

CS506 Team 1 Deliverable 1

Team 1 - Spark! Project Team | Universal Basic Income - City Councilor Lara

Questions to be answered:

1. How many people participate in assistance programs?

Answer :

Initially we have scouted for datasets which gives the demographic understanding of the participants . Based on the data found and filtering process, we have decided to focus of 3 Assistance program

- 1, Supplemental Nutrition Assistance Program (SNAP)
- 2, Transitional Aid to Families with Dependent Children (TAFDC)
- 3, Emergency Aid to the Elderly, Disabled and Children (EAEDC)

The below pie charts summarizes the 3 programs together for the month of DEC 2022

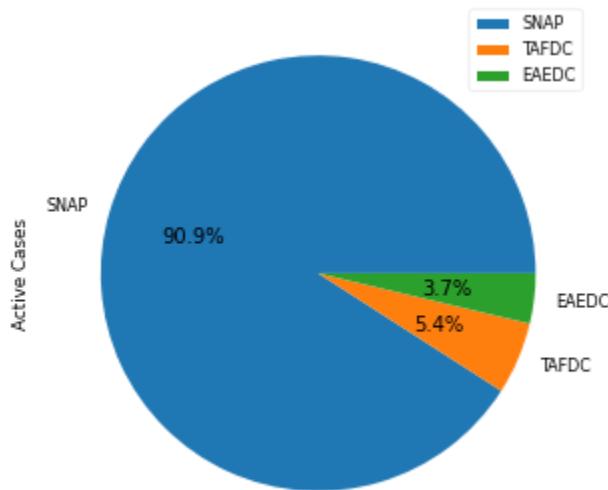


Image1 : Active cases in Boston

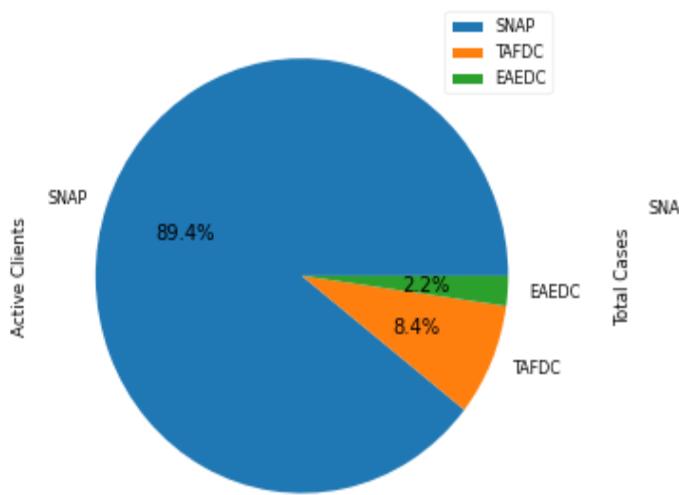


Image2 : Active clients in boston

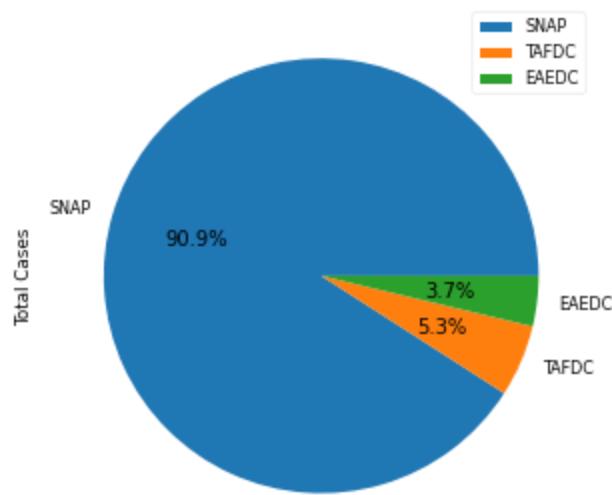


Image3 : Total Cases in Boston

Observation 1: SNAP Assistance seems to be the largest one compared to TAFDC and EAEDC. It is 9 times bigger than TAFDC and EAEDC combined. We have confirmed the same inputs from the client and client would like to move forward with analysis focus of SNAP program.

Analysis based on geographical distribution of cases

Geographical Heatmaps based on number of active cases in Boston

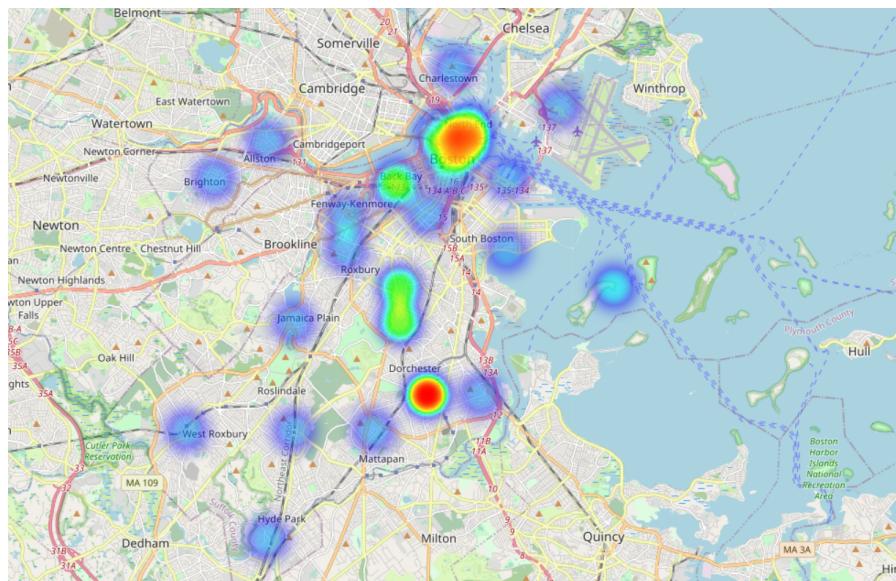


Image 4 : Geographical heat map based of no of active SNAP cases

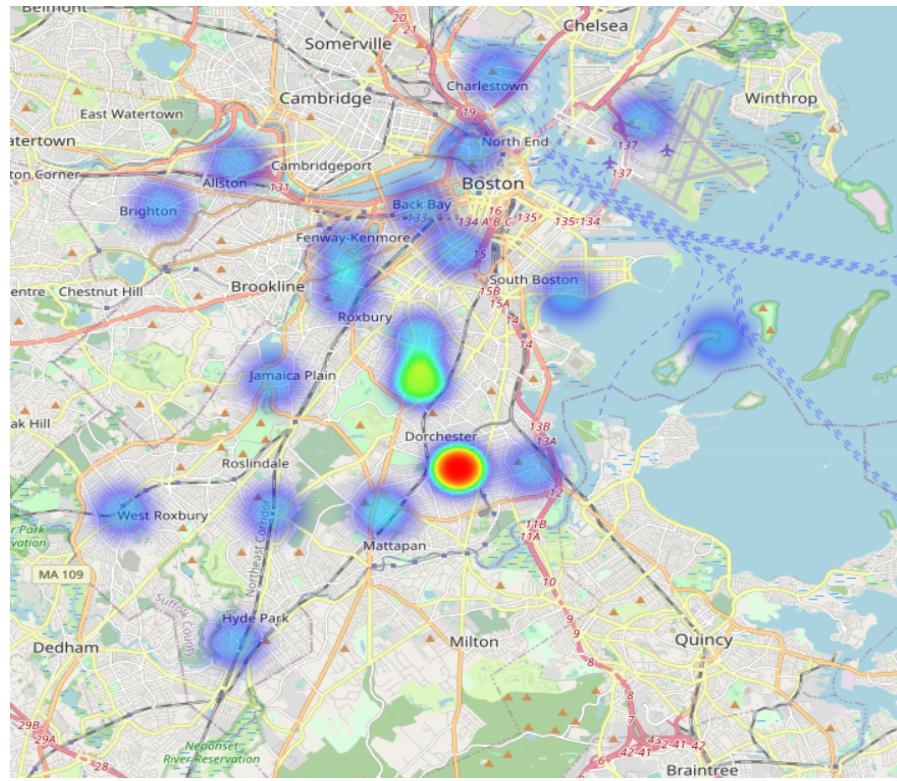


Image 5 : Geographical heat map based of no of active TAFDC cases

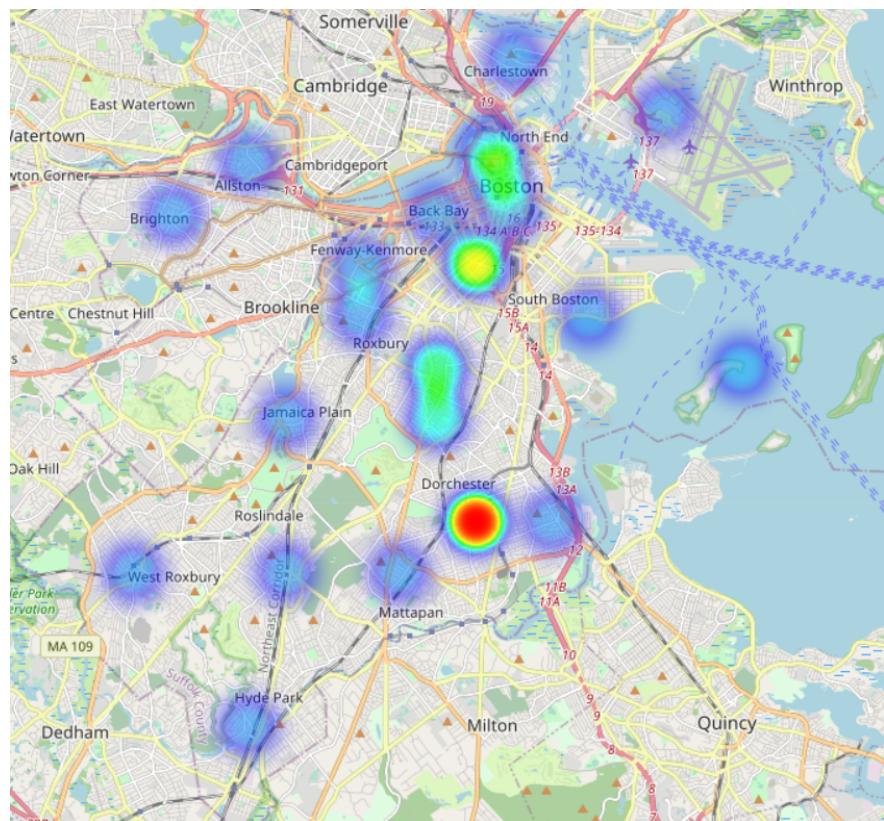


Image 6 : Geographical heat map based of no of active EAEDC cases

Observation 2 : From the above Heatmap , we can conclude that all large number of residents of Dorchester neighborhood receive assistance from these 3 programs. It is followed by residents of Roxbury residents. The same can be concluded from the below bar plots of the top 7 and bottom 7 places

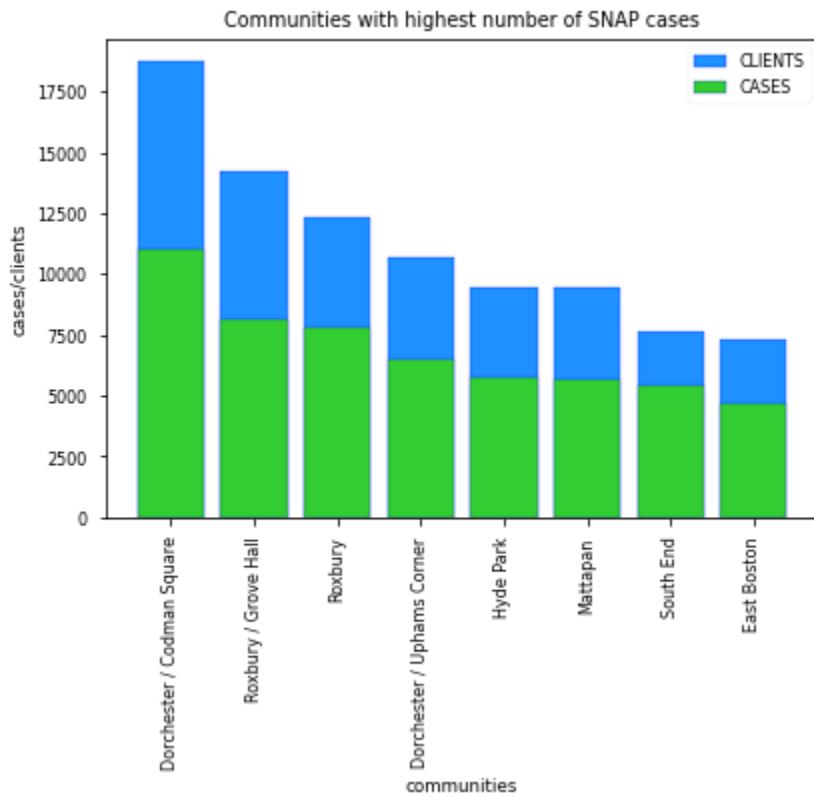


Image 7

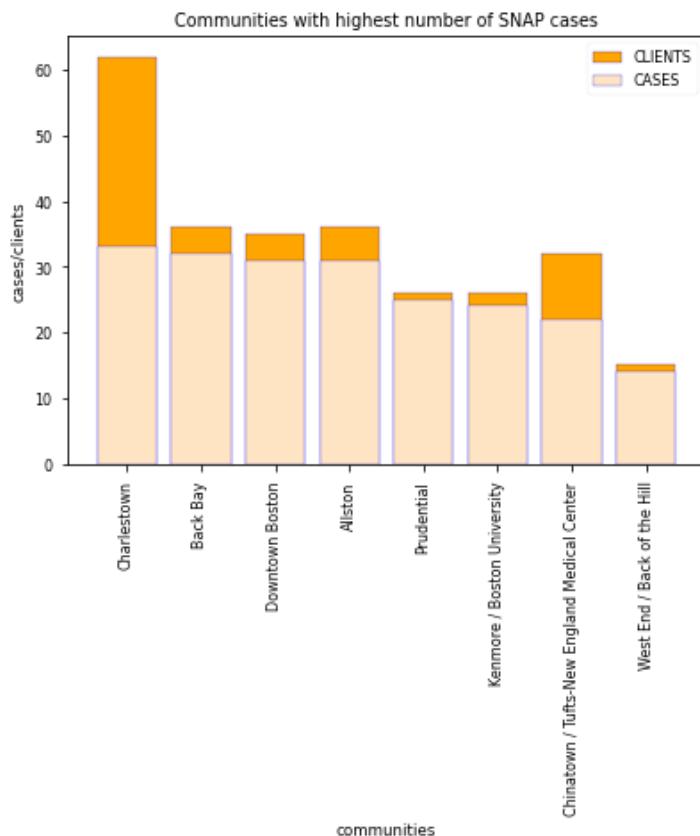


Image 8

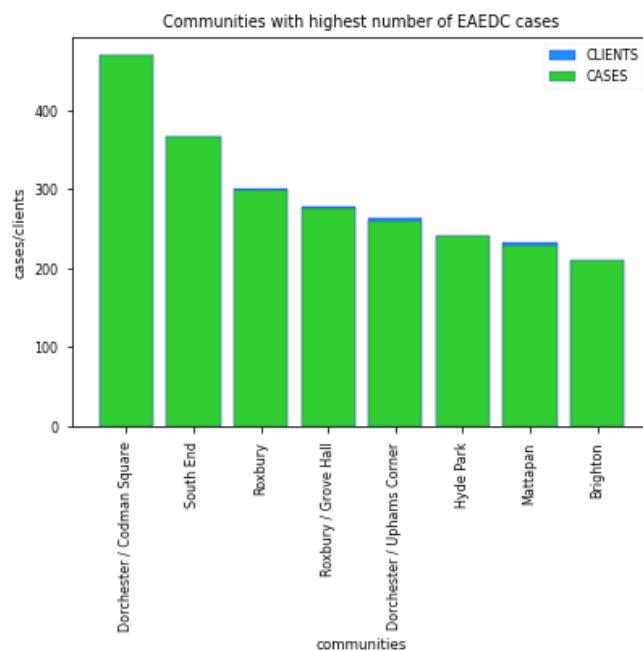


Image 9

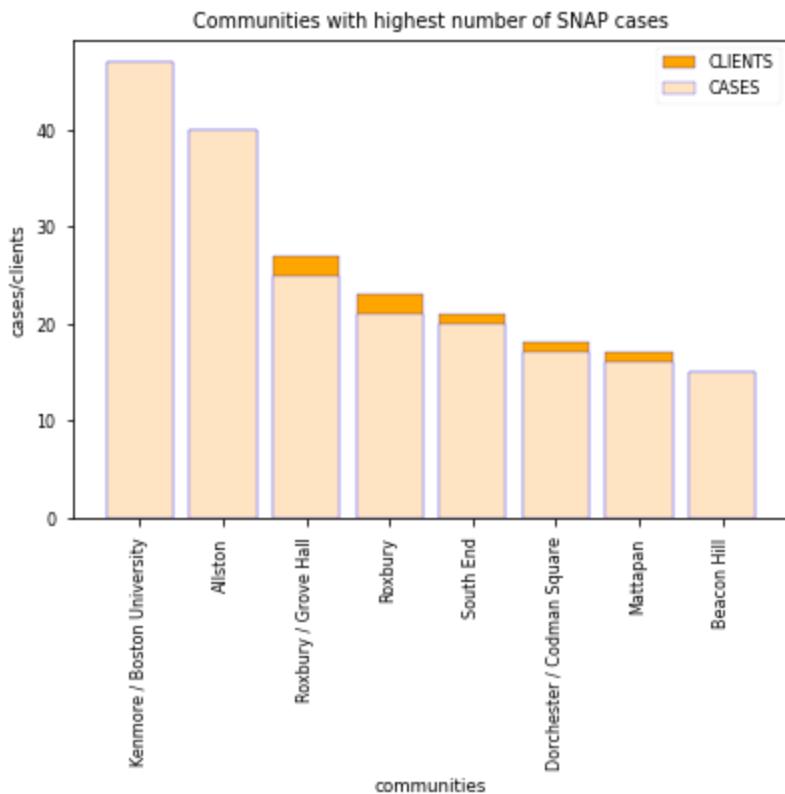


Image 10

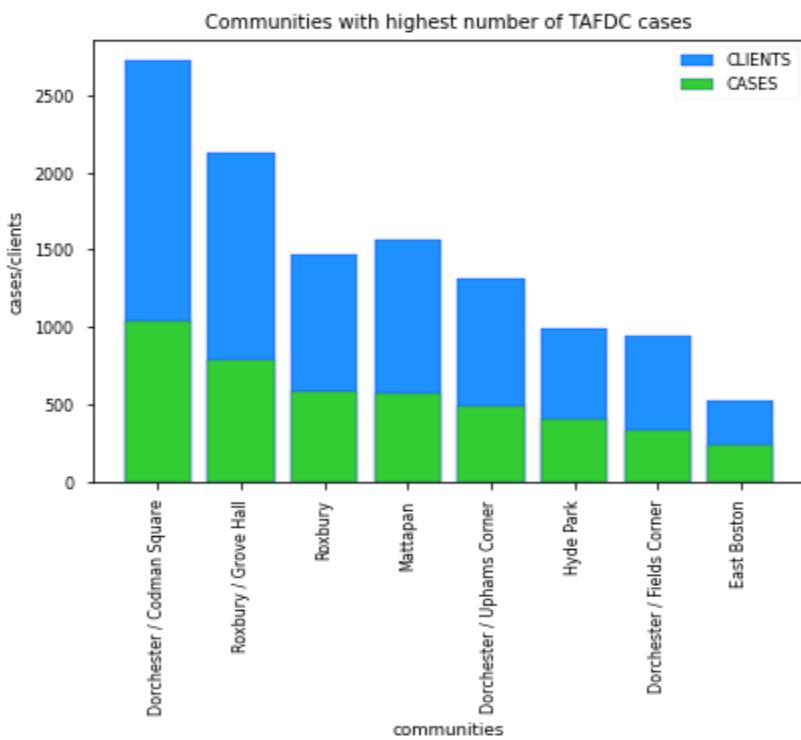


Image 11

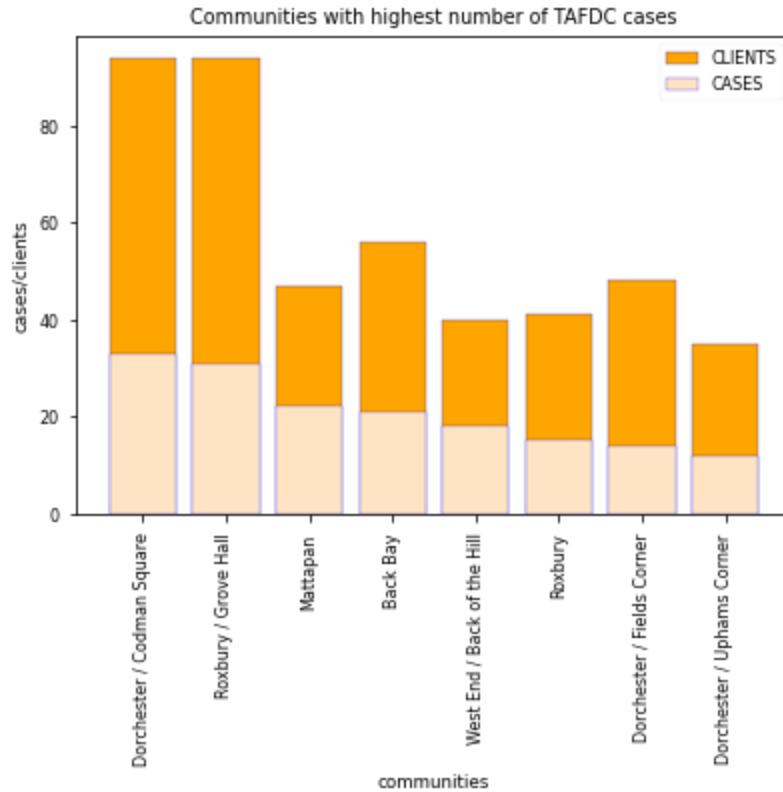
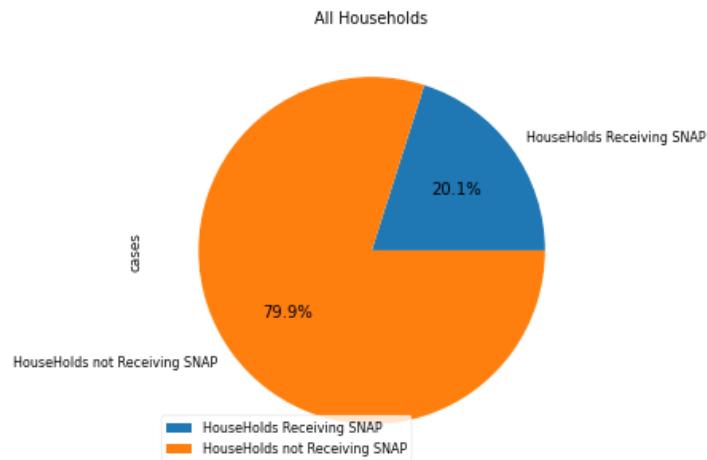
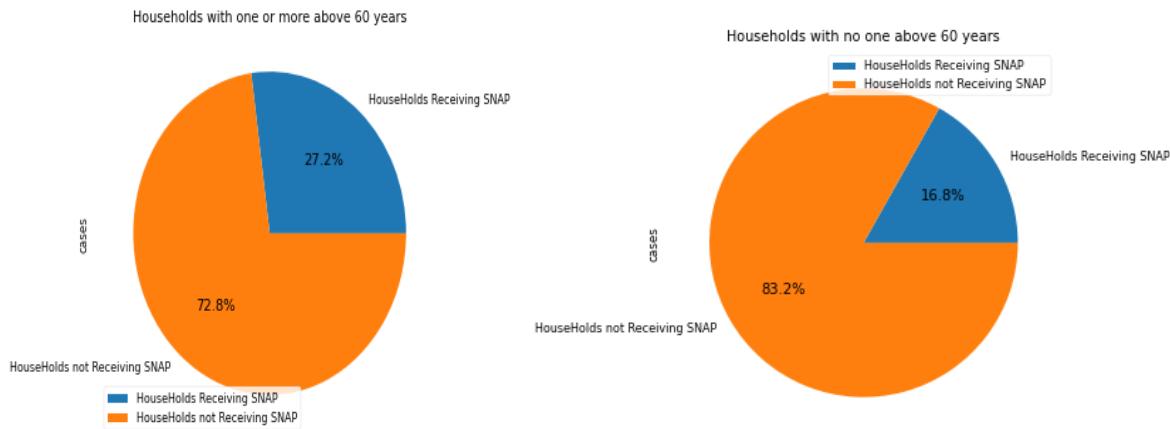


Image 12

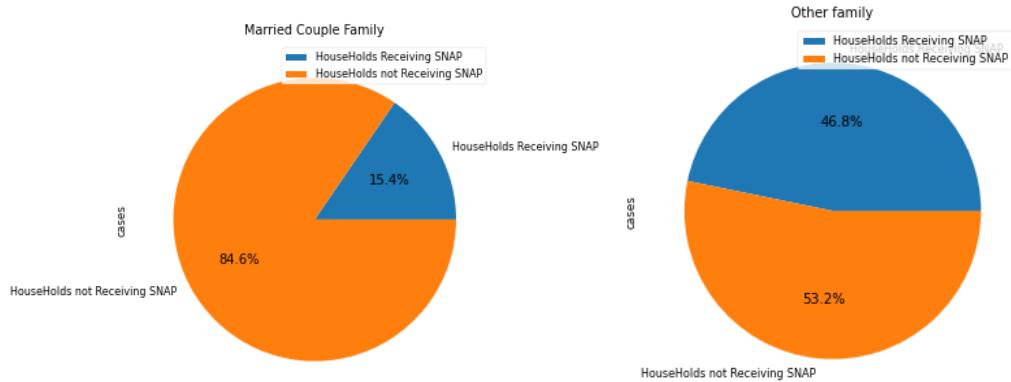
Demographical Analysis of SNAP recipients



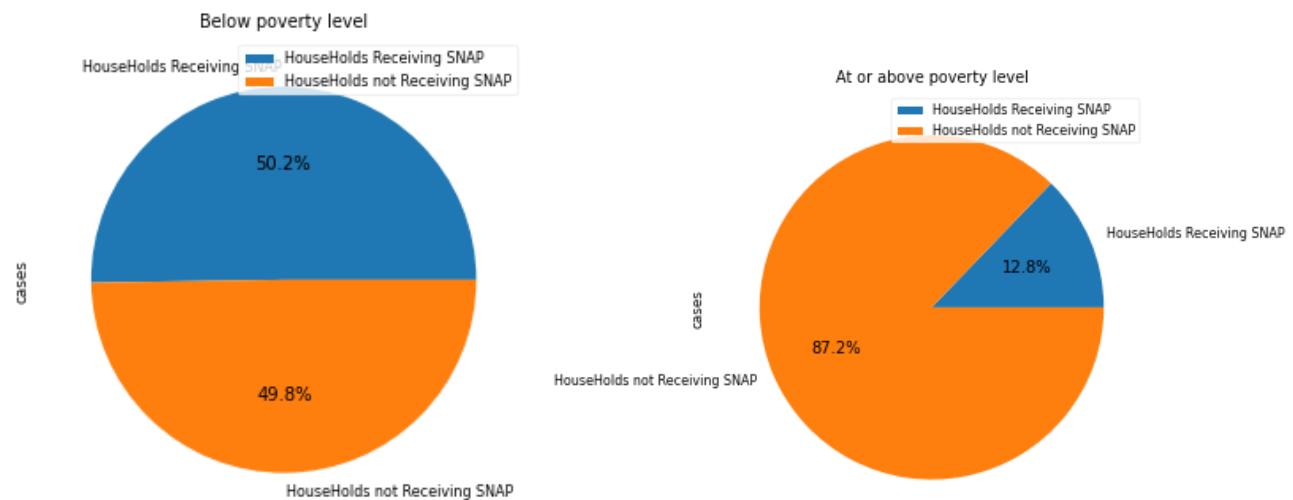
Observation : 1/5 of all households have received SNAP benefits



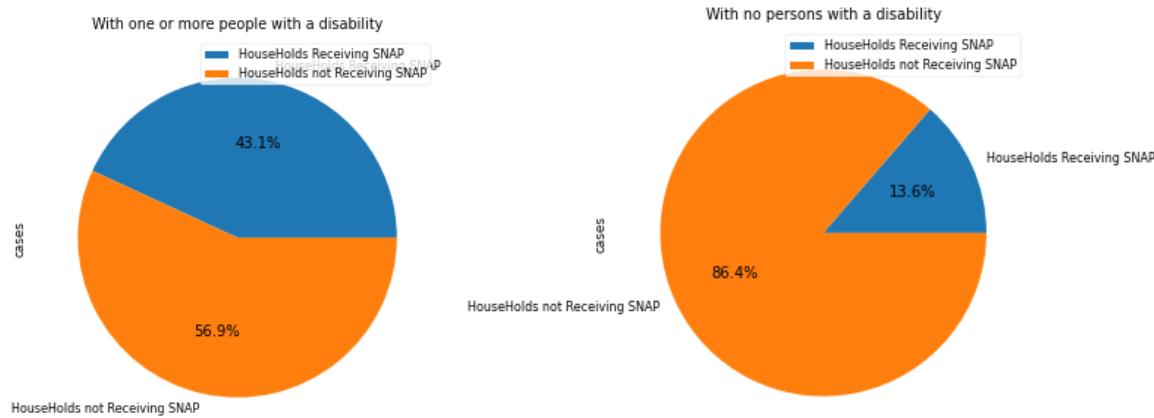
Observation : Households having people of age more than 60 received more SNAP benefits



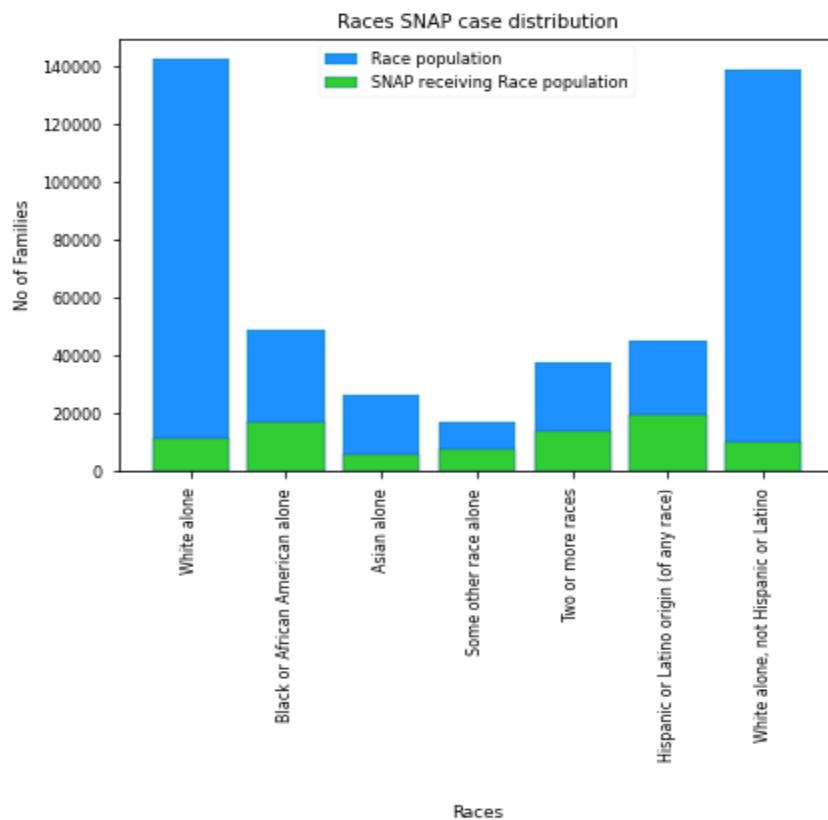
Observation : Households of Other family type has almost 50% of getting a SNAP assistanseship compared to married households



Observation : Half of the households under poverty line got SNAP where as only 12% of households above poverty line got it



Observation : Half of the households with disability got SNAP where as only 13% of households above poverty line got it



Observation : It can be observed that large proportion of Black or African american and Hispanic race have got SNAP assistantship compare to other races.

Conclusions :

- Residents of Dorchester neighborhood have enrolled maximum for the SNAP assistance program
- Factors which had an effect on the selection are :
 1. community located
 2. household with disability
 3. poverty line,
 4. Other family types

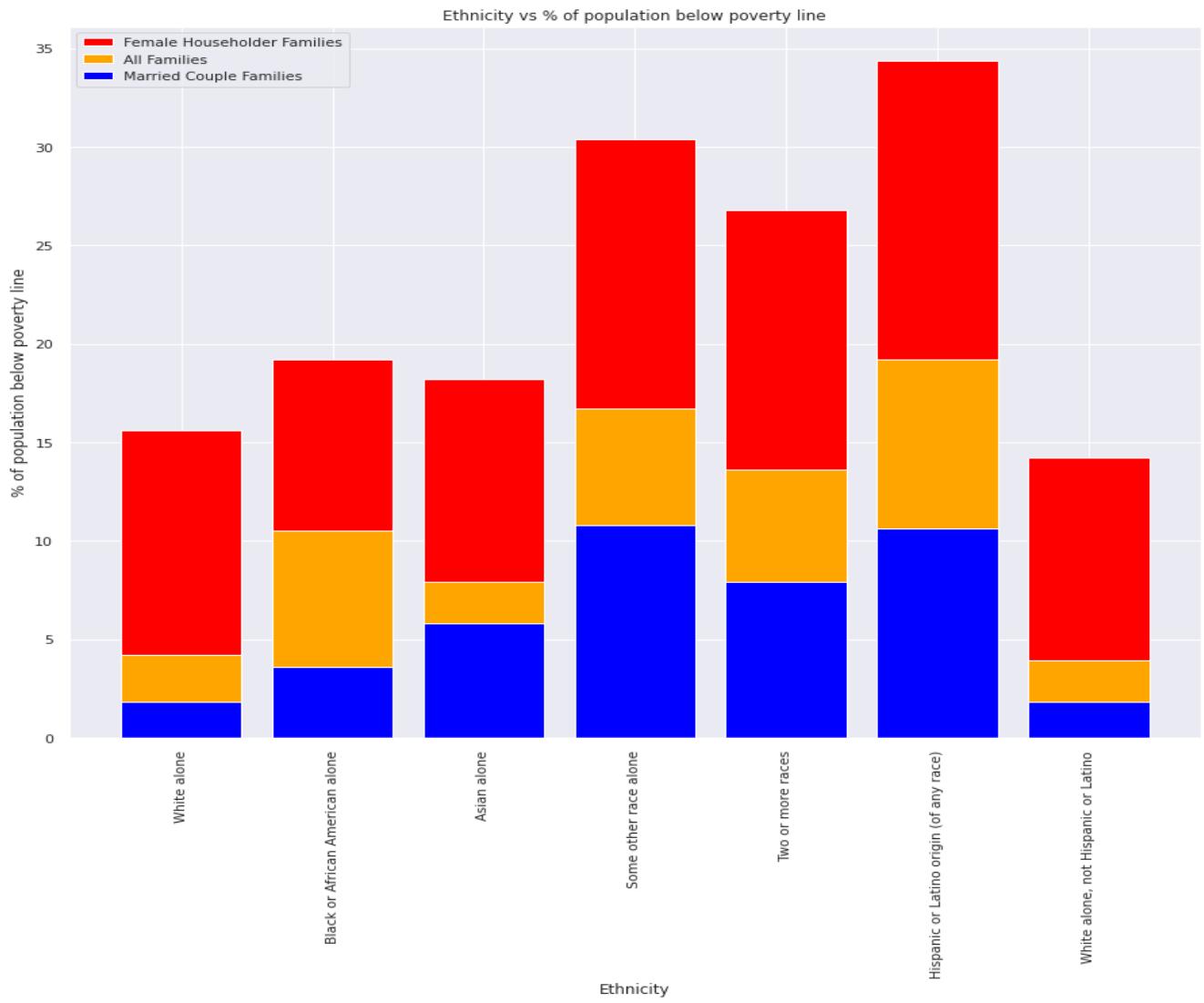
Note :

Dataset used are :

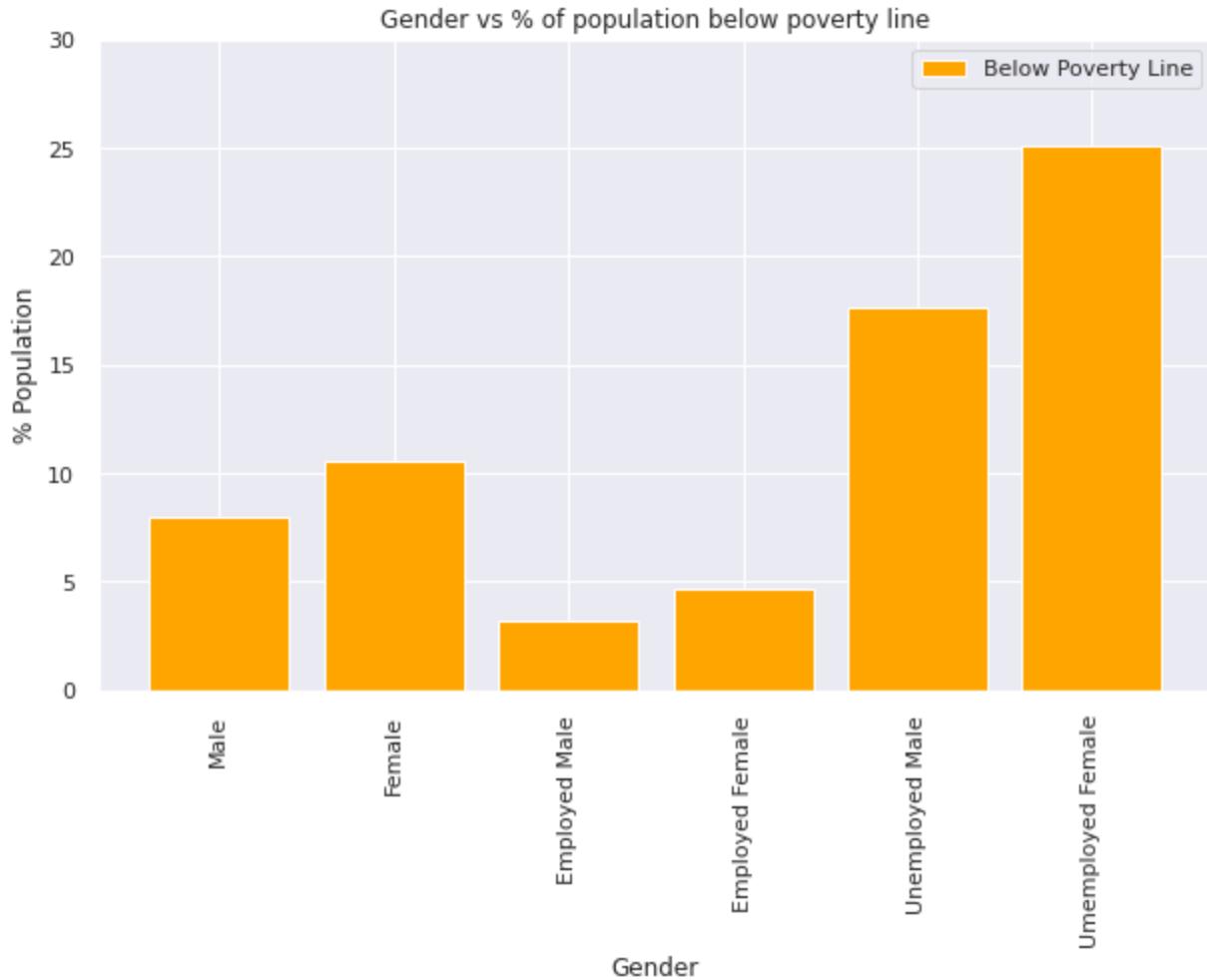
- <https://data.census.gov/table?q=SNAP&g=1600000US2507000>
 - i. [Food Stamps/Supplemental Nutrition Assistance Program \(SNAP\) | American Community Survey | U.S. Census Bureau](#)
- [DTA Data and Research | Mass.gov](#)
- [DTA_ZIPCODE_Report_DEC_2022.v2.xlsx](#)
- <https://www.unitedstateszipcodes.org/02111/>

2. What is the income distribution for Boston residents living below the poverty line?

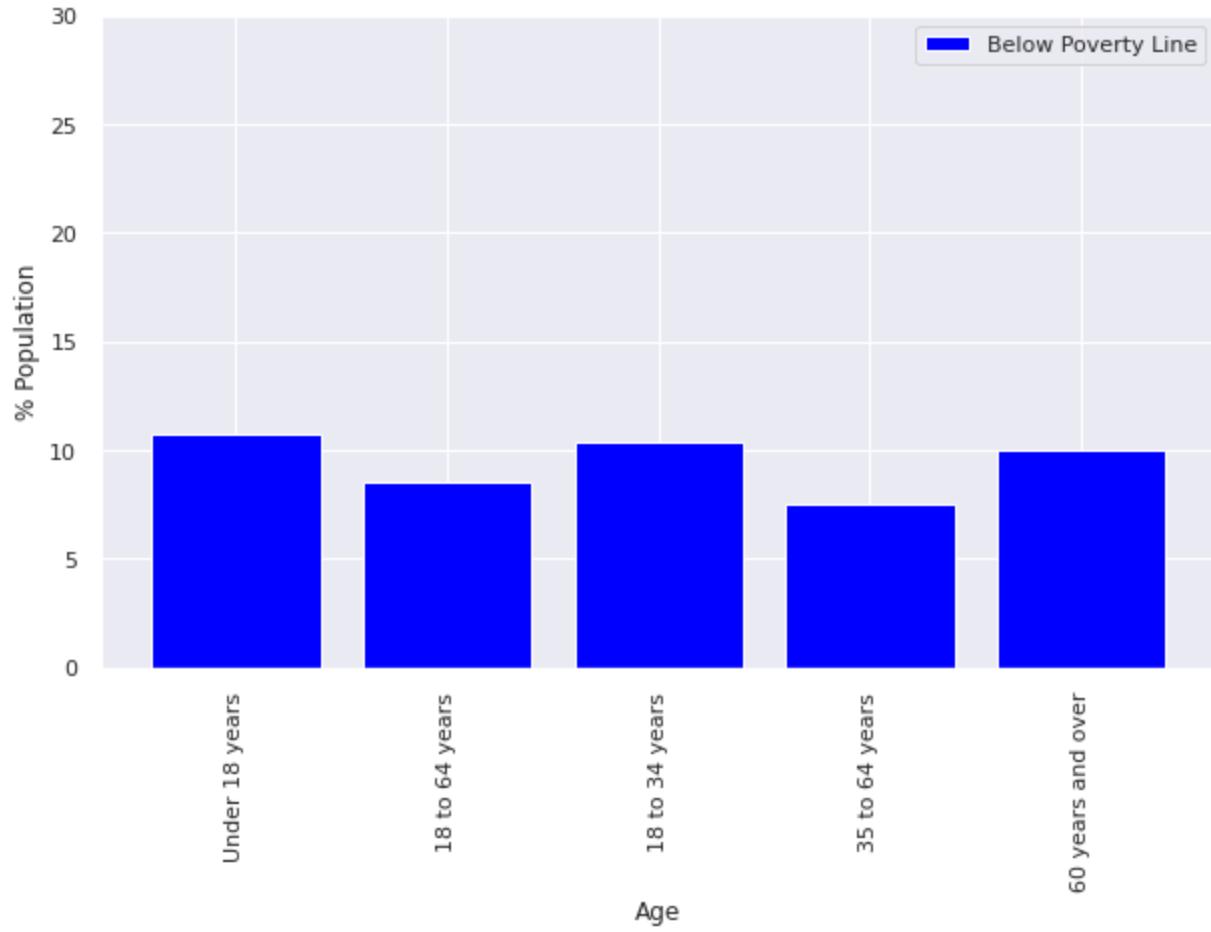
Answer: We have gone through datasets available on poverty distribution for the population in boston. And based on the data we were able to get from all the resources available we tried to answer this question. However, we are not successful in getting exact income distribution related to the population over various categories. Based on the avg income range which indicates the poverty line and poverty distribution over various categories of population we are trying to find out the income distribution of the boston residents. Below are the few bar plots which help in answering the question.



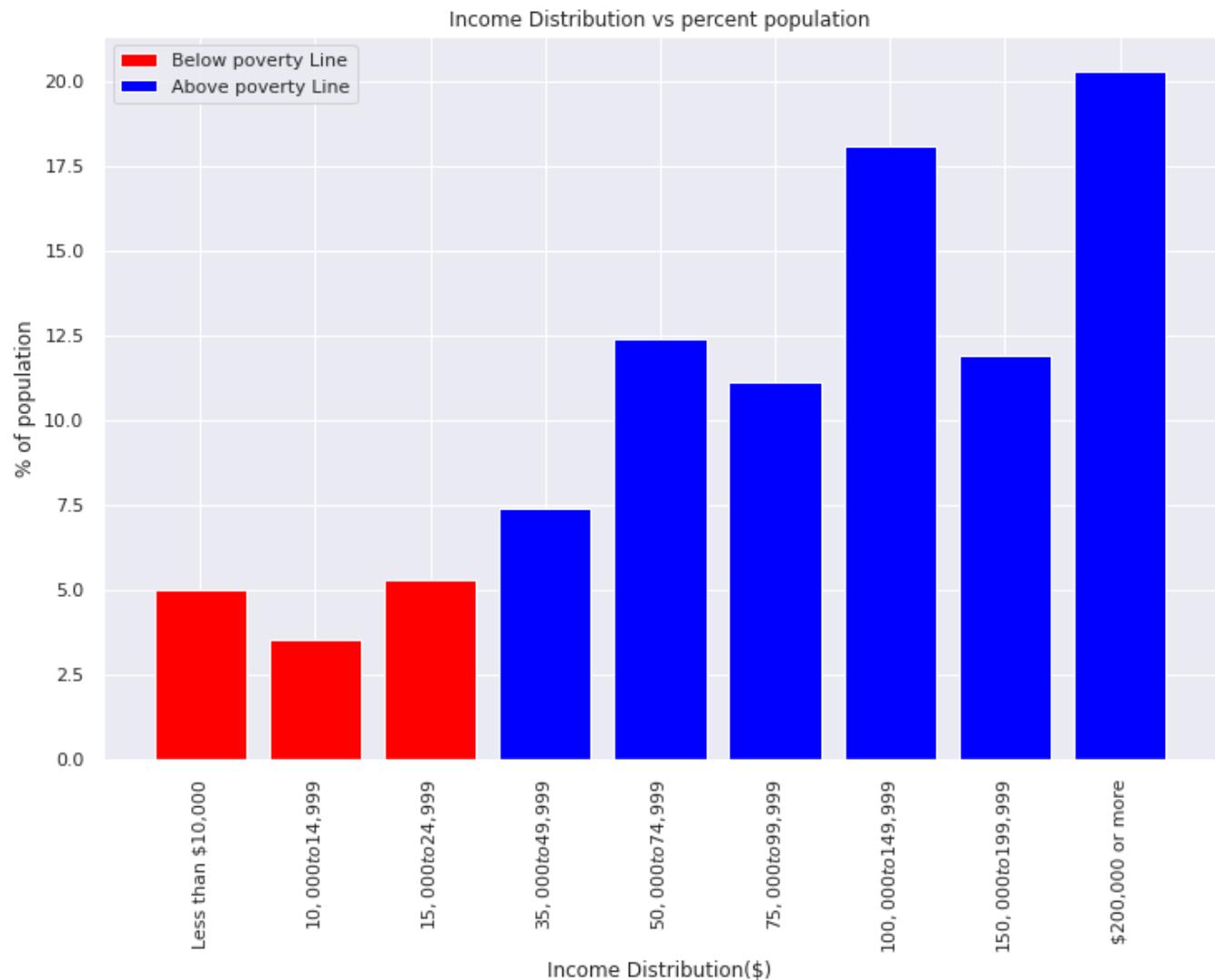
From the above plot we get the distribution of people below the poverty line in each of the ethnic groups. And in each ethnicity we have different categories of people and we can see the percent of people below poverty line are more in case of families who have females as house householders in each ethnicity and less in case of people who have married couples as householders. And overall we can see that people belong to hispanic or latino origin have highest poverty population followed by Black or African household



From the above plot we can see the percent of population below poverty in relationship with gender. And also based on employment in each gender how percent of population below poverty line is varying. As expected the % of population below poverty line is high incase of females who are unemployed.



Above plot gives the distribution of population in boston which are under poverty line in relation to age group



As from following govt website '<https://aspe.hhs.gov/2021-poverty-guidelines>' the threshold income of a household of 4 people is '\$ 26,500' and considering this we can say that first three ranges in salary distribution(in red) indicate the percent population below poverty line in above plot

Dataset used are :

- Census income brackets/ poverty level: <https://data.census.gov/table?q=DP03>
- Income range: https://www.huduser.gov/portal/datasets/il/il2022/select_Geography.odn
- https://data.census.gov/table?g=0400000US25_310XX00US14460&tid=ACSST1Y2021.S1702
- https://data.census.gov/table?g=0400000US25_310XX00US14460&tid=ACSST1Y2021.S1702
- <https://data.census.gov/table?g=310XX00US14460&tid=ACSST1Y2021.S1701>

Additional information:

While answering the questions, we also tried to use the population distribution data provided by Boston City Council for each district. There are some benefits and some limitations to this result.

Benefits:

- The benefit of this dataset is that we can clearly see the distribution and exact number of each race from each district. From that information, combined with the information we get from other datasets, such as the aid given to each zip code area, we are able to tell which group of people needs more help compared to others. Then we are able to filter out where and how much aid in the future we will provide to each district/community/group of people.

Drawbacks:

- the Drawback we have is that the districts need to be identically drawn with zip codes. This means the boundaries between the two are not exactly the same, and we need to map zip codes to the appropriate districts for the benefits of this dataset to work. We do not yet know how vital this dataset is, spending effort on this task might not be a choice before we understand how vital this dataset is.