3402Final-SR

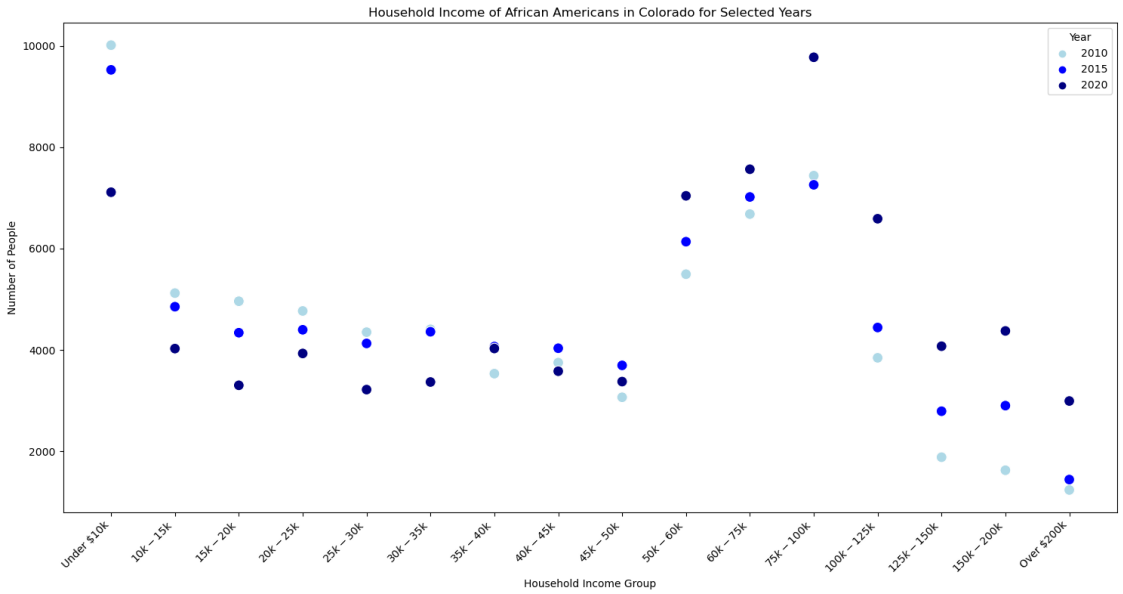
August 15, 2024

Graphing African American Income in CO as a scatterplot

[32]:
```
import requests
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

base_url = "https://api.census.gov/data"

Blackvariables = [
    'B19001B_002E', 'B19001B_003E', 'B19001B_004E', 'B19001B_005E',
    'B19001B_006E', 'B19001B_007E', 'B19001B_008E', 'B19001B_009E',
    'B19001B_010E', 'B19001B_011E', 'B19001B_012E', 'B19001B_013E',␣
 ↪'B19001B_014E',
    'B19001B_015E', 'B19001B_016E', 'B19001B_017E'
]

Blackdescriptions = {
    "B19001B_002E": "Under $10k",
    "B19001B_003E": "$10k - $15k",
    "B19001B_004E": "$15k - $20k",
    "B19001B_005E": "$20k - $25k",
    "B19001B_006E": "$25k - $30k",
    "B19001B_007E": "$30k - $35k",
    "B19001B_008E": "$35k - $40k",
    "B19001B_009E": "$40k - $45k",
    "B19001B_010E": "$45k - $50k",
    "B19001B_011E": "$50k - $60k",
    "B19001B_012E": "$60k - $75k",
    "B19001B_013E": "$75k - $100k",
    "B19001B_014E": "$100k - $125k",
    "B19001B_015E": "$125k - $150k",
    "B19001B_016E": "$150k - $200k",
    "B19001B_017E": "Over $200k",
}

CensusAPIKey = 'e4d3089a7e1e1dc85c67b1b23fe9ed09149464ad'
```

```
COStateCode = "08"

years = [2010, 2015, 2020]

colors_for_years = {
    2010: 'lightblue',
    2015: 'blue',
    2020: 'navy'
}

all_years_data = []

for year in years:
    query_params = {
        "get": ",".join(Blackvariables),
        "for": "state:" + COStateCode,
        "key": CensusAPIKey
    }

    response = requests.get(f"{base_url}/{year}/acs/acs5", params=query_params)

    if response.status_code == 200:
        data = response.json()
        headers = data[0]
        values = data[1:]
        df = pd.DataFrame(values, columns=headers)
        df['Year'] = year
        all_years_data.append(df)


AllDataDF = pd.concat(all_years_data, ignore_index=True)

for variable in Blackvariables:
    AllDataDF[variable] = pd.to_numeric(AllDataDF[variable], errors='coerce')

MeltedDF = AllDataDF.melt(id_vars=['Year'], value_vars=Blackvariables,␣
 ↪var_name="Variable", value_name="Number of People")
MeltedDF['Income Bracket'] = MeltedDF['Variable'].map(Blackdescriptions)

plt.figure(figsize=(15, 8))
palette = [colors_for_years[year] for year in MeltedDF['Year'].unique()]
sns.scatterplot(data=MeltedDF, x="Income Bracket", y="Number of People",␣
 ↪hue="Year", palette=palette, s=100)
plt.xticks(rotation=45, ha="right")
plt.title("Household Income of African Americans in Colorado for Selected␣
 ↪Years")
plt.ylabel("Number of People")
```

```
plt.xlabel("Household Income Group")
plt.legend(title='Year')
plt.tight_layout()
plt.show()
```



DF containing graphed info

[34]:
```
MeltedDF
```

[34]:

	Year	Variable	Number of People	Income Bracket
0	2010	B19001B_002E	10011	Under $10k
1	2015	B19001B_002E	9524	Under $10k
2	2020	B19001B_002E	7111	Under $10k
3	2010	B19001B_003E	5121	$10k - $15k
4	2015	B19001B_003E	4853	$10k - $15k
5	2020	B19001B_003E	4027	$10k - $15k
6	2010	B19001B_004E	4961	$15k - $20k
7	2015	B19001B_004E	4340	$15k - $20k
8	2020	B19001B_004E	3303	$15k - $20k
9	2010	B19001B_005E	4769	$20k - $25k
10	2015	B19001B_005E	4398	$20k - $25k
11	2020	B19001B_005E	3931	$20k - $25k
12	2010	B19001B_006E	4351	$25k - $30k
13	2015	B19001B_006E	4129	$25k - $30k
14	2020	B19001B_006E	3218	$25k - $30k
15	2010	B19001B_007E	4407	$30k - $35k
16	2015	B19001B_007E	4359	$30k - $35k
17	2020	B19001B_007E	3368	$30k - $35k

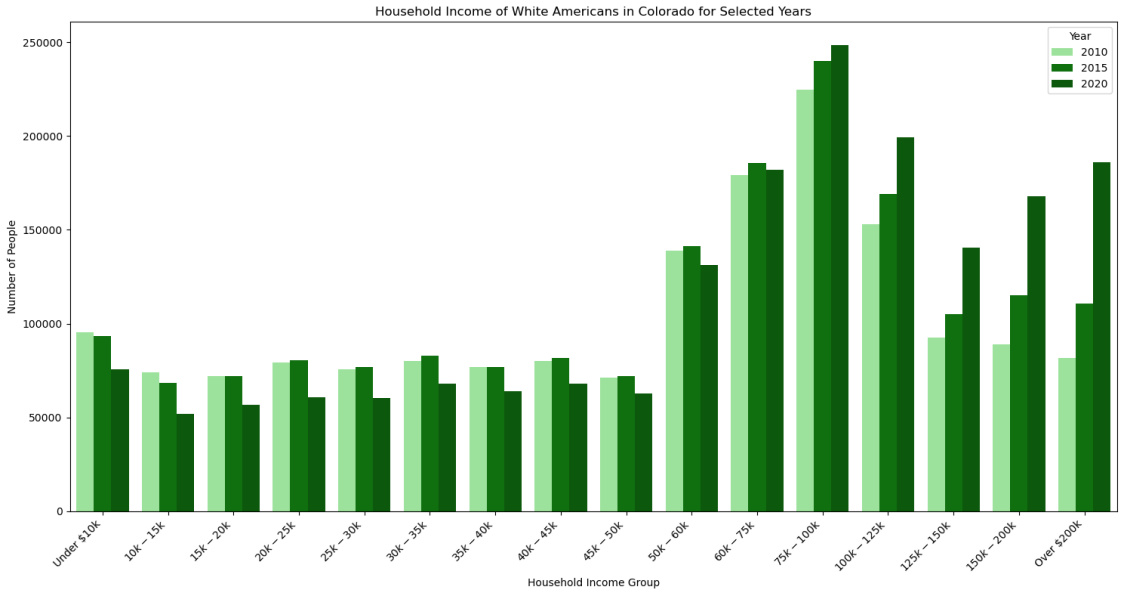
18	2010	B19001B_008E	3533	$35k - $40k
19	2015	B19001B_008E	4067	$35k - $40k
20	2020	B19001B_008E	4029	$35k - $40k
21	2010	B19001B_009E	3750	$40k - $45k
22	2015	B19001B_009E	4034	$40k - $45k
23	2020	B19001B_009E	3581	$40k - $45k
24	2010	B19001B_010E	3067	$45k - $50k
25	2015	B19001B_010E	3696	$45k - $50k
26	2020	B19001B_010E	3376	$45k - $50k
27	2010	B19001B_011E	5494	$50k - $60k
28	2015	B19001B_011E	6135	$50k - $60k
29	2020	B19001B_011E	7040	$50k - $60k
30	2010	B19001B_012E	6680	$60k - $75k
31	2015	B19001B_012E	7017	$60k - $75k
32	2020	B19001B_012E	7564	$60k - $75k
33	2010	B19001B_013E	7438	$75k - $100k
34	2015	B19001B_013E	7257	$75k - $100k
35	2020	B19001B_013E	9772	$75k - $100k
36	2010	B19001B_014E	3845	$100k - $125k
37	2015	B19001B_014E	4443	$100k - $125k
38	2020	B19001B_014E	6588	$100k - $125k
39	2010	B19001B_015E	1885	$125k - $150k
40	2015	B19001B_015E	2792	$125k - $150k
41	2020	B19001B_015E	4074	$125k - $150k
42	2010	B19001B_016E	1628	$150k - $200k
43	2015	B19001B_016E	2902	$150k - $200k
44	2020	B19001B_016E	4375	$150k - $200k
45	2010	B19001B_017E	1239	Over $200k
46	2015	B19001B_017E	1444	Over $200k
47	2020	B19001B_017E	2993	Over $200k

Graphing White CO income as a bar plot

[25]:
```
Whitevariables = [
    'B19001A_002E', 'B19001A_003E', 'B19001A_004E', 'B19001A_005E',
    'B19001A_006E', 'B19001A_007E', 'B19001A_008E', 'B19001A_009E',
    'B19001A_010E', 'B19001A_011E', 'B19001A_012E', 'B19001A_013E',␣
 ↪'B19001A_014E',
    'B19001A_015E', 'B19001A_016E', 'B19001A_017E'
]

Whitedescriptions = {
    "B19001A_002E": "Under $10k",
    "B19001A_003E": "$10k - $15k",
    "B19001A_004E": "$15k - $20k",
    "B19001A_005E": "$20k - $25k",
    "B19001A_006E": "$25k - $30k",
```

```
    "B19001A_007E": "$30k - $35k",
    "B19001A_008E": "$35k - $40k",
    "B19001A_009E": "$40k - $45k",
    "B19001A_010E": "$45k - $50k",
    "B19001A_011E": "$50k - $60k",
    "B19001A_012E": "$60k - $75k",
    "B19001A_013E": "$75k - $100k",
    "B19001A_014E": "$100k - $125k",
    "B19001A_015E": "$125k - $150k",
    "B19001A_016E": "$150k - $200k",
    "B19001A_017E": "Over $200k",
}

CensusAPIKey = 'e4d3089a7e1e1dc85c67b1b23fe9ed09149464ad'

COStateCode = "08"

years = [2010, 2015, 2020]

colors_for_years = {
    2010: 'lightgreen',
    2015: 'green',
    2020: 'darkgreen'
}

all_years_data = []

for year in years:
    query_params = {
        "get": ",".join(Whitevariables),
        "for": "state:" + COStateCode,
        "key": CensusAPIKey
    }

    response = requests.get(f"{base_url}/{year}/acs/acs5", params=query_params)

    if response.status_code == 200:
        data = response.json()
        headers = data[0]
        values = data[1:]
        df = pd.DataFrame(values, columns=headers)
        df['Year'] = year
        all_years_data.append(df)


AllDataDF = pd.concat(all_years_data, ignore_index=True)
```

```
for variable in Whitevariables:
    AllDataDF[variable] = pd.to_numeric(AllDataDF[variable], errors='coerce')

MeltedDF = AllDataDF.melt(id_vars=['Year'], value_vars=Whitevariables,␣
 ↪var_name="Variable", value_name="Number of People")
MeltedDF['Income Bracket'] = MeltedDF['Variable'].map(Whitedescriptions)

plt.figure(figsize=(15, 8))
palette = [colors_for_years[year] for year in MeltedDF['Year'].unique()]
sns.barplot(data=MeltedDF, x="Income Bracket", y="Number of People",␣
 ↪hue="Year", palette=palette)
plt.xticks(rotation=45, ha="right")
plt.title("Household Income of White Americans in Colorado for Selected Years")
plt.ylabel("Number of People")
plt.xlabel("Household Income Group")
plt.legend(title='Year')
plt.tight_layout()
plt.show()
```

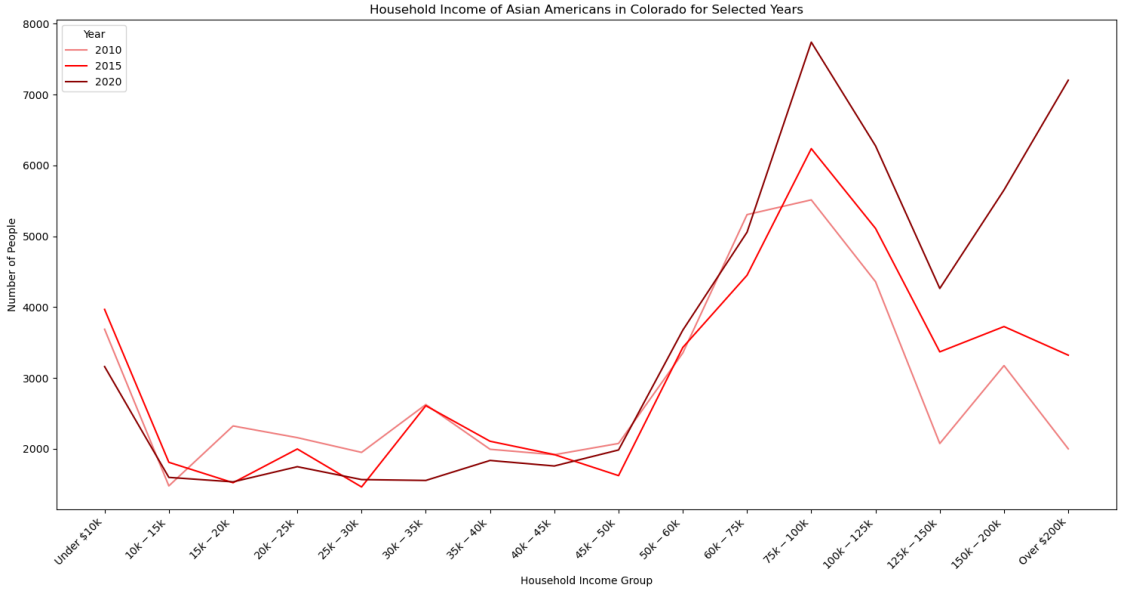


Graphing Asian American income as a line plot

[24]:
```
Asianvariables = [
    'B19001D_002E', 'B19001D_003E', 'B19001D_004E', 'B19001D_005E',
    'B19001D_006E', 'B19001D_007E', 'B19001D_008E', 'B19001D_009E',
    'B19001D_010E', 'B19001D_011E', 'B19001D_012E', 'B19001D_013E',␣
 ↪'B19001D_014E',
    'B19001D_015E', 'B19001D_016E', 'B19001D_017E'
```

```
]

Asiandescriptions = {
    "B19001D_002E": "Under $10k",
    "B19001D_003E": "$10k - $15k",
    "B19001D_004E": "$15k - $20k",
    "B19001D_005E": "$20k - $25k",
    "B19001D_006E": "$25k - $30k",
    "B19001D_007E": "$30k - $35k",
    "B19001D_008E": "$35k - $40k",
    "B19001D_009E": "$40k - $45k",
    "B19001D_010E": "$45k - $50k",
    "B19001D_011E": "$50k - $60k",
    "B19001D_012E": "$60k - $75k",
    "B19001D_013E": "$75k - $100k",
    "B19001D_014E": "$100k - $125k",
    "B19001D_015E": "$125k - $150k",
    "B19001D_016E": "$150k - $200k",
    "B19001D_017E": "Over $200k",
}

CensusAPIKey = 'e4d3089a7e1e1dc85c67b1b23fe9ed09149464ad'

COStateCode = "08"

years = [2010, 2015, 2020]

colors_for_years = {
    2010: 'lightcoral',
    2015: 'red',
    2020: 'darkred'
}

all_years_data = []

for year in years:
    query_params = {
        "get": ",".join(Asianvariables),
        "for": "state:" + COStateCode,
        "key": CensusAPIKey
    }

    response = requests.get(f"{base_url}/{year}/acs/acs5", params=query_params)

    if response.status_code == 200:
        data = response.json()
        headers = data[0]
```

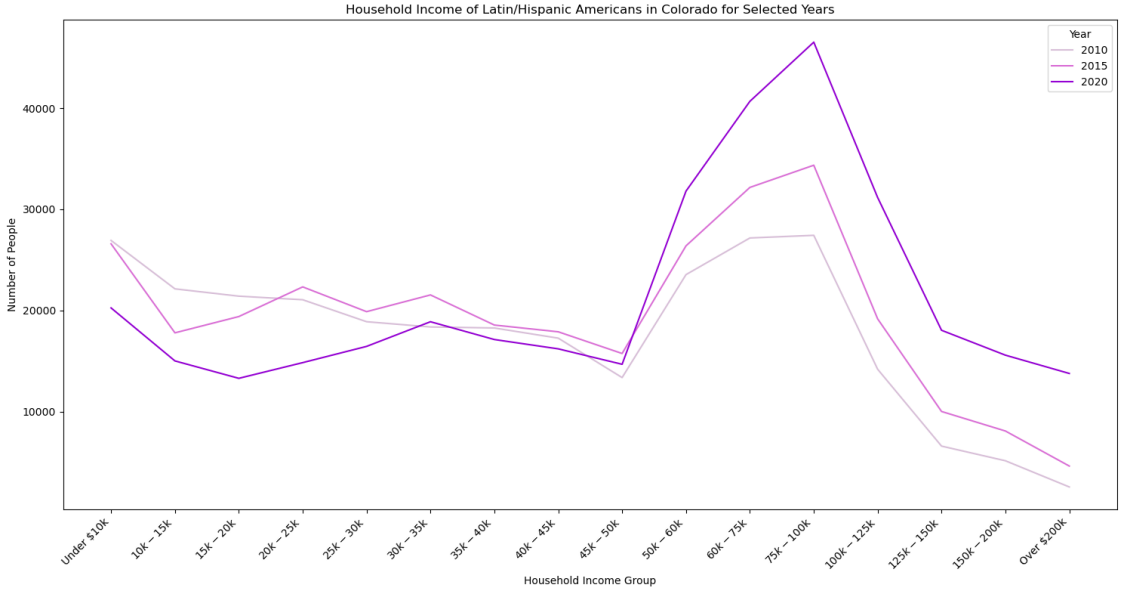
```
        values = data[1:]
        df = pd.DataFrame(values, columns=headers)
        df['Year'] = year
        all_years_data.append(df)


AllDataDF = pd.concat(all_years_data, ignore_index=True)

for variable in Asianvariables:
    AllDataDF[variable] = pd.to_numeric(AllDataDF[variable], errors='coerce')

MeltedDF = AllDataDF.melt(id_vars=['Year'], value_vars=Asianvariables,␣
 ↪var_name="Variable", value_name="Number of People")
MeltedDF['Income Bracket'] = MeltedDF['Variable'].map(Asiandescriptions)

plt.figure(figsize=(15, 8))
palette = [colors_for_years[year] for year in MeltedDF['Year'].unique()]
sns.lineplot(data=MeltedDF, x="Income Bracket", y="Number of People",␣
 ↪hue="Year", palette=palette)
plt.xticks(rotation=45, ha="right")
plt.title("Household Income of Asian Americans in Colorado for Selected Years")
plt.ylabel("Number of People")
plt.xlabel("Household Income Group")
plt.legend(title='Year')
plt.tight_layout()
plt.show()
```



Graphing Latino Income as a line plot

[23]:
```
Latinovariables = [
    'B19001I_002E', 'B19001I_003E', 'B19001I_004E', 'B19001I_005E',
    'B19001I_006E', 'B19001I_007E', 'B19001I_008E', 'B19001I_009E',
    'B19001I_010E', 'B19001I_011E', 'B19001I_012E', 'B19001I_013E',␣
 ↪'B19001I_014E',
    'B19001I_015E', 'B19001I_016E', 'B19001I_017E'
]

Latinodescriptions = {
    "B19001I_002E": "Under $10k",
    "B19001I_003E": "$10k - $15k",
    "B19001I_004E": "$15k - $20k",
    "B19001I_005E": "$20k - $25k",
    "B19001I_006E": "$25k - $30k",
    "B19001I_007E": "$30k - $35k",
    "B19001I_008E": "$35k - $40k",
    "B19001I_009E": "$40k - $45k",
    "B19001I_010E": "$45k - $50k",
    "B19001I_011E": "$50k - $60k",
    "B19001I_012E": "$60k - $75k",
    "B19001I_013E": "$75k - $100k",
    "B19001I_014E": "$100k - $125k",
    "B19001I_015E": "$125k - $150k",
    "B19001I_016E": "$150k - $200k",
    "B19001I_017E": "Over $200k",
}

CensusAPIKey = 'e4d3089a7e1e1dc85c67b1b23fe9ed09149464ad'

COStateCode = "08"

years = [2010, 2015, 2020]

colors_for_years = {
    2010: 'thistle',
    2015: 'orchid',
    2020: 'darkviolet'
}

all_years_data = []

for year in years:
    query_params = {
        "get": ",".join(Latinovariables),
        "for": "state:" + COStateCode,
        "key": CensusAPIKey
    }
```

```
    response = requests.get(f"{base_url}/{year}/acs/acs5", params=query_params)

    if response.status_code == 200:
        data = response.json()
        headers = data[0]
        values = data[1:]
        df = pd.DataFrame(values, columns=headers)
        df['Year'] = year
        all_years_data.append(df)


AllDataDF = pd.concat(all_years_data, ignore_index=True)

for variable in Latinovariables:
    AllDataDF[variable] = pd.to_numeric(AllDataDF[variable], errors='coerce')

MeltedDF = AllDataDF.melt(id_vars=['Year'], value_vars=Latinovariables,␣
 ↪var_name="Variable", value_name="Number of People")
MeltedDF['Income Bracket'] = MeltedDF['Variable'].map(Latinodescriptions)

plt.figure(figsize=(15, 8))
palette = [colors_for_years[year] for year in MeltedDF['Year'].unique()]
sns.lineplot(data=MeltedDF, x="Income Bracket", y="Number of People",␣
 ↪hue="Year", palette=palette)
plt.xticks(rotation=45, ha="right")
plt.title("Household Income of Latin/Hispanic Americans in Colorado for␣
 ↪Selected Years")
plt.ylabel("Number of People")
plt.xlabel("Household Income Group")
plt.legend(title='Year')
plt.tight_layout()
plt.show()
```


Household Income of Latin/Hispanic Americans in Colorado for Selected Years
Year
2010
2015
2020
Number of People
40000
30000
20000
10000
Under $10k
10k – 15k
15k – 20k
20k – 25k
25k – 30k
30k – 35k
35k – 40k
40k – 45k
45k – 50k
50k – 60k
60k – 75k
75k – 100k
100k – 125k
125k – 150k
150k – 200k
Over $200k
Household Income Group

[ ]: