```python
import pandas as pd
data = pd.read_csv("/Users/royli/Desktop/query.csv")
data['time'] = pd.to_datetime(data['time'])
filtered_data = data[data['time'] >= '1980-01-01']
print(filtered_data)
data['year'] = data['time'].dt.year
yearly_counts = data.groupby('year').size()


import matplotlib.pyplot as plt
# Plot different diagrams
plt.figure(figsize=(10, 6))
plt.plot(yearly_counts.index, yearly_counts.values, marker='.')
plt.title('Earthquake Count by Year')
plt.xlabel('Year')
plt.ylabel('Number of Earthquakes')
plt.grid()
plt.savefig('/Users/royli/Desktop/EC.pdf', format='pdf')
plt.show()

plt.figure(figsize=(10, 6))
plt.hist(data['mag'], bins=10, edgecolor='black')
plt.title('Magnitude Distribution Since 1980')
plt.xlabel('Magnitude')
plt.ylabel('Frequency')
plt.savefig('/Users/royli/Desktop/MD.pdf', format='pdf')
plt.show()

phoenix_lat, phoenix_lon = 33.4484, -112.0740
plt.figure(figsize=(8, 6))
plt.scatter(data['longitude'], data['latitude'], c=data['mag'], cmap='viridis', alpha=0.7)
plt.scatter(phoenix_lon, phoenix_lat, color='blue', label='Phoenix', marker='o', s=100)  # 凤凰城位置
plt.colorbar(label='Magnitude')
plt.title('Earthquake Locations')
plt.xlabel('Longitude')
plt.ylabel('Latitude')
plt.legend()
plt.grid()
plt.savefig('/Users/royli/Desktop/EL.pdf', format='pdf')
plt.show()

import pandas as pd
data = pd.read_csv("/Users/royli/Desktop/query.csv")
```

```python
phoenix_lat, phoenix_lon = 33.4484, -112.0740
filtered_data = data[
    (data['latitude'] >= phoenix_lat - 1) & (data['latitude'] <= phoenix_lat + 1) &
    (data['longitude'] >= phoenix_lon - 1) & (data['longitude'] <= phoenix_lon + 1)
]
import matplotlib.pyplot as plt
plt.figure(figsize=(8, 6))
plt.scatter(filtered_data['longitude'], filtered_data['latitude'],
            c=filtered_data['mag'], cmap='Reds', alpha=0.7)
plt.colorbar(label='Magnitude')
plt.scatter(phoenix_lon, phoenix_lat, color='blue', label='Phoenix', marker='o', s=100)  # 凤凰城位置
plt.title('Earthquake Distribution Around Phoenix')
plt.xlabel('Longitude')
plt.ylabel('Latitude')
plt.legend()
plt.grid()
plt.savefig('/Users/royli/Desktop/EDAPHX.pdf', format='pdf')
plt.show()

filtered_data1 = data[data['mag'] >= 5]
print(filtered_data1)
```