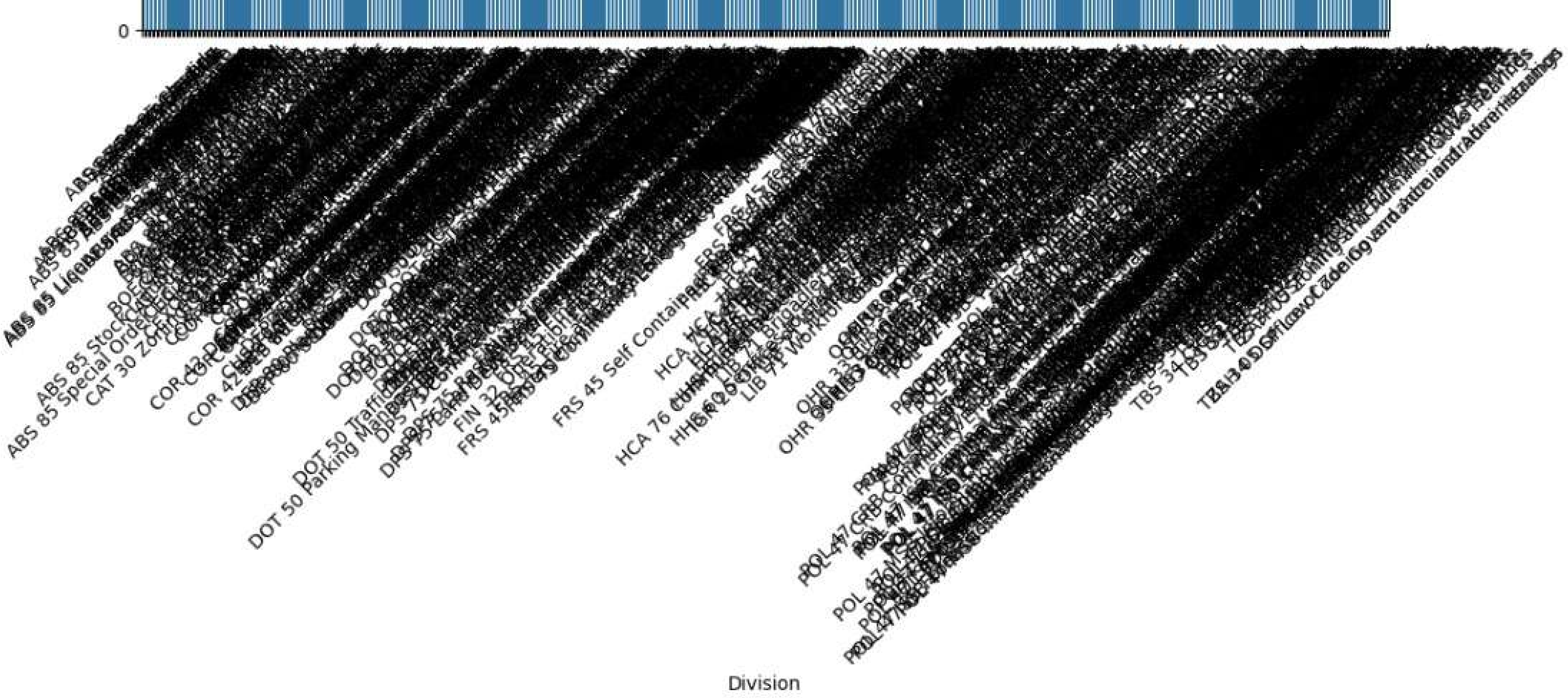
```
<ipython-input-11-d0727e033b0f>:6: FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.

  sns.barplot(data=employee_data, x='Department', y='Base_Salary', ci=None)
```



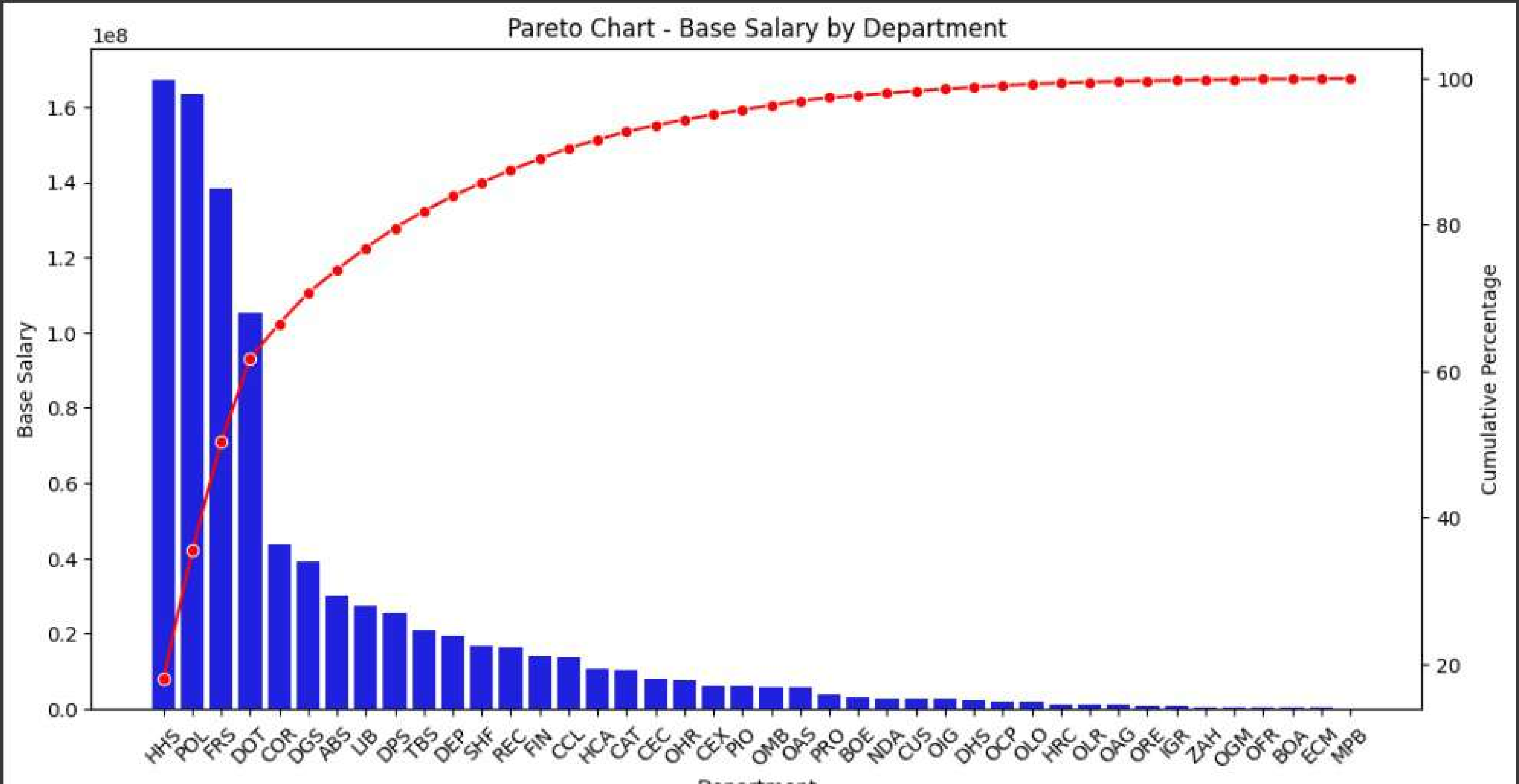
```
# Column chart to compare average salary by Division
plt.figure(figsize=(12, 6))
sns.barplot(data=employee_data, x='Division', y='Base_Salary', ci=None)
plt.title("Average Base Salary by Division")
plt.xticks(rotation=45)
plt.show()
```

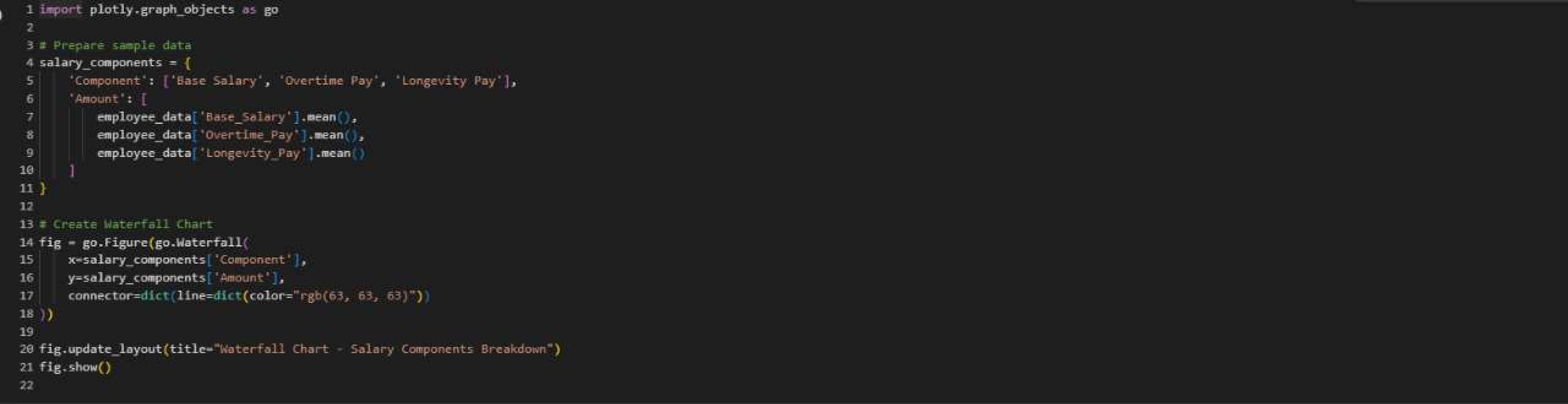
```
<ipython-input-19-ed86b1a23cca>:3: FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.

  sns.barplot(data=employee_data, x='Division', y='Base_Salary', ci=None)
```



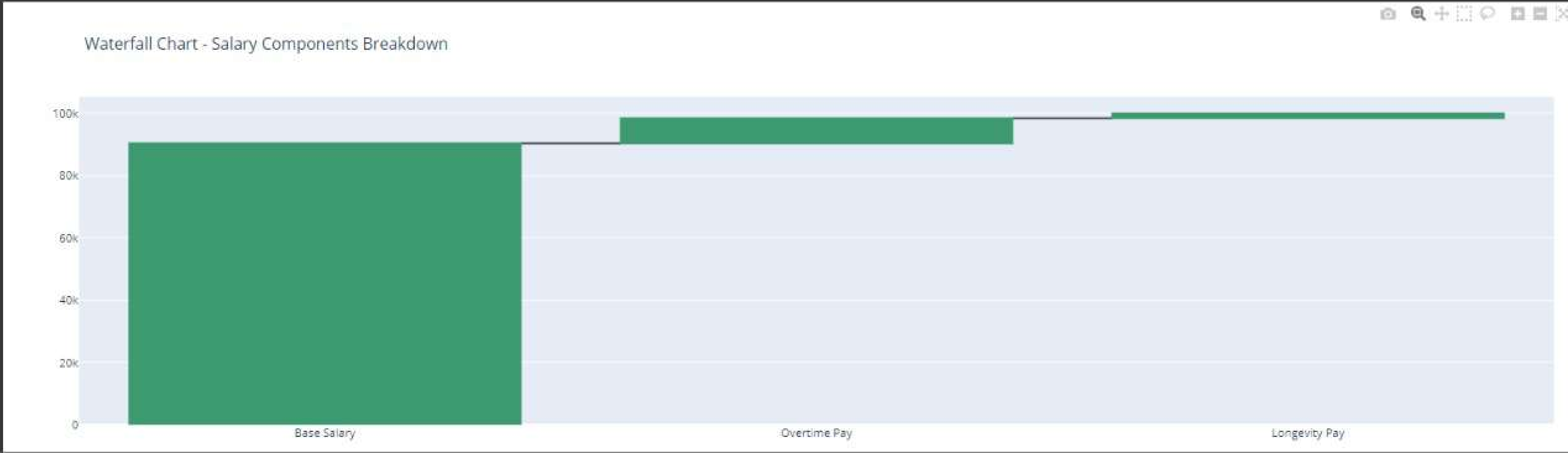

0
Division

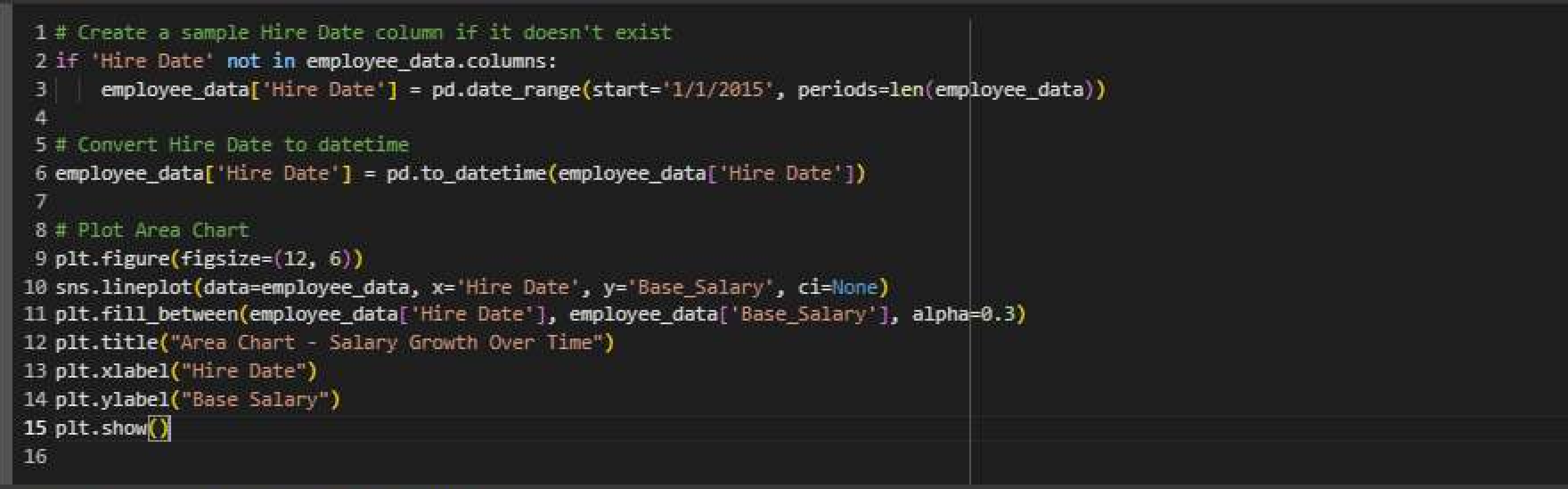
```python
# Sort by Base Salary
dept_salary_sorted = dept_salary.sort_values(by='Base_Salary', ascending=False)
dept_salary_sorted['Cumulative_Percentage'] = dept_salary_sorted['Base_Salary'].cumsum() / dept_salary_sorted['Base_Salary'].sum() * 100

# Plot Pareto Chart
plt.figure(figsize=(12, 6))
sns.barplot(data=dept_salary_sorted, x='Department', y='Base_Salary', color='b')
plt.xticks(rotation=45)
plt.ylabel("Base Salary")
plt.title("Pareto Chart - Base Salary by Department")

# Plot cumulative percentage
plt.twinx()
sns.lineplot(data=dept_salary_sorted, x='Department', y='Cumulative_Percentage', color='r', marker='o')
plt.ylabel("Cumulative Percentage")
plt.show()

```





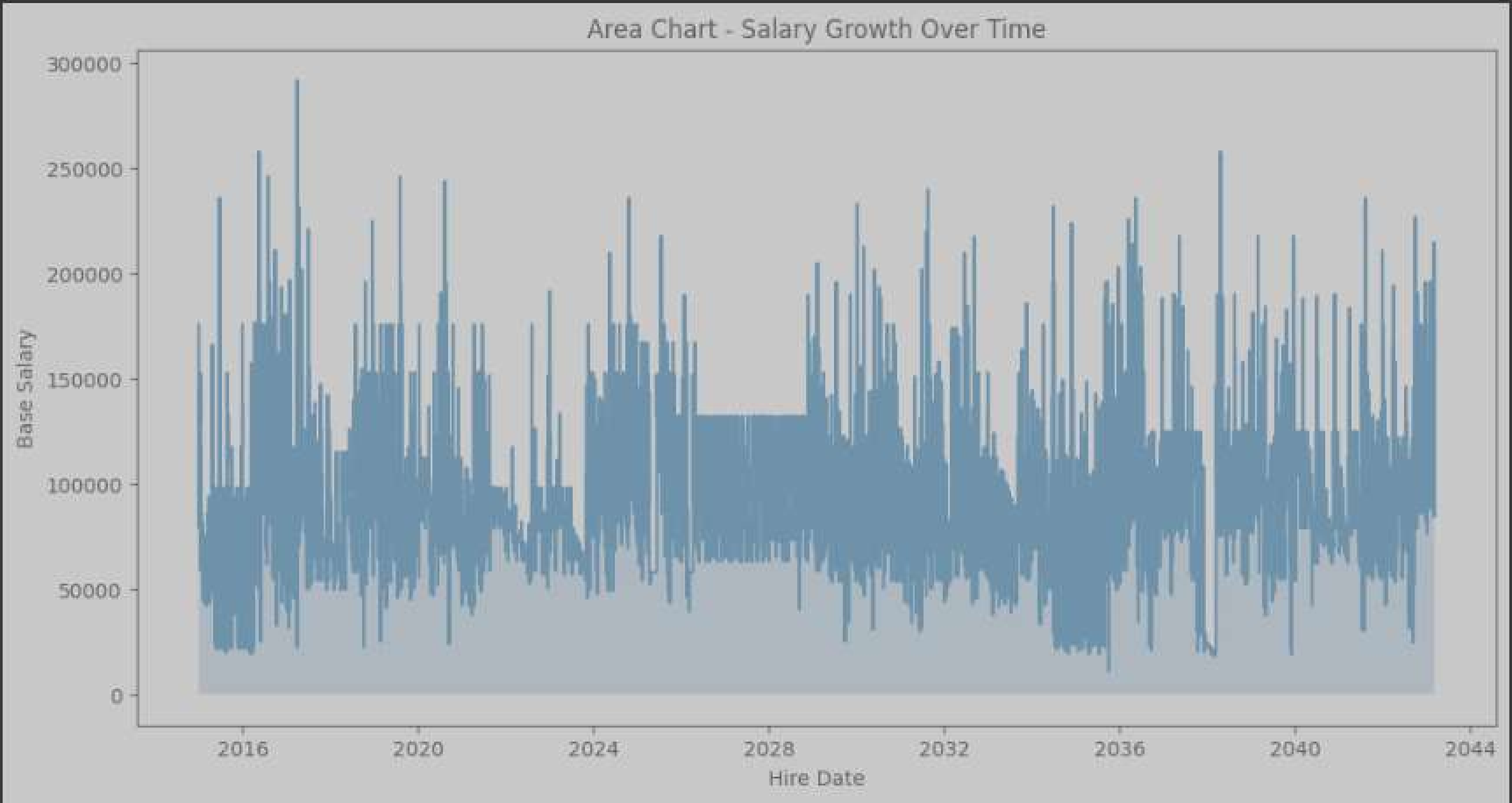
```python
import plotly.graph_objects as go

# Prepare sample data
salary_components = {
    'Component': ['Base Salary', 'Overtime Pay', 'Longevity Pay'],
    'Amount': [
        employee_data['Base_Salary'].mean(),
        employee_data['Overtime_Pay'].mean(),
        employee_data['Longevity_Pay'].mean()
    ]
}

# Create Waterfall Chart
fig = go.Figure(go.Waterfall(
    x=salary_components['Component'],
    y=salary_components['Amount'],
    connector=dict(line=dict(color="rgb(63, 63, 63)"))
))

fig.update_layout(title="Waterfall Chart - Salary Components Breakdown")
fig.show()
```



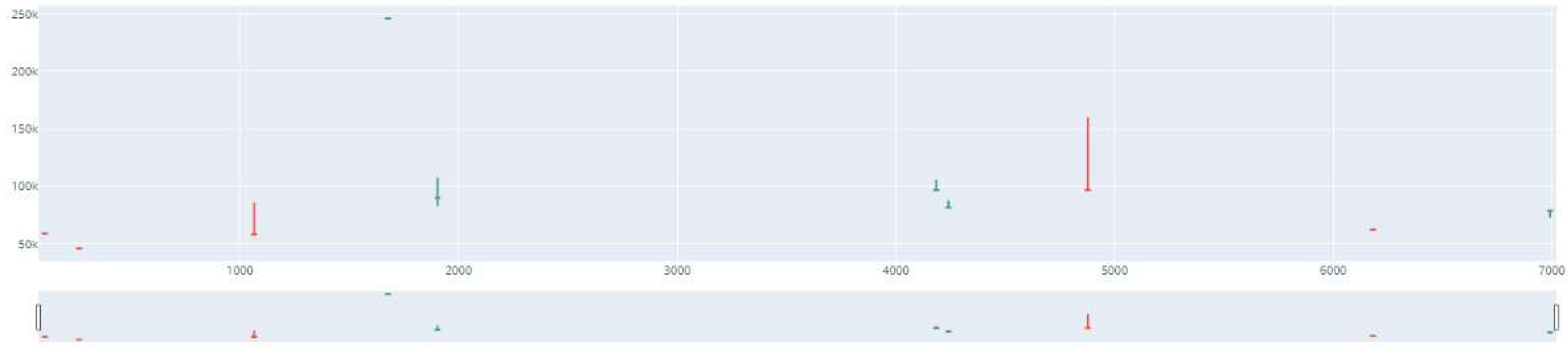


```
# Create a sample Hire Date column if it doesn't exist
if 'Hire Date' not in employee_data.columns:
    employee_data['Hire Date'] = pd.date_range(start='1/1/2015', periods=len(employee_data))

# Convert Hire Date to datetime
employee_data['Hire Date'] = pd.to_datetime(employee_data['Hire Date'])

# Plot Area Chart
plt.figure(figsize=(12, 6))
sns.lineplot(data=employee_data, x='Hire Date', y='Base_Salary', ci=None)
plt.fill_between(employee_data['Hire Date'], employee_data['Base_Salary'], alpha=0.3)
plt.title("Area Chart - Salary Growth Over Time")
plt.xlabel("Hire Date")
plt.ylabel("Base Salary")
plt.show()

```

```
<ipython-input-28-be455d60bfd1>:10: FutureWarning:



The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.
```

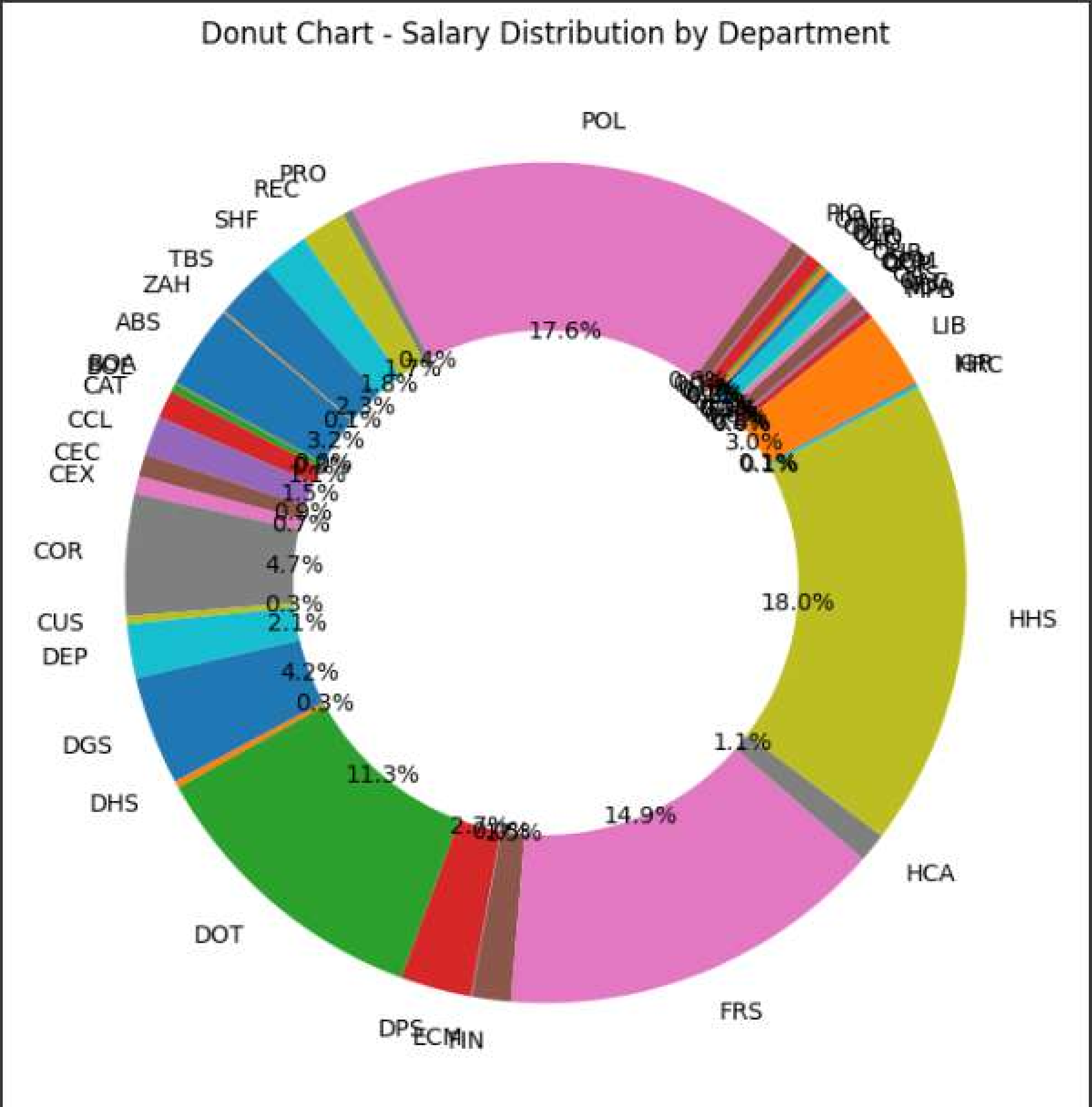


```python
# Sample Candlestick Chart using Plotly
import plotly.graph_objects as go

# Example data
candlestick_data = employee_data[['Base_Salary', 'Overtime_Pay', 'Longevity_Pay']].sample(10)

# Plot Candlestick Chart
fig = go.Figure(data=[go.Candlestick(
    x=candlestick_data.index,
    open=candlestick_data['Base_Salary'],
    high=candlestick_data['Base_Salary'] + candlestick_data['Overtime_Pay'],
    low=candlestick_data['Base_Salary'] - candlestick_data['Longevity_Pay'],
    close=candlestick_data['Base_Salary']
)])
fig.show()

```

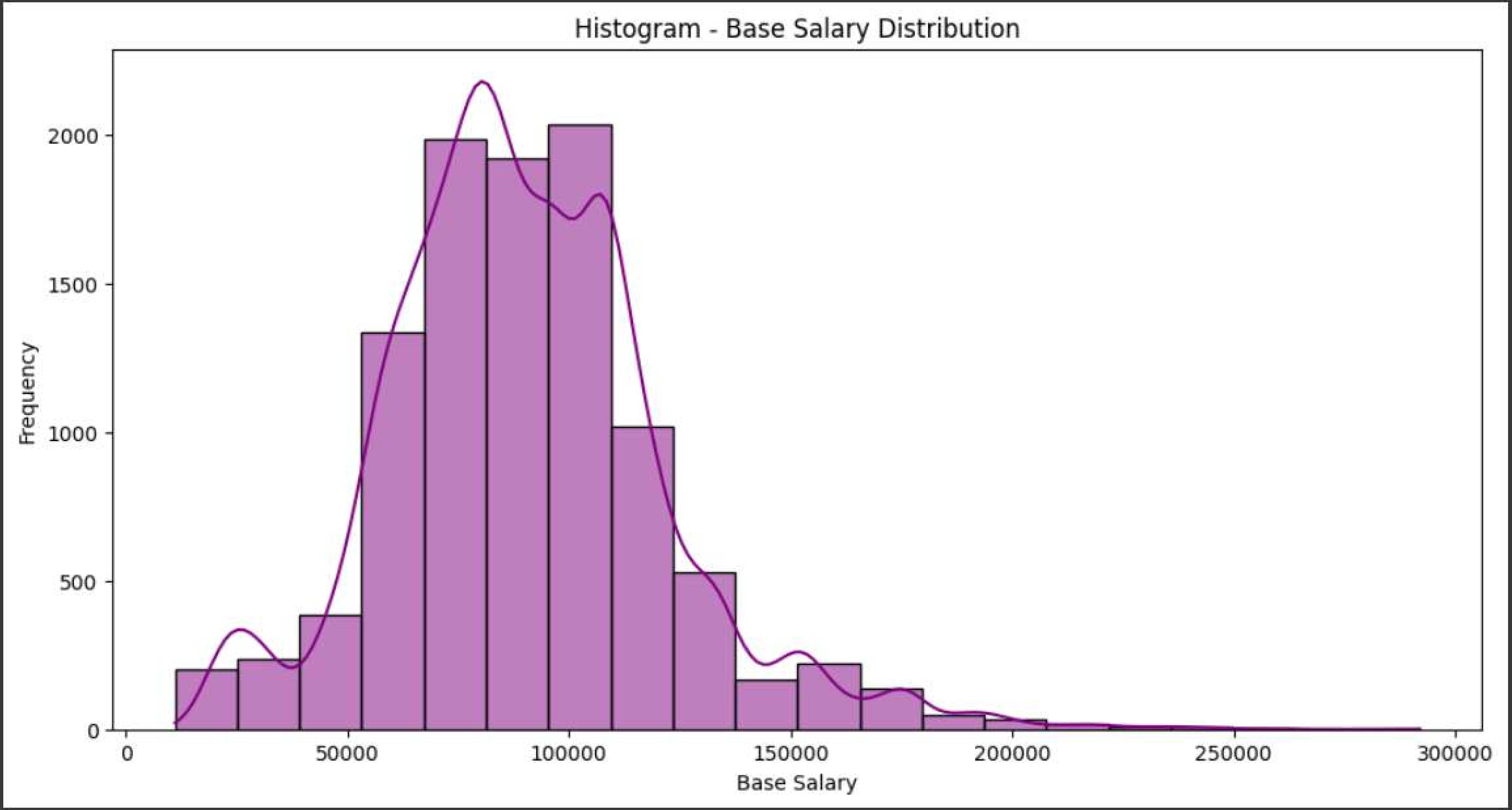


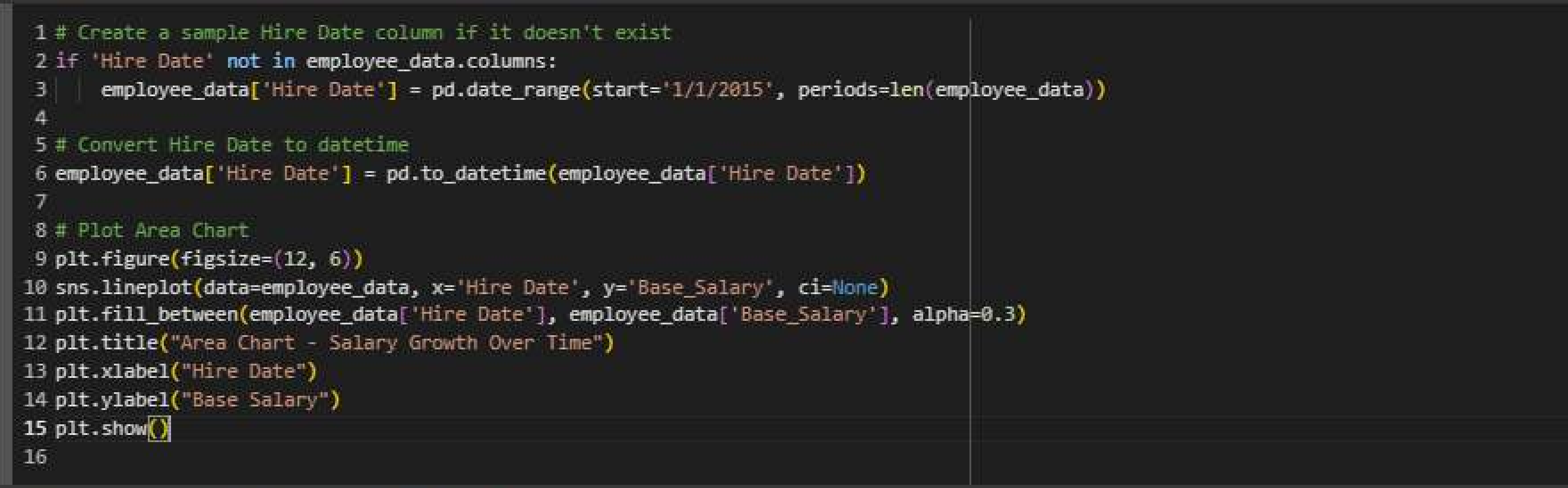
[33]

```
# Calculate total salary by department
dept_salary = employee_data.groupby('Department')['Base_Salary'].sum()

# Create Donut Chart
plt.figure(figsize=(10, 8))
plt.pie(dept_salary, labels=dept_salary.index, autopct='%1.1f%%', startangle=140, wedgeprops=dict(width=0.4))
plt.title("Donut Chart - Salary Distribution by Department")
plt.show()

```



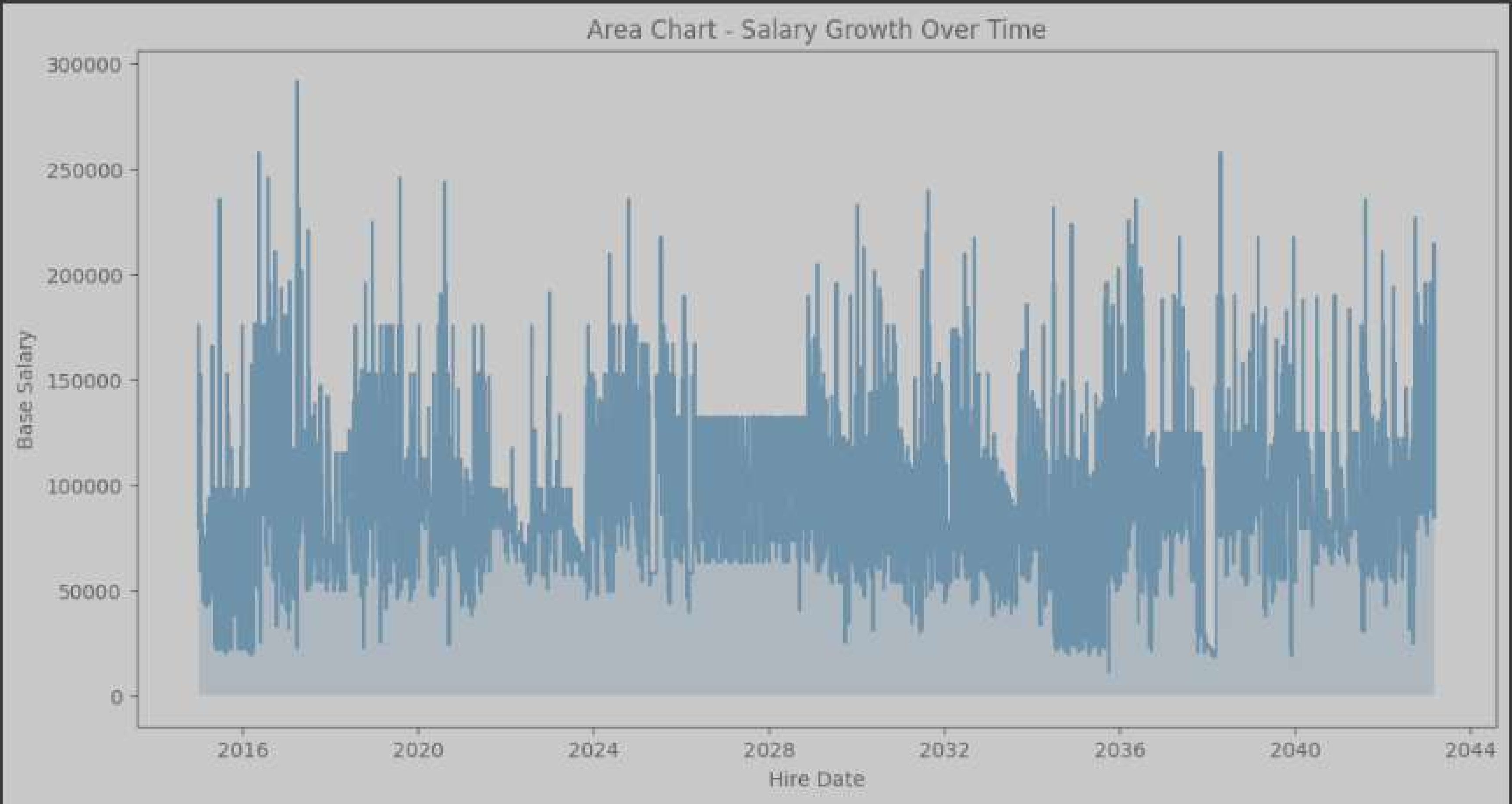
```python
# Plot histogram of Base Salary
plt.figure(figsize=(12, 6))
sns.histplot(employee_data['Base_Salary'], kde=True, bins=20, color='purple')
plt.title("Histogram - Base Salary Distribution")
plt.xlabel("Base Salary")
plt.ylabel("Frequency")
plt.show()

```



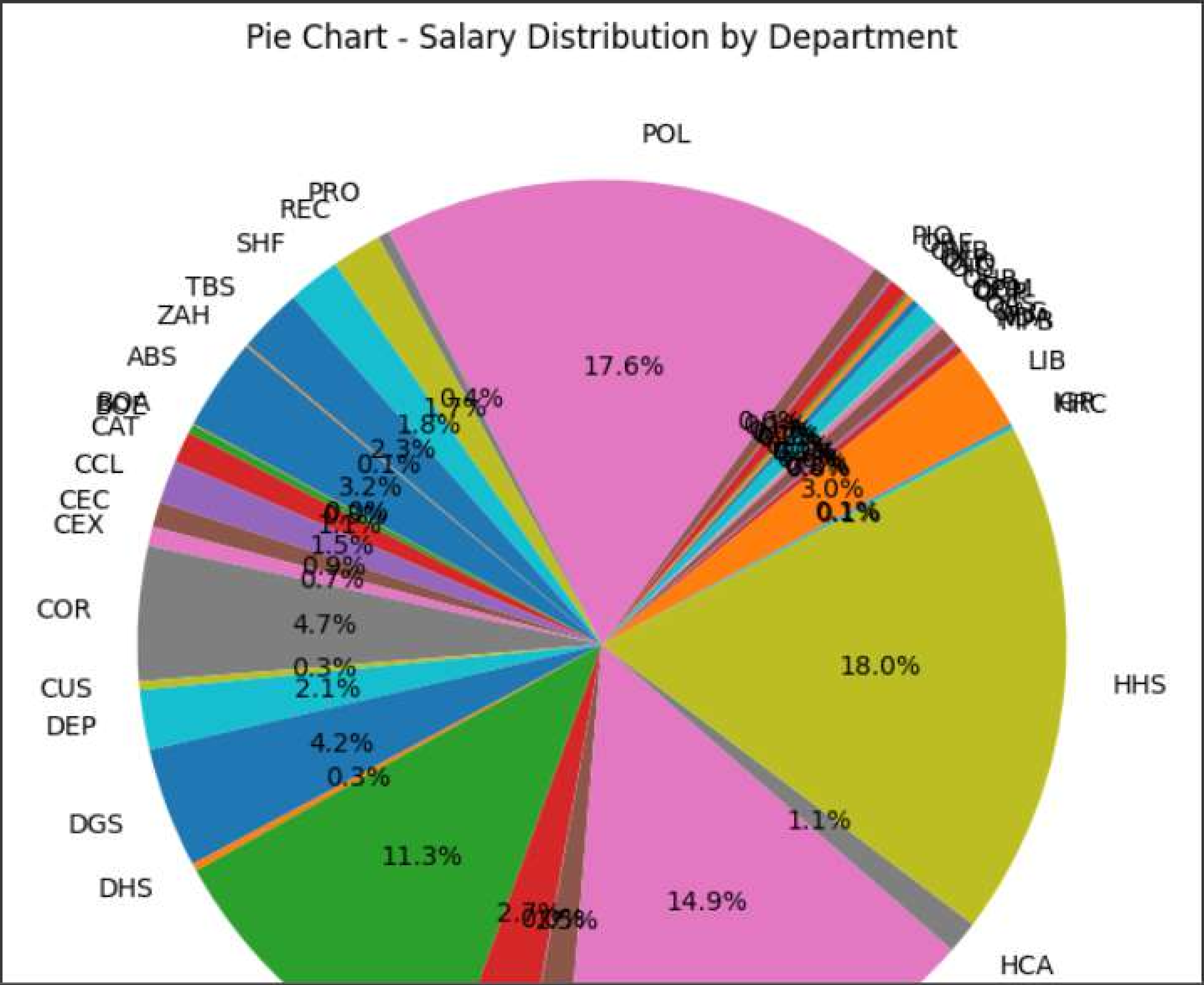


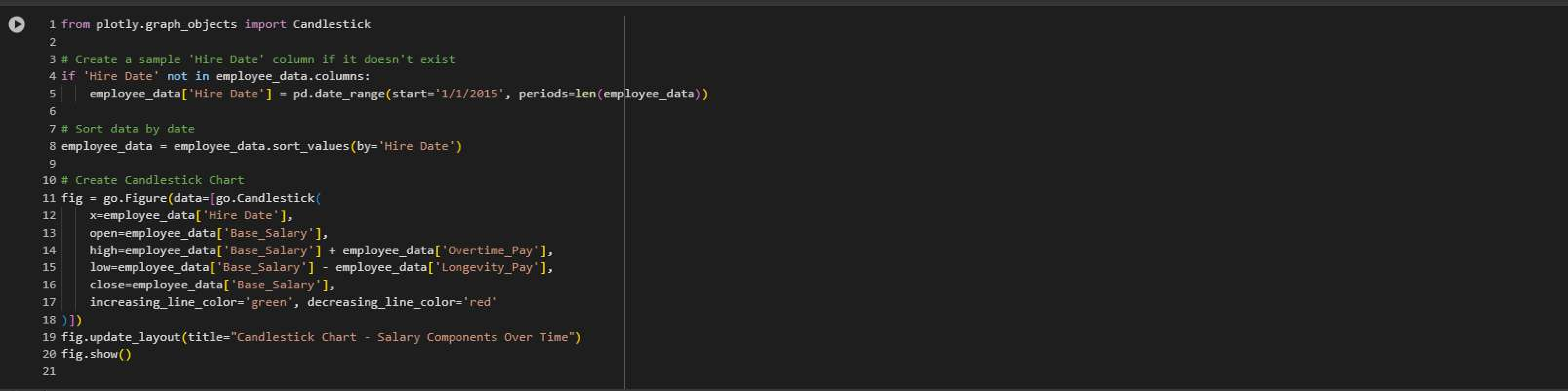
```python
# Create a sample Hire Date column if it doesn't exist
if 'Hire Date' not in employee_data.columns:
    employee_data['Hire Date'] = pd.date_range(start='1/1/2015', periods=len(employee_data))

# Convert Hire Date to datetime
employee_data['Hire Date'] = pd.to_datetime(employee_data['Hire Date'])

# Plot Area Chart
plt.figure(figsize=(12, 6))
sns.lineplot(data=employee_data, x='Hire Date', y='Base_Salary', ci=None)
plt.fill_between(employee_data['Hire Date'], employee_data['Base_Salary'], alpha=0.3)
plt.title("Area Chart - Salary Growth Over Time")
plt.xlabel("Hire Date")
plt.ylabel("Base Salary")
plt.show()

```

```
<ipython-input-28-be455d60bfd1>:10: FutureWarning:



The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.
```

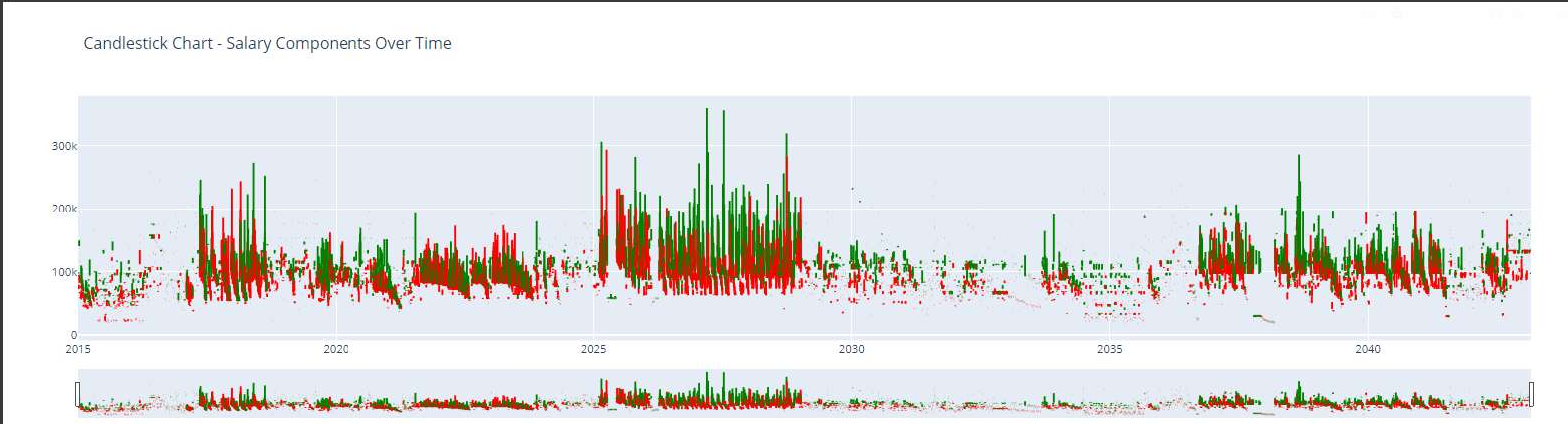


```python
# Group data by Department and sum the Base Salary
dept_salary = employee_data.groupby('Department')['Base_Salary'].sum()

# Plot Pie Chart
plt.figure(figsize=(10, 8))
plt.pie(dept_salary, labels=dept_salary.index, autopct='%1.1f%%', startangle=140)
plt.title("Pie Chart - Salary Distribution by Department")
plt.show()

```

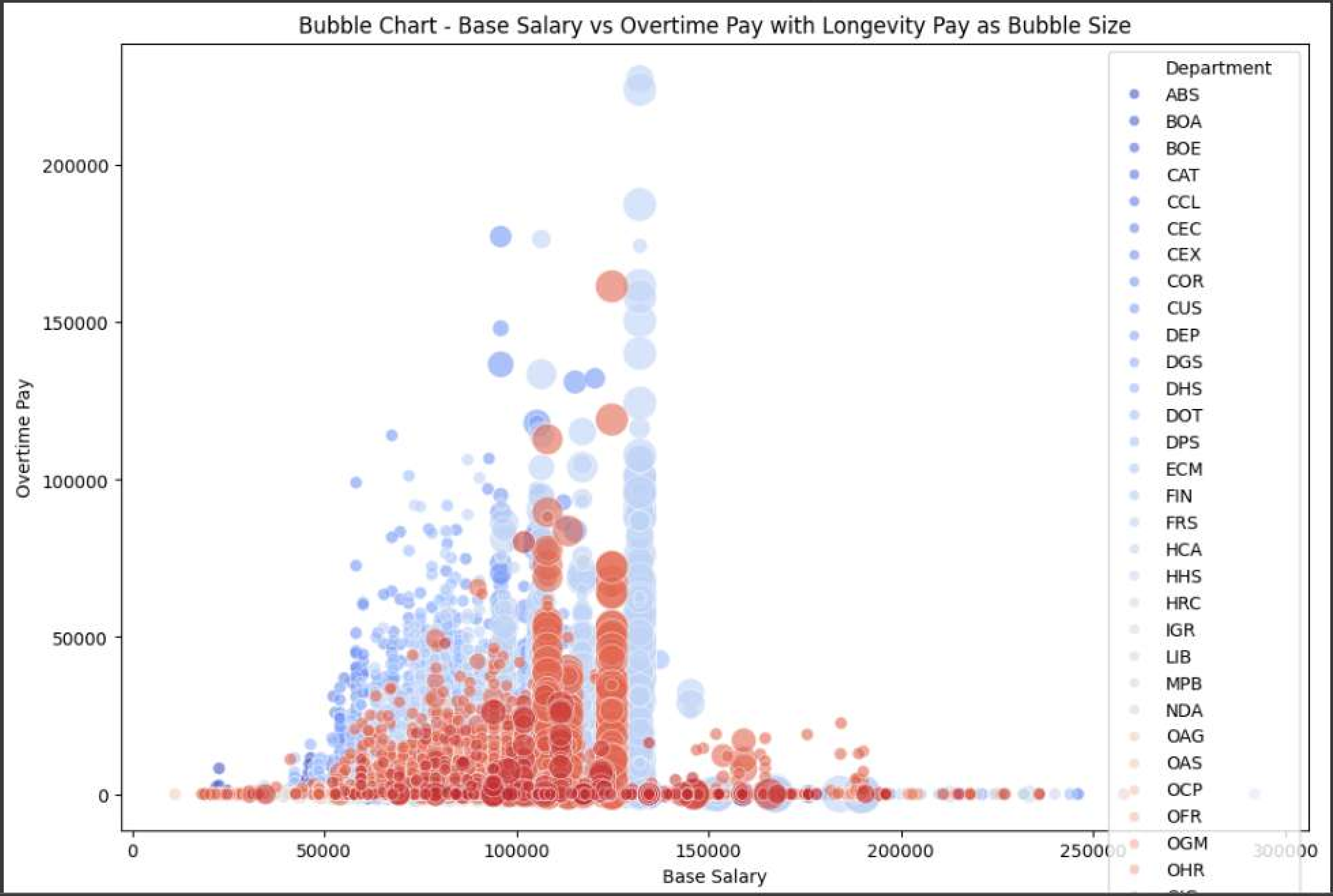


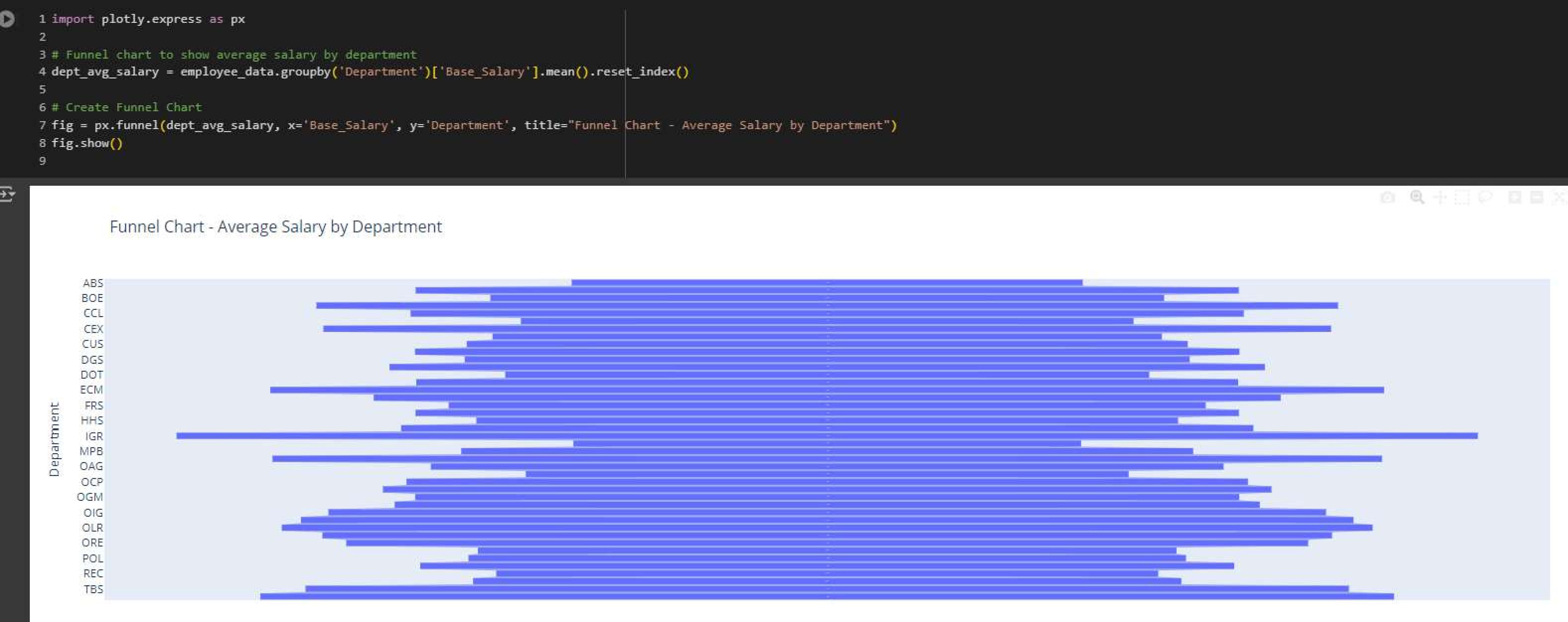


```python
from plotly.graph_objects import Candlestick

# Create a sample 'Hire Date' column if it doesn't exist
if 'Hire Date' not in employee_data.columns:
    employee_data['Hire Date'] = pd.date_range(start='1/1/2015', periods=len(employee_data))

# Sort data by date
employee_data = employee_data.sort_values(by='Hire Date')

# Create Candlestick Chart
fig = go.Figure(data=[go.Candlestick(
    x=employee_data['Hire Date'],
    open=employee_data['Base_Salary'],
    high=employee_data['Base_Salary'] + employee_data['Overtime_Pay'],
    low=employee_data['Base_Salary'] - employee_data['Longevity_Pay'],
    close=employee_data['Base_Salary'],
    increasing_line_color='green', decreasing_line_color='red'
)])
fig.update_layout(title="Candlestick Chart - Salary Components Over Time")
fig.show()
```

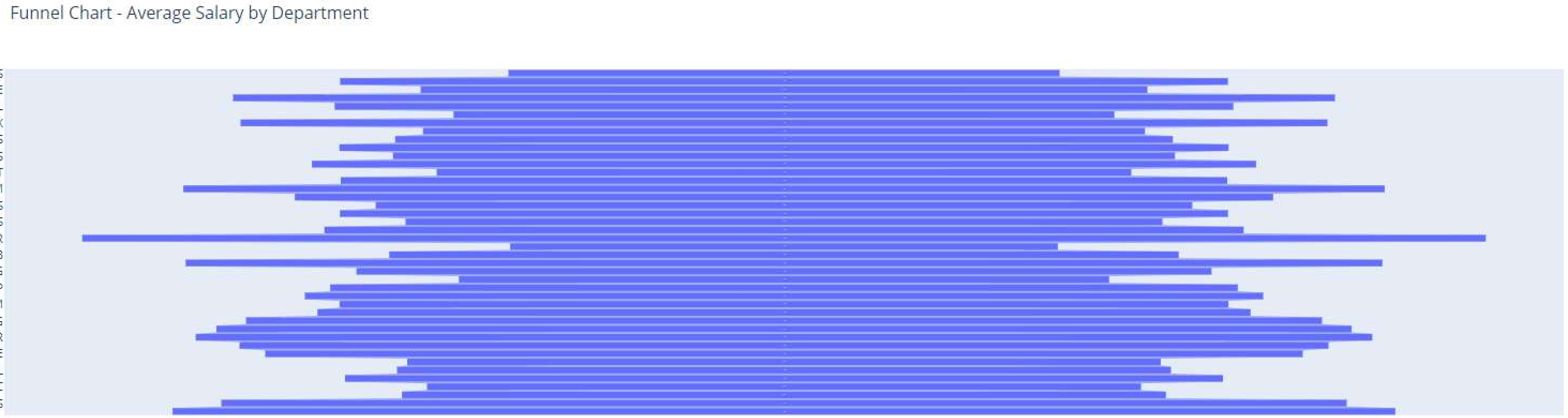


```python
# Bubble chart to show Base Salary vs Overtime Pay, with Longevity Pay as bubble size
plt.figure(figsize=(12, 8))
sns.scatterplot(data=employee_data, x='Base_Salary', y='Overtime_Pay', size='Longevity_Pay', hue='Department', alpha=0.6, palette="coolwarm", sizes=(50, 500))
plt.title("Bubble Chart - Base Salary vs Overtime Pay with Longevity Pay as Bubble Size")
plt.xlabel("Base Salary")
plt.ylabel("Overtime Pay")
plt.legend(loc="upper right")
plt.show()

```





```python
import plotly.express as px

# Funnel chart to show average salary by department
dept_avg_salary = employee_data.groupby('Department')['Base_Salary'].mean().reset_index()

# Create Funnel Chart
fig = px.funnel(dept_avg_salary, x='Base_Salary', y='Department', title="Funnel Chart - Average Salary by Department")
fig.show()

```


Funnel Chart - Average Salary by Department
Department
ABS
BOE
CCL
CEX
CUS
DGS
DOT
ECM
FRS
HHS
IGR
MPB
OAG
OCP
OGM
OIG
OLR
ORE
POL
REC
TBS