In [1]:

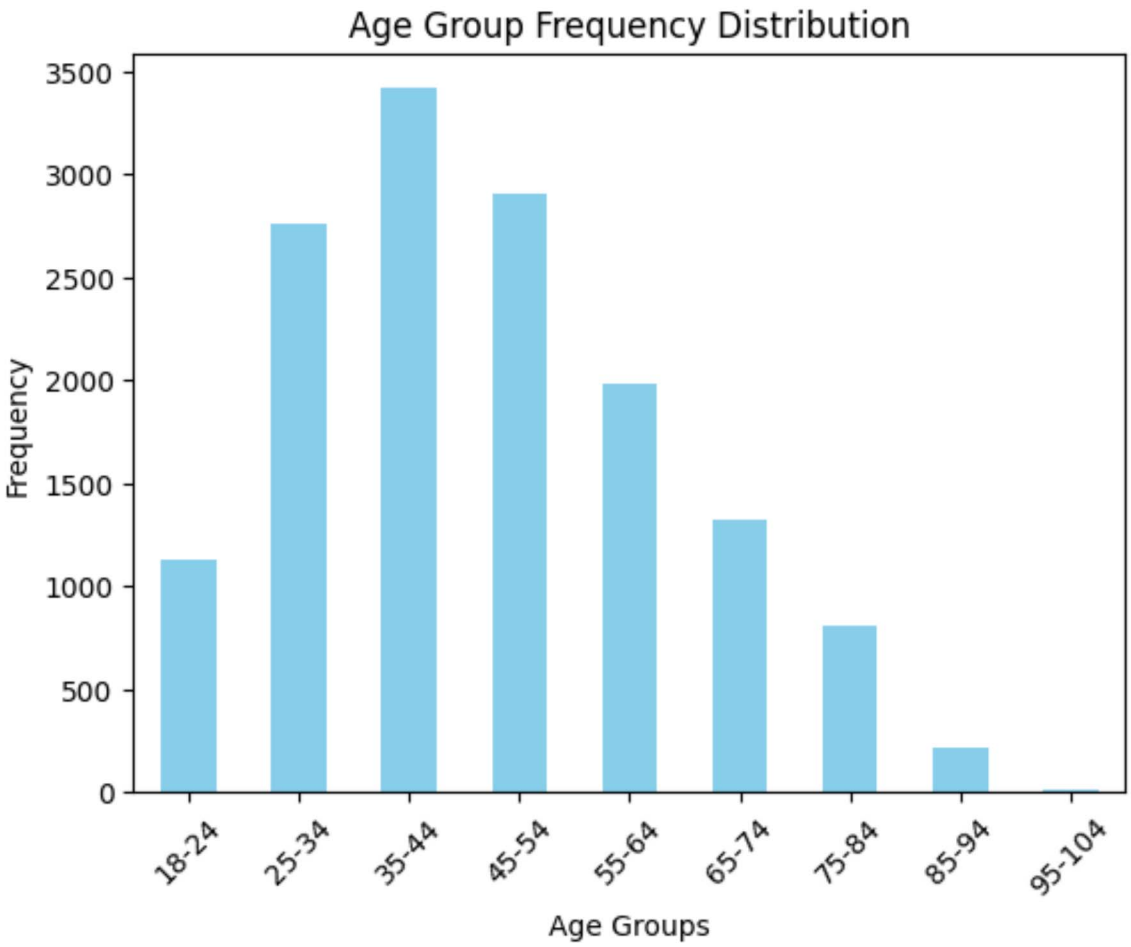
```
import pandas as pd
import matplotlib.pyplot as plt

df_cleaned = pd.read_excel('finally_clean_data_for_further_processing.xlsx')
```

```
       age  sex  householdincome  howoftenwine  noofwines  \
0       34    2               12            10          1
1       84    2                7             6          1
2       29    2               13            10          1
3       68    2                6             5          1
4       54    2               11             9          1
...    ...  ...              ...           ...        ...
14556   18    2                1             9          1
14557   18    1                1            10          1
14558   51    1                6             6          1
14559   21    1                1            10          2
14560   18    2                1            10          1

                      wine_frequency              wine_amount  \
0      1 or 2 times in the last year     One glass/ container
1                2 to 3 times a month     One glass/ container
2      1 or 2 times in the last year     One glass/ container
3                          Once a week     One glass/ container
4      3 to 6 times in the last year     One glass/ container
...                              ...                     ...
14556  3 to 6 times in the last year     One glass/ container
14557  1 or 2 times in the last year     One glass/ container
14558            2 to 3 times a month     One glass/ container
14559  1 or 2 times in the last year  Two glasses/ containers
14560  1 or 2 times in the last year     One glass/ container

          income_category
0      $50,000 to $59,999
1      $20,000 to $24,999
2      $60,000 to $69,999
3      $15,000 to $19,999
4      $40,000 to $49,999
...                   ...
14556    Less than $5,000
14557    Less than $5,000
14558  $15,000 to $19,999
14559    Less than $5,000
14560    Less than $5,000

[14561 rows x 8 columns]
```

Generating the univariate graph to illustrate the distributions of week 2

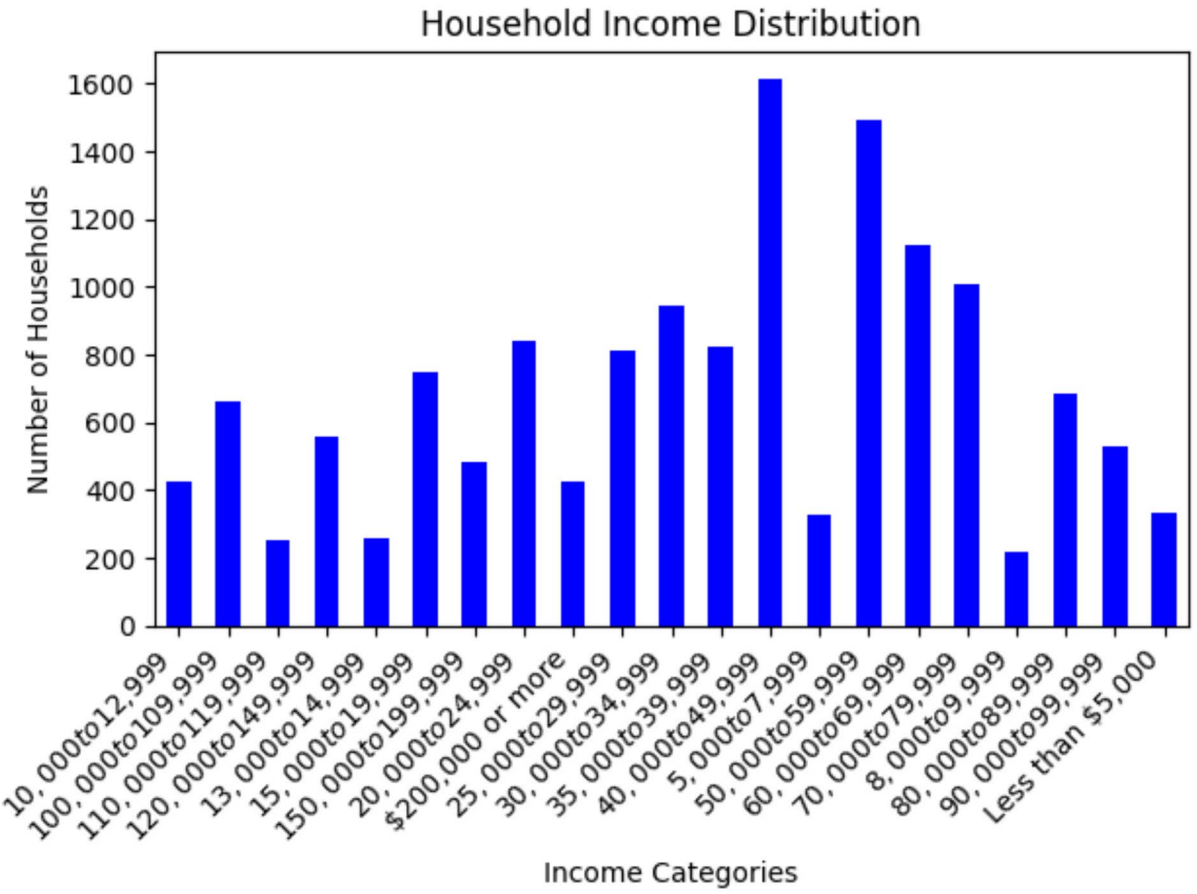
In [2]:

```
# Plotting the Age Group Frequency Distribution
labels = ['18-24', '25-34', '35-44', '45-54', '55-64', '65-74', '75-84', '85-94', '95
age_group = df_cleaned['age_group'].value_counts().reindex(labels, fill_value=0).sort

age_group.plot(kind='bar', color='skyblue')
plt.title('Age Group Frequency Distribution')
plt.xlabel('Age Groups')
plt.ylabel('Frequency')
plt.xticks(rotation=45)
plt.show()
```



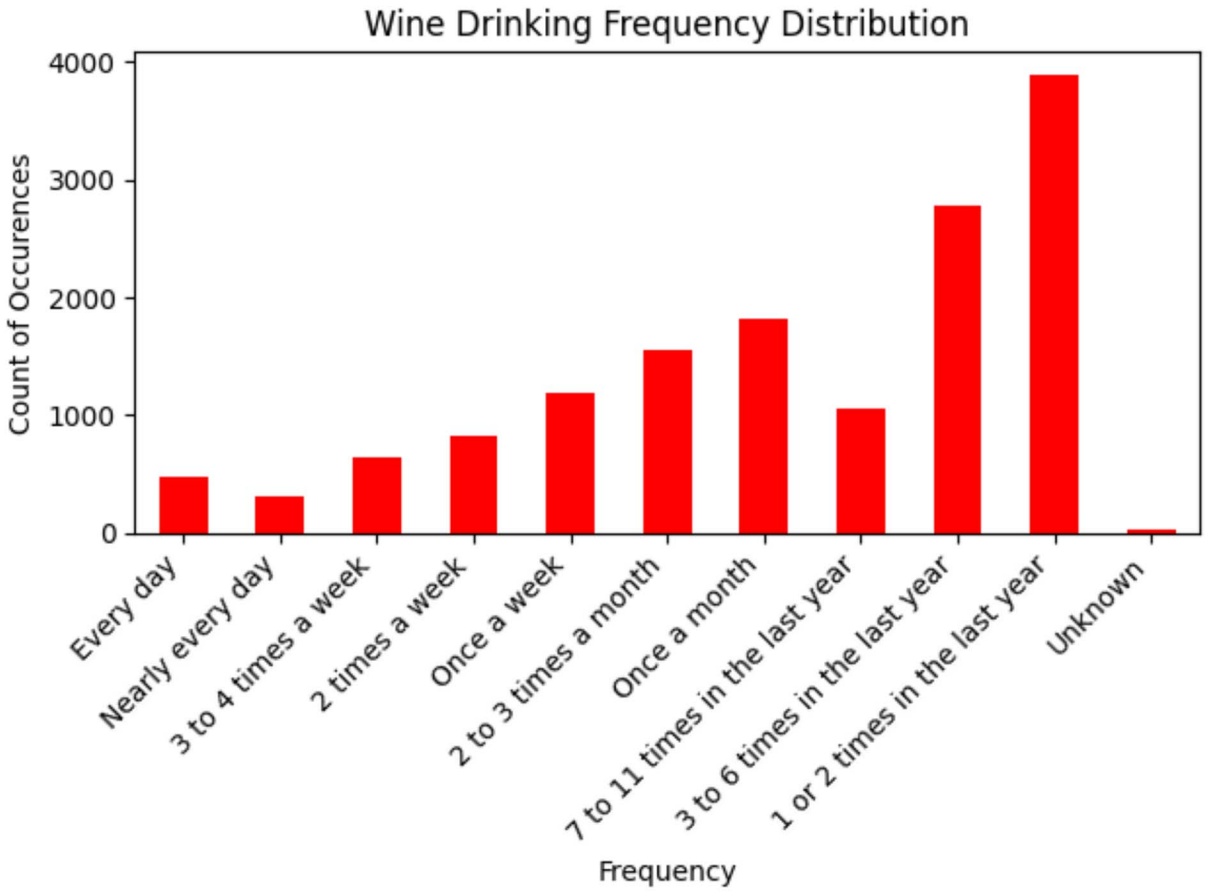
In [3]:

```
# Plotting the Income Category Frequency Distribution
income_labels = ['Less than $5,000',
    '$5,000 to $7,999',
    '$8,000 to $9,999',
    '$10,000 to $12,999',
    '$13,000 to $14,999',
    '$15,000 to $19,999',
    '$20,000 to $24,999',
    '$25,000 to $29,999',
    '$30,000 to $34,999',
    '$35,000 to $39,999',
    '$40,000 to $49,999',
    '$50,000 to $59,999',
    '$60,000 to $69,999',
    '$70,000 to $79,999',
    '$80,000 to $89,999',
    '$90,000 to $99,999',
    '$100,000 to $109,999',
    '$110,000 to $119,999',
    '$120,000 to $149,999',
    '$150,000 to $199,999',
    '$200,000 or more']

income_data = df_cleaned['income_category'].value_counts().reindex(income_labels, fi

income_data.plot(kind='bar', color='blue')
plt.title('Household Income Distribution')
plt.xlabel('Income Categories')
plt.ylabel('Number of Households')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()  # Adjust layout to make room for x-axis labels
plt.show()
```



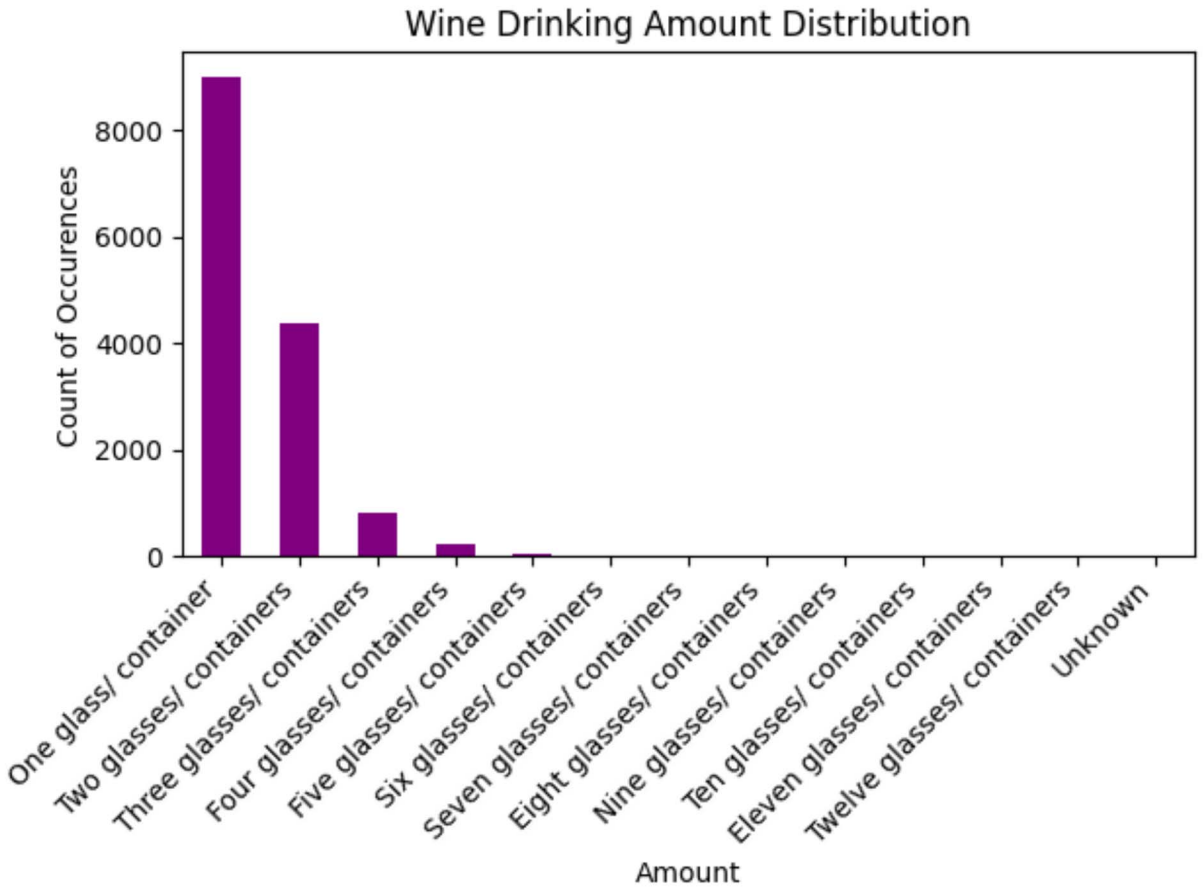
In [4]:

```
# Plotting the Wine Drinking Frequency Distribution
wine_freq_labels = ['Every day', 'Nearly every day',
                            '3 to 4 times a week', '2 times a week',
                            'Once a week', '2 to 3 times a month',
                            'Once a month', '7 to 11 times in the last year',
                            '3 to 6 times in the last year', '1 or 2 times in the last
                            'Unknown']

wine_freq_data = df_cleaned['wine_frequency'].value_counts().reindex(wine_freq_labels

wine_freq_data.plot(kind='bar', color='red')
plt.title('Wine Drinking Frequency Distribution')
plt.xlabel('Frequency')
plt.ylabel('Count of Occurences')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()  # Adjust layout to make room for x-axis labels
plt.show()
```



In [5]:

```
# Plotting the Wine Drinking Amount Distribution
wine_amount_labels = ['One glass/ container',
    'Two glasses/ containers',
    'Three glasses/ containers',
    'Four glasses/ containers',
    'Five glasses/ containers',
    'Six glasses/ containers',
    'Seven glasses/ containers',
    'Eight glasses/ containers',
    'Nine glasses/ containers',
    'Ten glasses/ containers',
    'Eleven glasses/ containers',
    'Twelve glasses/ containers',
    'Unknown']

wine_amount_data = df_cleaned['wine_amount'].value_counts().reindex(wine_amount_labe

wine_amount_data.plot(kind='bar', color='purple')
plt.title('Wine Drinking Amount Distribution')
plt.xlabel('Amount')
plt.ylabel('Count of Occurences')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()  # Adjust layout to make room for x-axis labels
plt.show()
```



In [6]:

```
# Remove the 99 category (="Unknown") from the data, since it does not benefit the ar
df_cleaned = df_cleaned[~(df_cleaned['noofwines'] == 99)]

# Create scatter plot
plt.scatter(df_cleaned_2['age'], df_cleaned_2['noofwines'], color='blue', marker='o')
plt.title('Age vs Wine Quantity')
plt.xlabel('Age')
plt.ylabel('Wine Consumption by Number of Units')

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


Age vs Wine Quantity
Wine Consumption by Number of Units
12
10
8
6
4
2
20
30
40
50
60
70
80
90
Age