

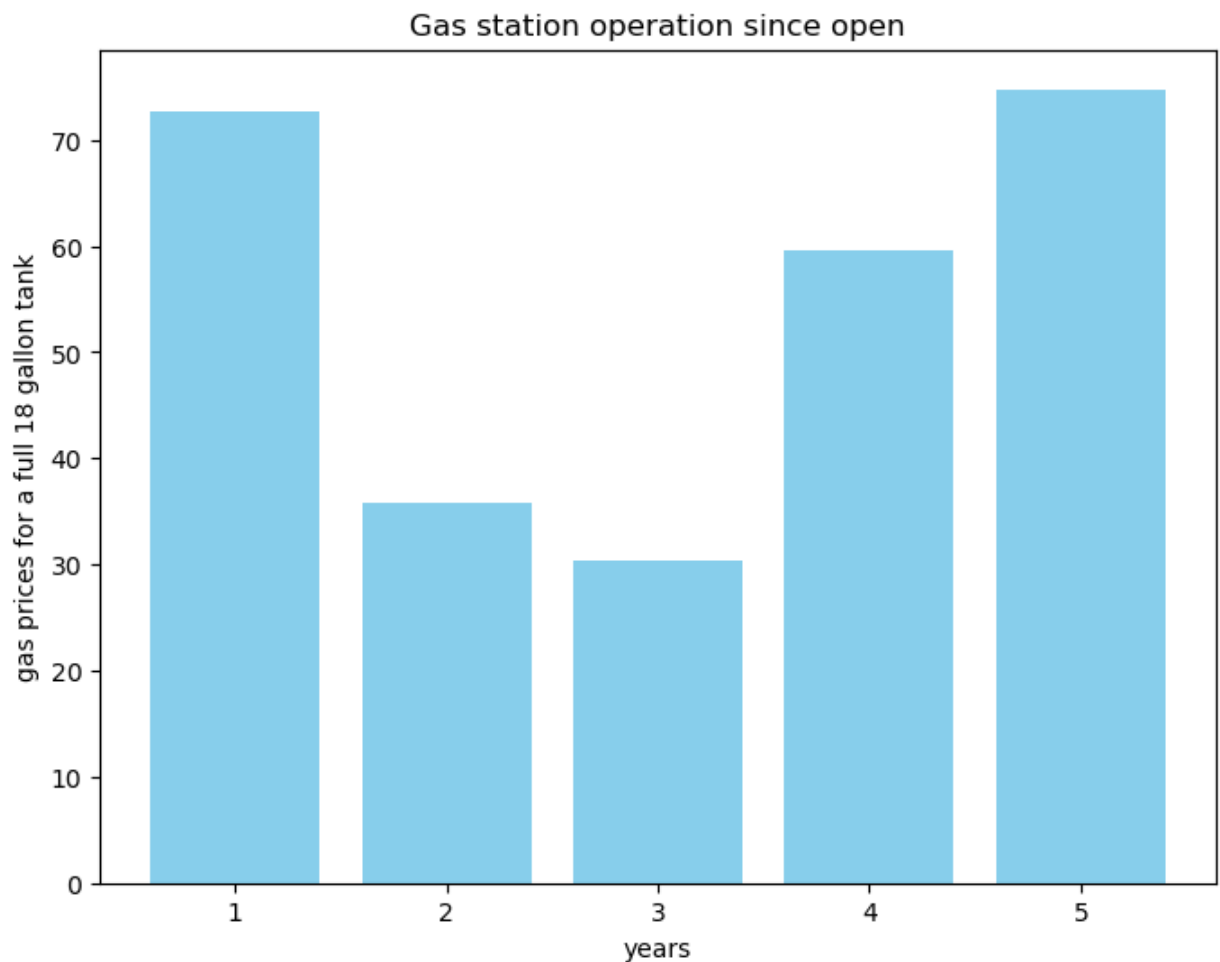
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In [28]: #visualization of a vertical or horizontal bar chart

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

#categories
num_categories = 5

#random data
#used this for help with random data seed >>> https://stackoverflow.com/questions/5854
np.random.seed(123)
data = pd.DataFrame({
    'Category': list('12345'),
    'Value': np.random.uniform(10, 100, num_categories)
})

#bar chart
plt.figure(figsize=(8, 6))
plt.bar(data['Category'], data['Value'], color='skyblue')
plt.title('Gas station operation since open')
plt.xlabel('years')
plt.ylabel('gas prices for a full 18 gallon tank')
plt.show()
```



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In [34]: #visualization for a grouped or stacked bar chart
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#use both matplotlib & numpy
import matplotlib.pyplot as plt
import numpy as np

#random data
categories = ['Northern USA', 'Southern USA', 'Eastern USA']
values1 = [20, 35, 30]
values2 = [15, 25, 40]

#x axis array?
x = np.arange(len(categories))

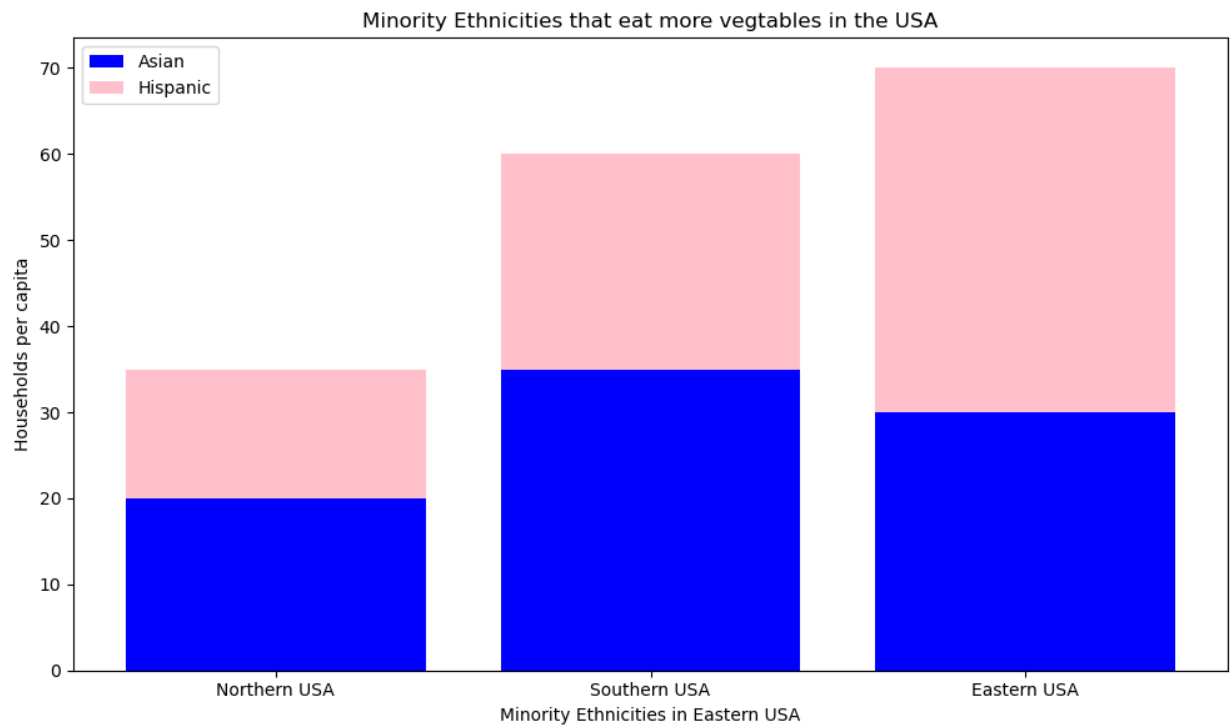
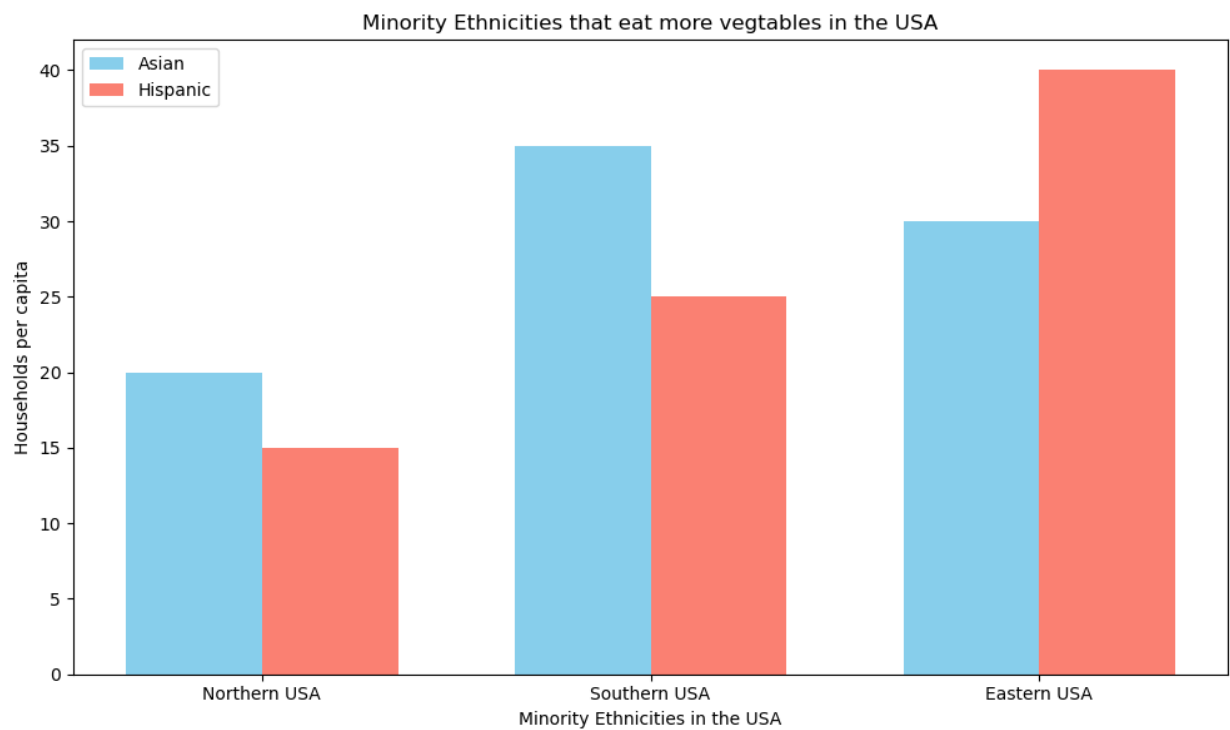
#bar chart specs
plt.figure(figsize=(10, 6))
#width .5 too thick
#width .2 too thin
#width .3 - .4 works
width = 0.35
plt.bar(x - width/2, values1, width, label='Asian', color='skyblue')
plt.bar(x + width/2, values2, width, label='Hispanic', color='salmon')
plt.xlabel('Minority Ethnicities in the USA')
plt.ylabel('Households per capita')
plt.title('Minority Ethnicities that eat more vegetables in the USA')
plt.xticks(x, categories)
plt.legend()
plt.tight_layout()
plt.show()

plt.figure(figsize=(10, 6))

plt.bar(x, values1, label='Asian', color='blue')
plt.bar(x, values2, bottom=values1, label='Hispanic', color='pink')
plt.xlabel('Minority Ethnicities in Eastern USA')
plt.ylabel('Households per capita')
plt.title('Minority Ethnicities that eat more vegetables in the USA')
plt.xticks(x, categories)
plt.legend()

plt.tight_layout()
plt.show()

```



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In [40]: #seaborn
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

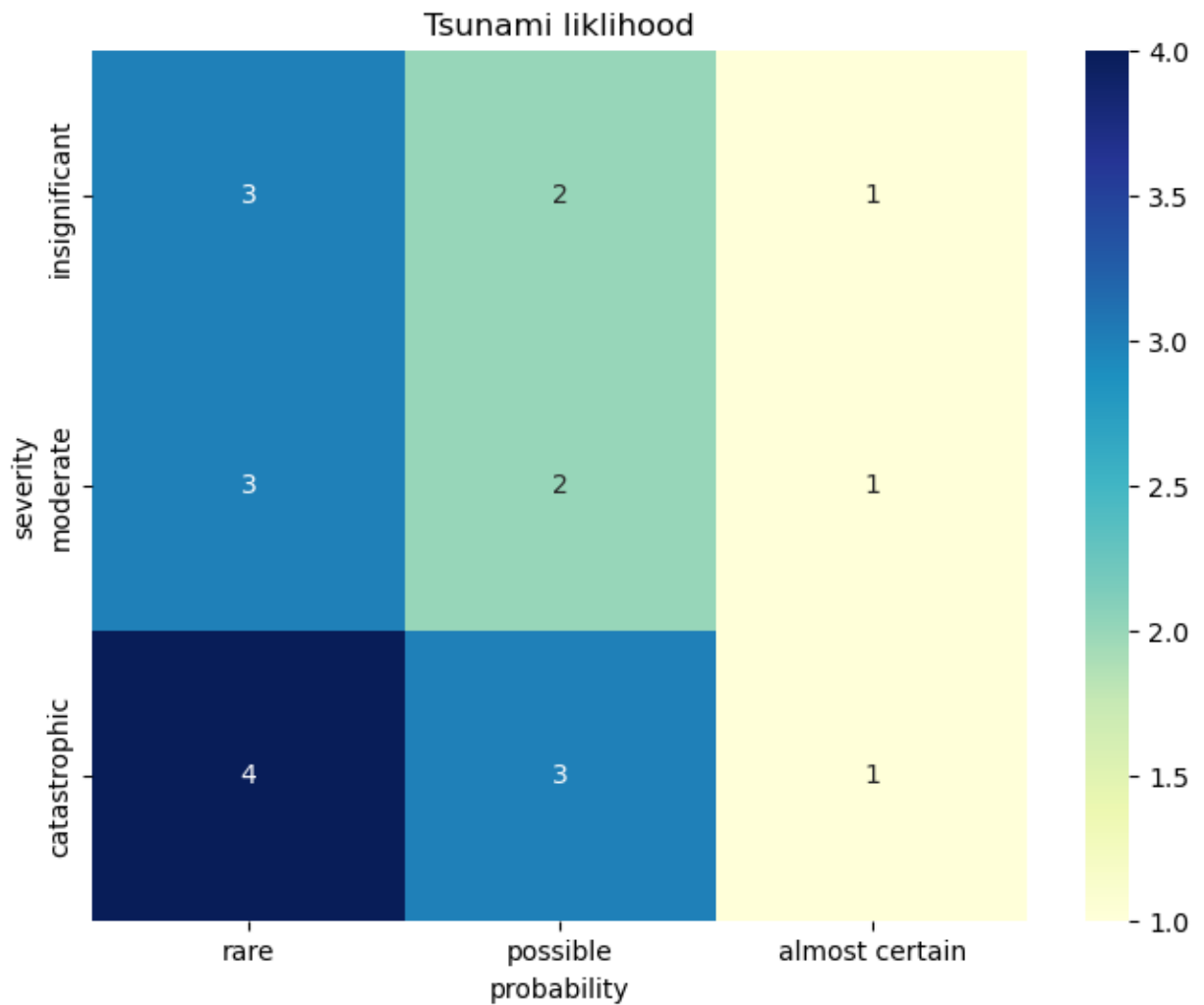
#random data
data = np.array([
    [3, 2, 1],
    [3, 2, 1],
    [4, 3, 1]])

#rows/columns (3x3?)
row_labels = ["insignificant", "moderate", "catastrophic"]
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column_labels = ["rare", "possible", "almost certain"]
#use YlGnBu
cmap = "YlGnBu"

#heat map figures
plt.figure(figsize=(8, 6))
sns.heatmap(data, annot=True, cmap=cmap, xticklabels=column_labels, yticklabels=row_labels)
plt.xlabel("probability")
plt.ylabel("severity")
plt.title("Tsunami liklihood")

# Show the plot
plt.show()
```



In [ ]: