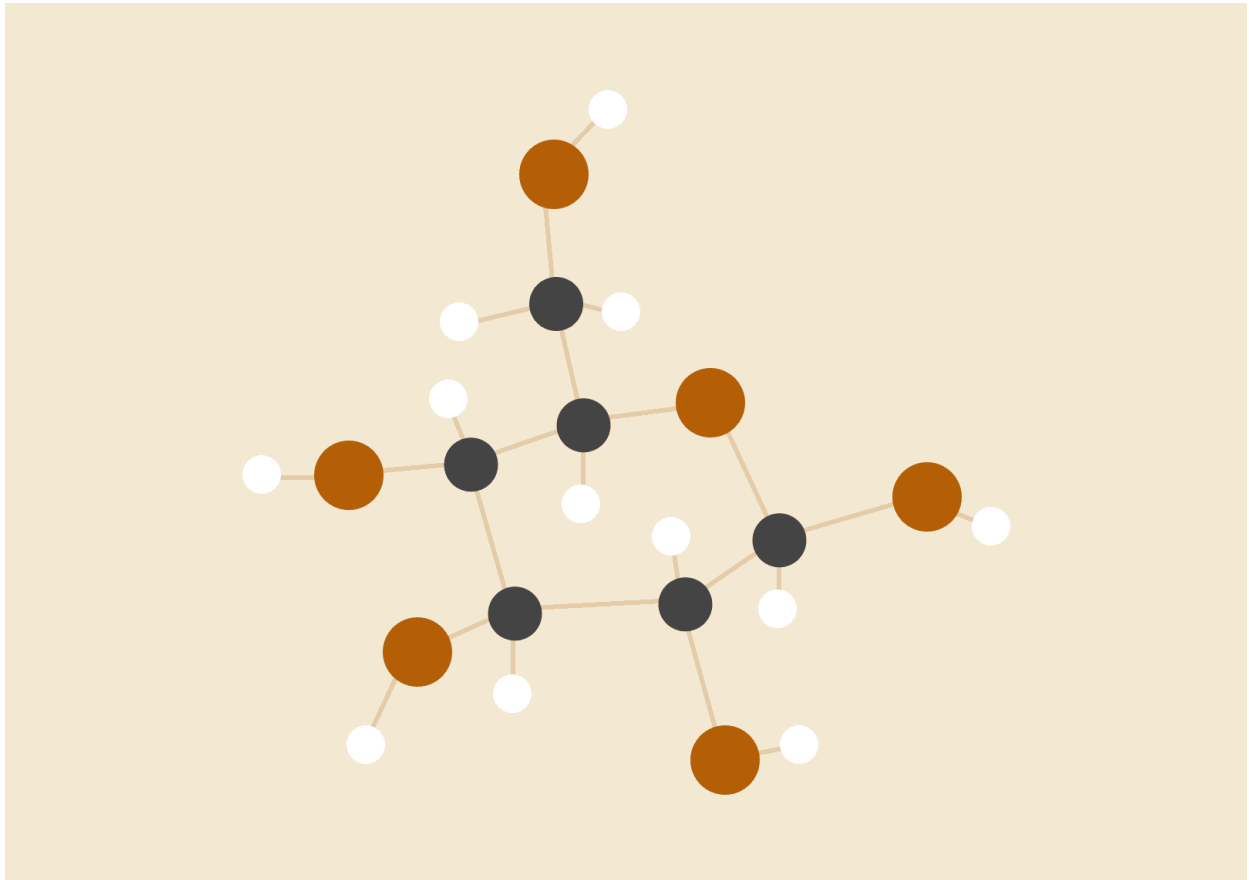


# Asian Impact & Equity

*Boston Chinatown Neighborhood Center (BCNC)*



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CAS CS506

## INTRODUCTION

The project is about exploring impacts and equity of Asian communities, and inspiring in the great Boston and MA area. We would like to research the features that show the different characteristics of Asian Americans in the area. We try to show the trend of growing population and related causes of such increase in population.

The purpose of this project is to analyze reliable datasets and figure out the trends about the Asian demographic over the span of 10 years and look at characteristics that might affect Asian America's choice of living in different regions in America, and analyze the percentage of new immigrants, first and second generation Asians to display the concentration in that region. Another objective is to analyze where there are highly populated cities because we believe that many Asians tend to adapt in cities where there is a high likelihood of job opportunities.

## KEY QUESTIONS:

1. How has the total Asian population changed in the MA area in the past 10 years? What are possible reasons for the trend? Are there any further trends about different sub-Asian groups being revealed?
2. What might be the reason for the increasing Asian population in Massachusetts and the Boston Area?
3. What is the wage distribution among different Asian Ethnic Salary groups?

## WORKING FLOW

1. Searching and reading related papers
2. Collecting data sets from Census and other websites
3. Cleaning and analysing data in data sets
4. Plotting graphs about data that presenting the correlation between demographic data and other social factors

## DATA

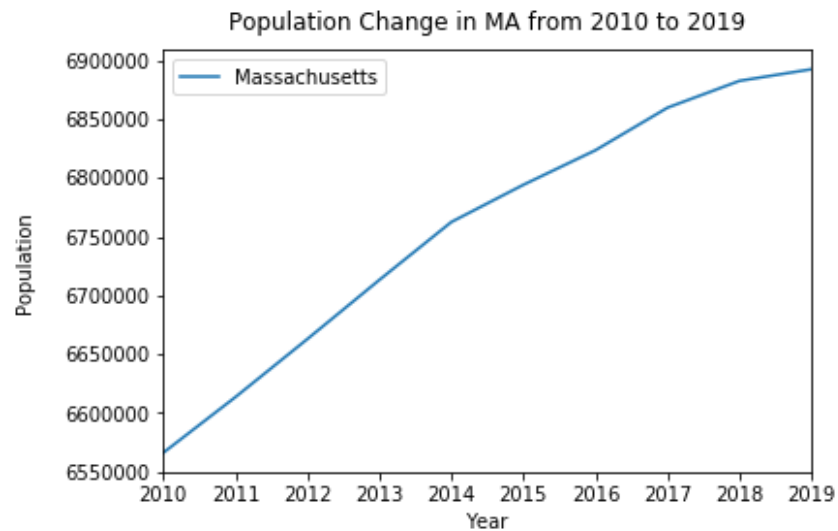
	Dataset Name	Link to the Dataset	Description
1	Census race survey(2010&2020)	<a href="https://data.census.gov/cedsci/table?q=United%20States&amp;tid=DECENNIALPLNAT2010.P1">https://data.census.gov/cedsci/table?q=United%20States&amp;tid=DECENNIALPLNAT2010.P1</a>	Total population of each race in the United States and Massachusetts. Can be used to calculate the population change within the last ten years.
2	Comparative Demographic Estimates	<a href="https://data.census.gov/cedsci/table?d=ACS%201-Year%20Estimates%20Comparison%20Profiles&amp;tid=ACSCP1Y2017.CP05">https://data.census.gov/cedsci/table?d=ACS%201-Year%20Estimates%20Comparison%20Profiles&amp;tid=ACSCP1Y2017.CP05</a> <a href="https://data.census.gov/cedsci/map?d=ACS%201-Year%20Estimates%20Comparison%20Profiles&amp;tid=ACSCP1Y2019.CP05&amp;vintage=2019&amp;cid=CP05_2015_001E">https://data.census.gov/cedsci/map?d=ACS%201-Year%20Estimates%20Comparison%20Profiles&amp;tid=ACSCP1Y2019.CP05&amp;vintage=2019&amp;cid=CP05_2015_001E</a>	Compared data from the American Community Survey in the previous 10 years.
3	Comparing Poverty Status and language spoken at home	<a href="https://data.census.gov/cedsci/table?q=United%20States&amp;t=Income%20and%20Poverty%3ALanguage%20Spoken%20at%20Home%3APopulations%20and%20People&amp;tid=ACSDT1Y2010.B16009">https://data.census.gov/cedsci/table?q=United%20States&amp;t=Income%20and%20Poverty%3ALanguage%20Spoken%20at%20Home%3APopulations%20and%20People&amp;tid=ACSDT1Y2010.B16009</a>	Comparing data of poverty status and language spoken at home for different ethnicities
4	2019 Census Data on Age groups of total population in MA, and population of different	<a href="https://data.census.gov/cedsci/table?q=Race&amp;t=-03%20-%2">https://data.census.gov/cedsci/table?q=Race&amp;t=-03%20-%2</a>	Comparative Datasets on different age and sex groups for both

	<p>ethnic groups and their subgroups.</p> <p>2019 Census Data on Age groups of Asian Population alone in MA.</p> <p>2019 Census Data on Ethnic groups in MA, including multiple aspects: age groups, household type, school enrollment, employment status and so on. (limited on Asian Indian and Chinese only)</p>	<a href="https://data.census.gov/tables/2019/ma/00000US25P1Y2019.S0201&amp;tid=ACSSP1Y2019.S0201&amp;hidePreview=true">0All%20available%20basic%20race%20combinations%3A-04%20-%20All%20available%20detailed%20Asian%20races%3ALanguage%20Spoken%20at%20Home%3ARace%20and%20Ethnicity&amp;g=0400000US25&amp;y=2019&amp;tid=ACSSP1Y2019.S0201&amp;hidePreview=true</a>	Asian and General American in MA
5	<p>2017 Census Data population in MA of different Asian ethnic groups.</p> <p>2019 Census Data population in MA of different Asian ethnic groups.</p> <p>2000 &amp; 2010 U.S. Census Data.</p>	<a href="https://www.population.com/us/massachusetts-population">https://www.population.com/us/massachusetts-population</a>  <a href="https://www.pewresearch.org/fact-tank/2021/04/29/key-facts-about-asian-americans/">https://www.pewresearch.org/fact-tank/2021/04/29/key-facts-about-asian-americans/</a>  <a href="https://scholarworks.umb.edu/iaas_pubs/31/">https://scholarworks.umb.edu/iaas_pubs/31/</a>	Census Data in MA for different specific groups of Asians including East Asian, Chinese, Korean and so on.
6	<p>2013 - 2019 Asian Population Change</p> <p>2013 - 2019 MA Income Change</p>	<a href="https://www.census.gov/data/developers/data-sets/acs-1year.html">https://www.census.gov/data/developers/data-sets/acs-1year.html</a> <a href="https://datausa.io/profile/geo/boston-ma/#economy">https://datausa.io/profile/geo/boston-ma/#economy</a>	Datasets with changing Asian population across different years and comparative data with income change.

## Analysis

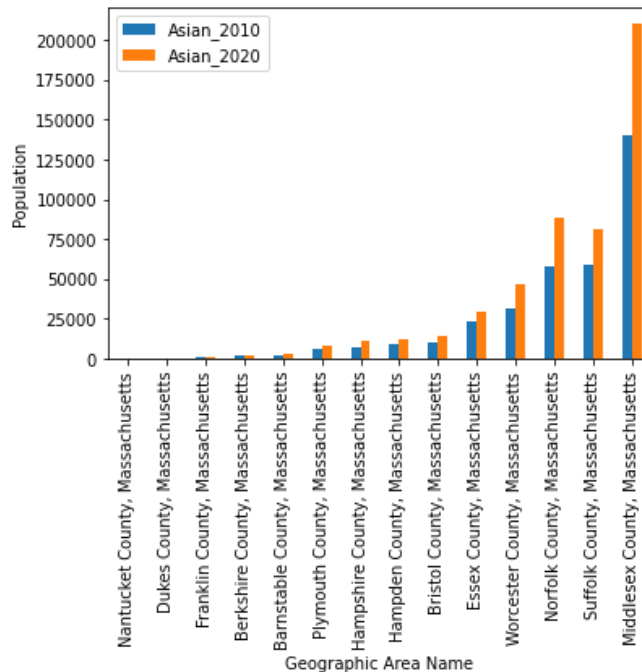
We start with looking at the overall population change in MA in ten years. Based on Figure 1, the overall MA population is almost linearly increasing from 2010 to 2019, from about 6.55m to 6.9m. From 2014, the increased speed slightly drops with the slope becoming smoother a little bit. I also take a look at each county, what is the trend of

percentage change from 2010 to 2019? Interestingly, there are several counties' populations continually decreasing, ie: Barnstable, Berkshire, Franklin. While some continually increased to a large extent. This shows some geographical discrepancies are embodied in population change. The reason for the discrepancies may be explained in later research.



***Figure 1: Total Population Change in MA from 2010 to 2019***

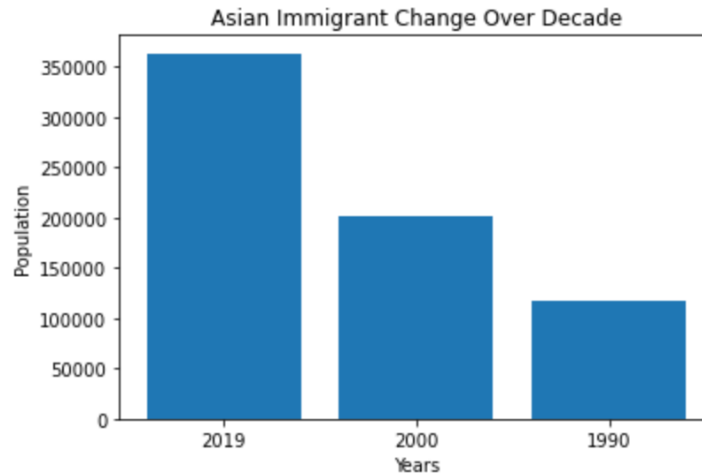
Then we shift our focus on the Asian population change and compare it with the overall population. Following the study of the total Asian population change, based on Figure 2, the Asian population overall increased in almost every county, and especially rapidly increased in Worcester county, Norfolk county, Suffolk county, and Middlesex county.



**Figure 2: Asian Population Different between 2010 and 2020**

Based on total Asian population change, we then try to perceive more specific aspects of Asian population, ie: Is there any trend we can find based on different age groups? Is there any sudden shift or general pattern we can infer based on different age groups? With that in mind, we found that there is a changing trend for each age group in the last 10 years that can be used to infer the mobility and general development of one region. One general trend we found in almost every region was that the population of age group 55-64 (years old) for both the male and female was steadily increasing in the last 10 years, which could be evidence of an aging population or a trend of aging immigration. Another pattern we found was that in Suffolk county, there is a skyrocketed increase in male population from 2017 to 2019 for Asians. Some of the abnormal changes are valuable for us to investigate. However, further research and data information from other dimensions like education or employment are needed in order to give a reliable and general analysis.

Further on, we start to notice Asian immigrants might be a reason for the total Asian population growth over the past two decades. Is there any trend of Asian immigrant population growth between the years?

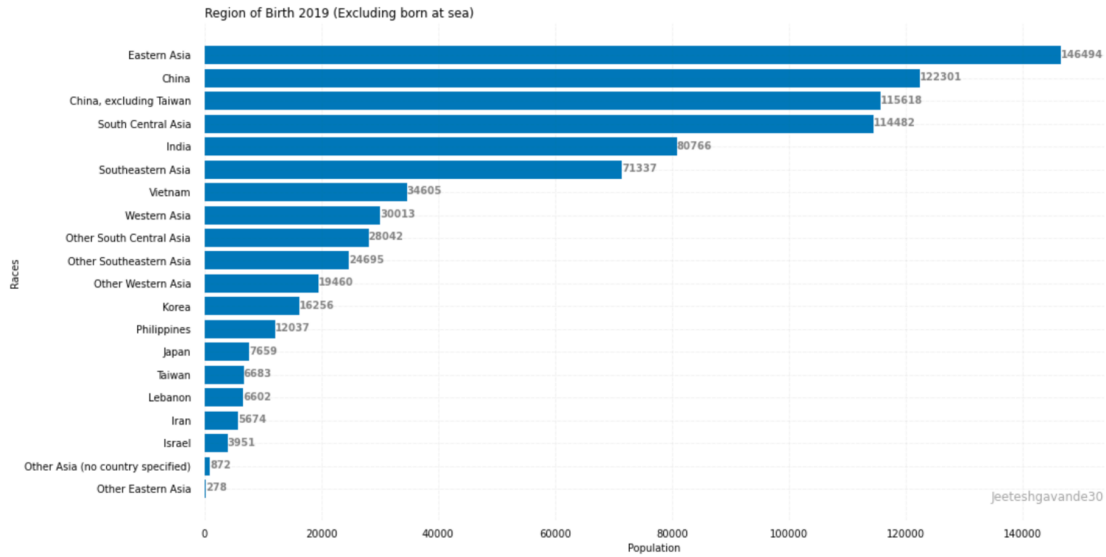


*Figure 3: Region of Birth with Population in 2019*

Over the past two decades, Asian population has grown tremendously. In 1990, there were only 116,608 Asian immigrants in Massachusetts. , but in the year of 2019, there were 363,189 Asians in Massachusetts.. The total amount of Asian population has tripled over last 40 years. According to the Figure 3, the amount of Asian population has doubled from 1990 to 2020, and those are the years that Asian population has the most growth rate.

After analyzing Asian immigrant change over the past 40 years, now we wonder where they are from?

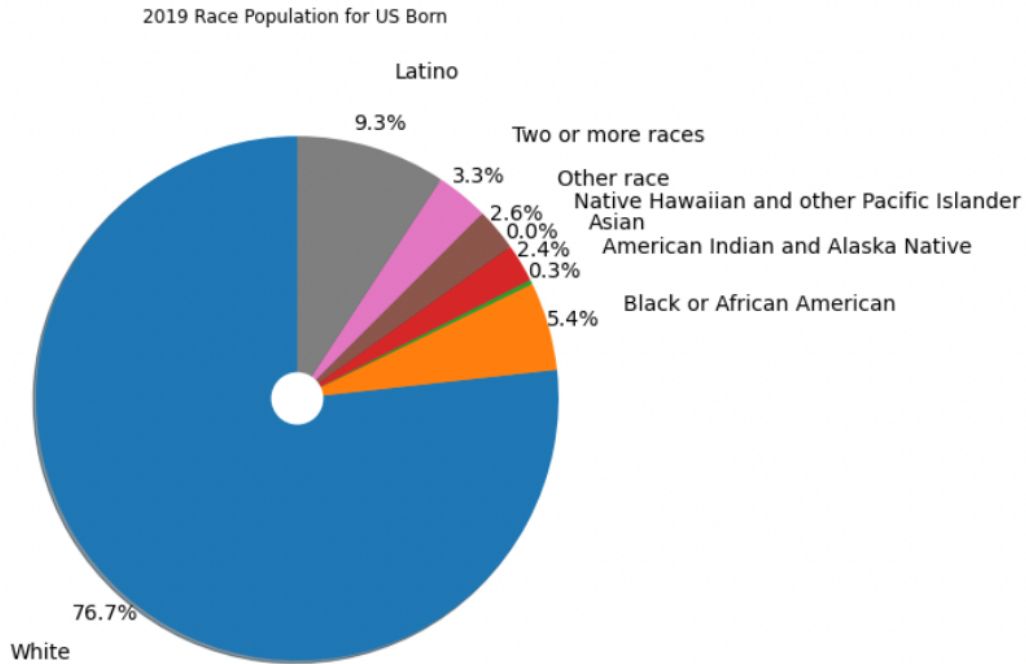
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*Figure 4: Asian Immigrant Change Over Decade*

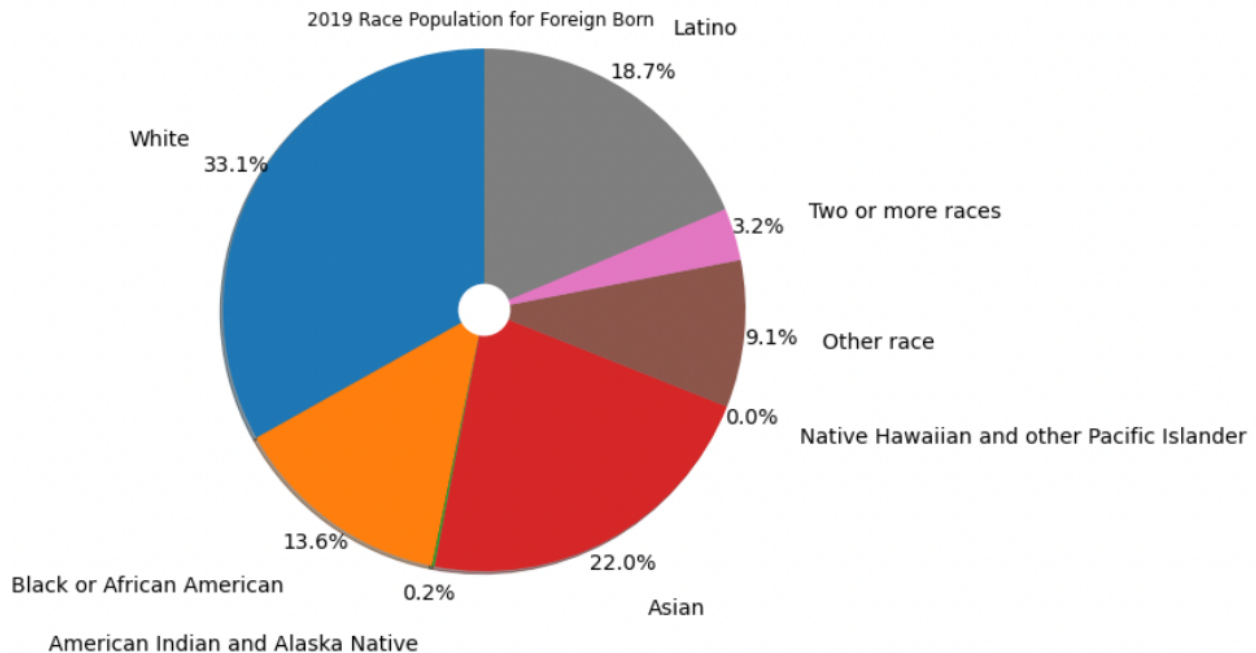
According to Figure 4, we can see most Asian immigrants were coming from Eastern Asian and South Central Asia. However, China, India and Vietnam have the most immigrants to the Massachuseets. And we will further analyze the race population in Massachusetts.





***Figure 5: 2019 Race Population for US Born***

In Figure 5 you can see that the US Born Asian population is very miniscule compared to most of the other races. You can see a dramatic difference between the caucasian population US Born population from the minority population. It is evident the asian population is 2.4% of the population of US Born. You can see the magnitude of the Caucasian American population compared to the Asian American population in this graph significantly.



*Figure 6: Race Population for Foreign Born 2019*

In Figure 6, the Foreign Born Asian (22.0%) population is the largest percentage compared to the other minorities and close to the percentage of caucasians (33.1%) which shows that there is an increase of immigrants migrating to Massachusetts during 2019.

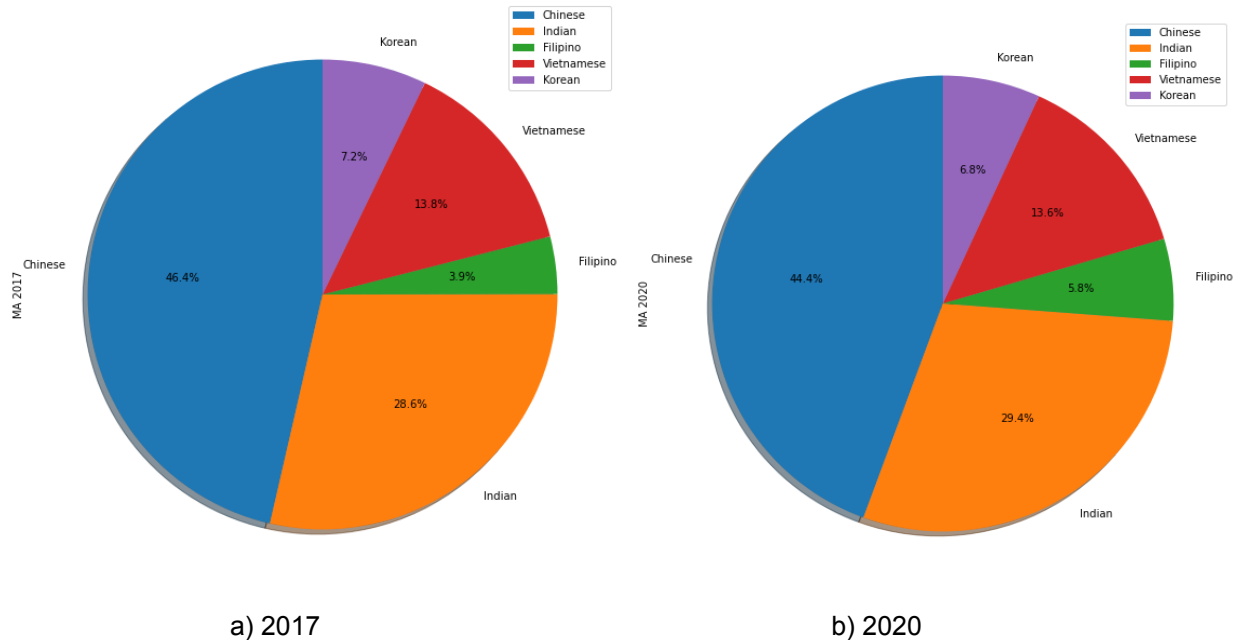
We found the overall trend that Asian American population in MA continuously increases from 2000 to 2020. To discover some more specific information related to Asian American in MA, we look at different ethnic groups within Asian American, including: Chinese, Indian, Korean, and etc. Figure 1 below displays the population of 21 ethnic groups within Asian American in MA in 2000 and 2010, and their population percentage change in the two years. Looking at all the valid statistics on Figure 1, we found there is only one group's population -Hmong- decreases from 2000 to 2010. All other groups follow the overall trend we discovered in deliverable 1. By only considering increasing speed, we found Bangladeshi population triples in 10 years, which represents the fastest growing speed. By considering the number of population, we found Chinese is the group that has increased the most with its population increasing 42,352 in 10 years.

By looking at Figure 7, we notice five top Asian subgroups that can make up more than 80% of all Asian Americans, they are Chinese, Indian, Filipino, Vietnamese, Korean. Therefore, we decided to take a deeper look at the five major groups to look for more

information about population change within Asian Americans.

	Race	2000	2010	%change
0	Chinese	89,521	131,846	47.3%
1	Indian	48,588	85,441	75.8%
2	Vietnamese	36,685	47,636	29.9%
3	Korean	19,469	28,904	48.5%
4	Cambodian	22,886	28,424	24.2%
5	Filipino	11,661	18,673	60.1%
6	Japanese	13,997	15,358	9.7%
7	Other Asian, not specified	9,025	14,256	160.0%
8	Pakistani	2,864	7,071	146.9%
9	Taiwanese	2,859	5,353	87.2%
10	Thai	2,747	4,712	71.5%
11	Laotian	4,449	4,530	1.8%
12	Nepalese	-	2,865	-
13	Bangladeshi	784	2,387	204.5%
14	Indonesian	1,063	1,379	29.7%
15	Sri Lankan	771	1,254	62.6%
16	Hmong	1,303	1,080	-17.1%
17	Burmese	-	1,072	-
18	Malaysian	346	593	71.4%
19	Bhutanese	-	544	-
20	Other Asian, specified	1,025	490	-

*Figure 7: Asian American Ethnic Groups' Population in MA in 2000 and 2010*



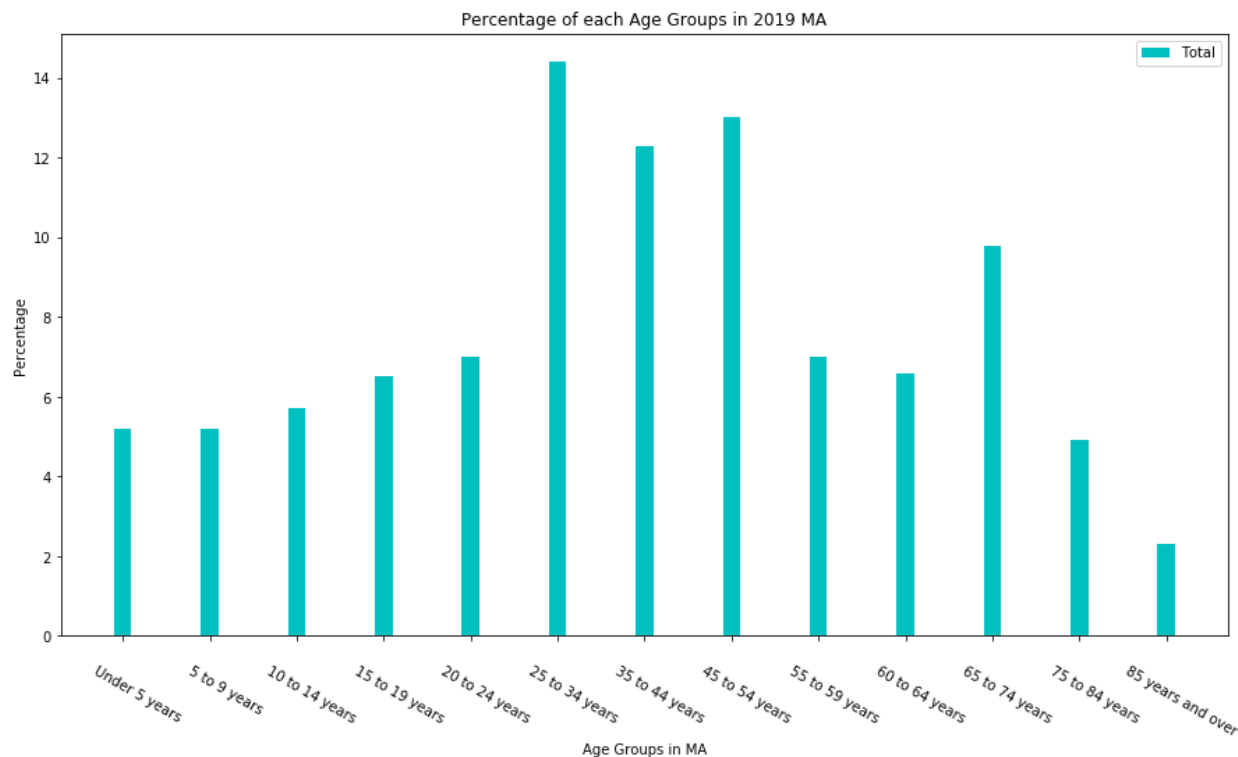
*Figure 8: Percentage of Top 5 Asian American Ethnic Groups Population in MA in 2017 and 2020*

In Figure 8, we try to see, within the top 5 Asian American subgroups, the percentage they individually take. As we can see, in both Figures, Chinese take the

majority percentage, up to 50%. The second majority is Indian, up to 30%. By comparing Figure 2 and 3, we found Chinese took less percentage from 2000 to 2010, from 46.4% to 44.4%, whereas, Indian, Korean, Filipino all increased their percentage, and Vietnamese stayed almost the same. Although there is only a 2% decrease for the Chinese population, since the population base is quite large, 2% can somehow mean something as a trend of decrease. Therefore, we want to explore possible reasons for decrease later on.

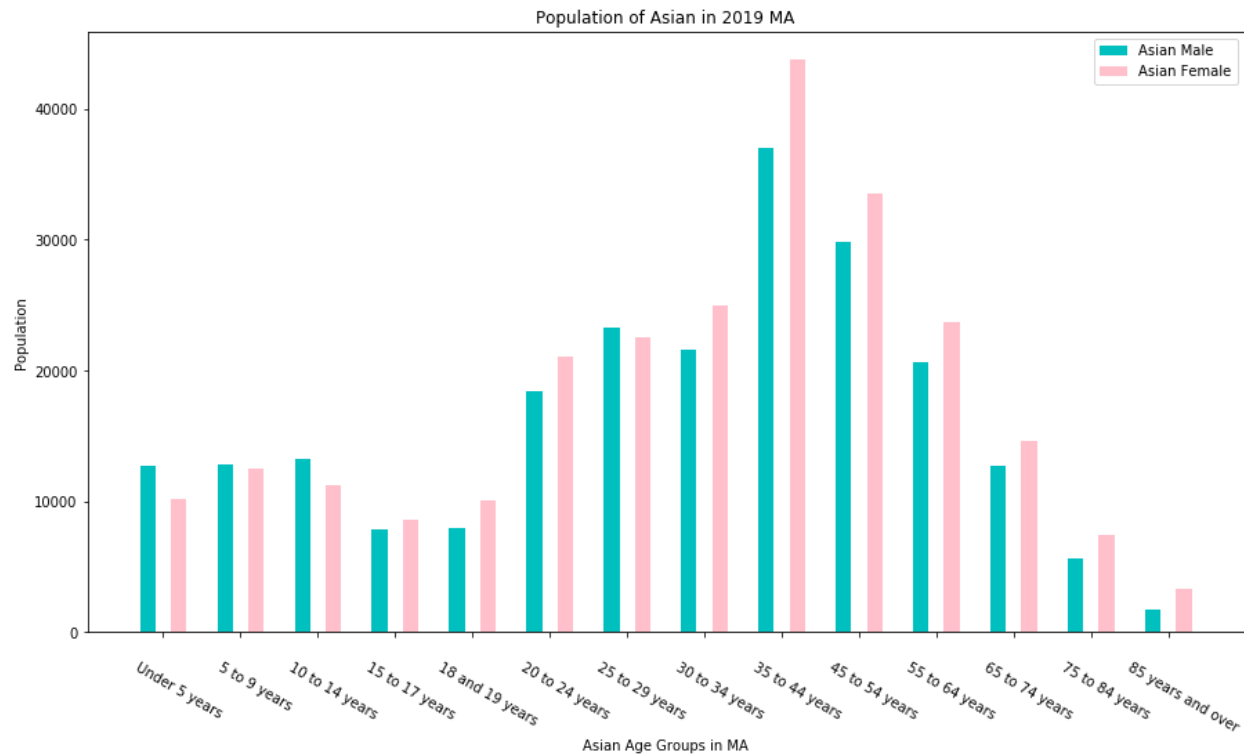
After digging into top Asian American ethnic groups, we also look at whether there is a trend within different age groups of Asian American. In figure 3, we notice that the age group from 25 to 34 years old take the lead in percentage in MA in 2019. And the top three population groups have ages from 25 to 54, which are basically middle-aged crowd groups. It can fits to our discovery in the immigrant trend that a huge amount of immigrants come for jobs which are possibly in the middle-aged group.

**Figure 9: Asian Population Percentage of Different Age Groups in MA in 2019**



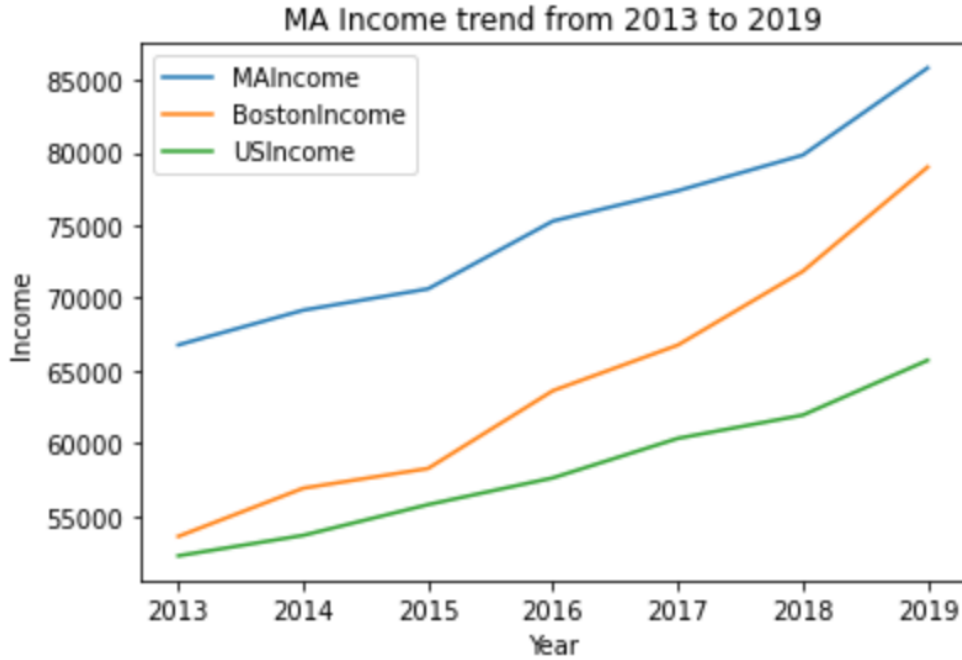
To be more specific, we want to take a look at sex category of Asian American within differet age groups. From figure 10, we could infer that from age 15 to 85 (teenagers and adults), the number of Asian females is greater than the number of Asian males. While for newborns and children from under 5 to 14 years old, the number of males is slightly greater than the number of females. Based on this trend, we can conclude that in MA 2019, the female Asian population is more than male Asian population. Since we only look at one year 2019, this trend might not be representative,

so it makes sense to look for more data about Asian population of different sex in other years in order to get a more reliable trend about sex age distribution. Then we can draw some conclusions and analyze some reasons for the trends. Here, we only take a brief look and start to realize there might be some trends within sex-age of Asian population in MA.



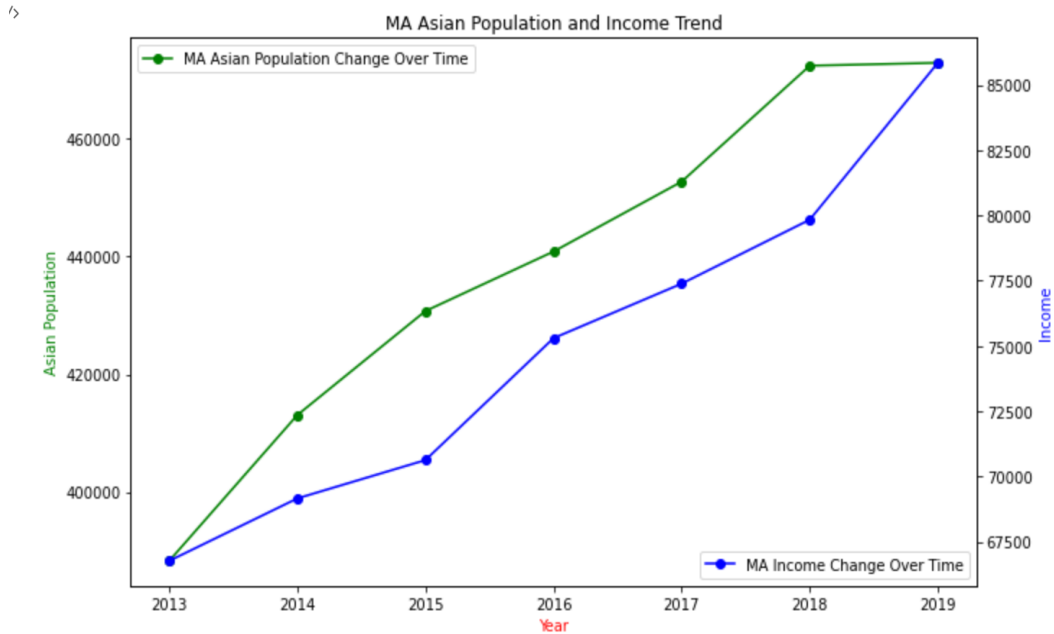
**Figure 10: Asian Population Percentage of Different Age Group in 2019 MA (Category by sex)**

Moreover, in deliverable 1, more than finding that Asian population has increased over the past 10 years, we also answered part of the question: why Asian population has increased over the time. Our answer is because of immigration from Asia. Now we want to find more reasons. And our follow up question is: does the economy play an important role in the population increase? From Figure 11, we used median household income data that was collected from Massachusetts, Boston and the United States. According to the line chart, we can see that people who live in Massachusetts and Boston have more average household income than the U.S. average household income. Therefore, we conclude that the economy might be an important reason that attracts the Asian population and immigrants.



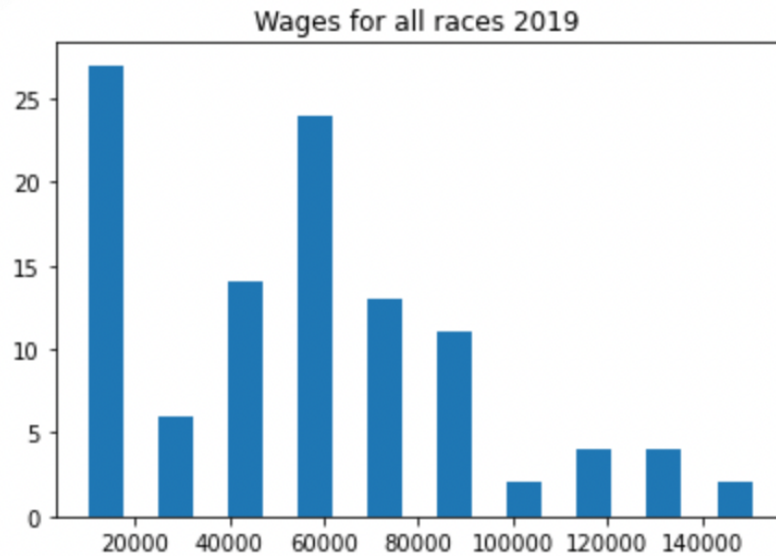
*Figure 11: Total MA Income Change from 2013 to 2019*

In Figure 12, we use Asian population as primary Y axis (left), MA median household Income as secondary Y axis (right) and time (2013 to 2019) as X axis. Based on the graph, we can see that both Asian population and median household income have steadily grown over time. From 2013 to 2015 and 2017 to 2018, the Asian population grew rapidly. In the following years 2015 to 2016 to 2018 to 2019, MA household income increased tremendously followed by Asian population increase. We might be able to conclude that Asian population growth drives MA income growth.



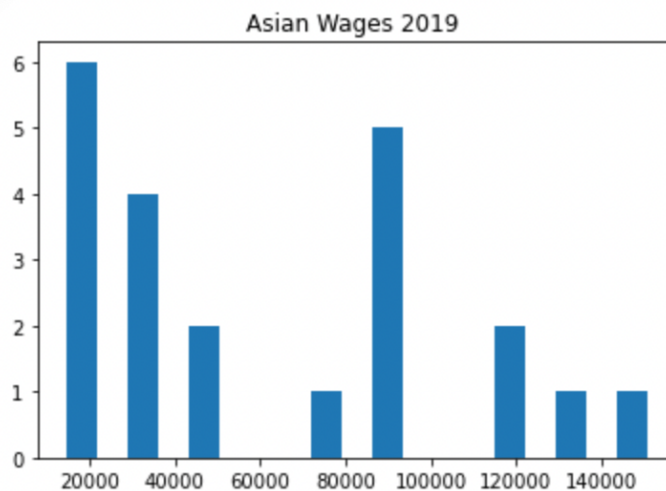
**Figure 12: Total MA Asian Population Change and their Income Change from 2013 to 2019**

We also noticed that there was a mass increase of the asian population over the years. We wanted to notice the wages overall for all of the races and try to find out the correlation between wages and demography. As we see that most of the jobs are under 6000. That follows our common sense that high wages jobs are limited. We can see that there is a large amount of wages under 20000. Mass jobs that are available for small wages, which might be a reason for the population increase in the nation.



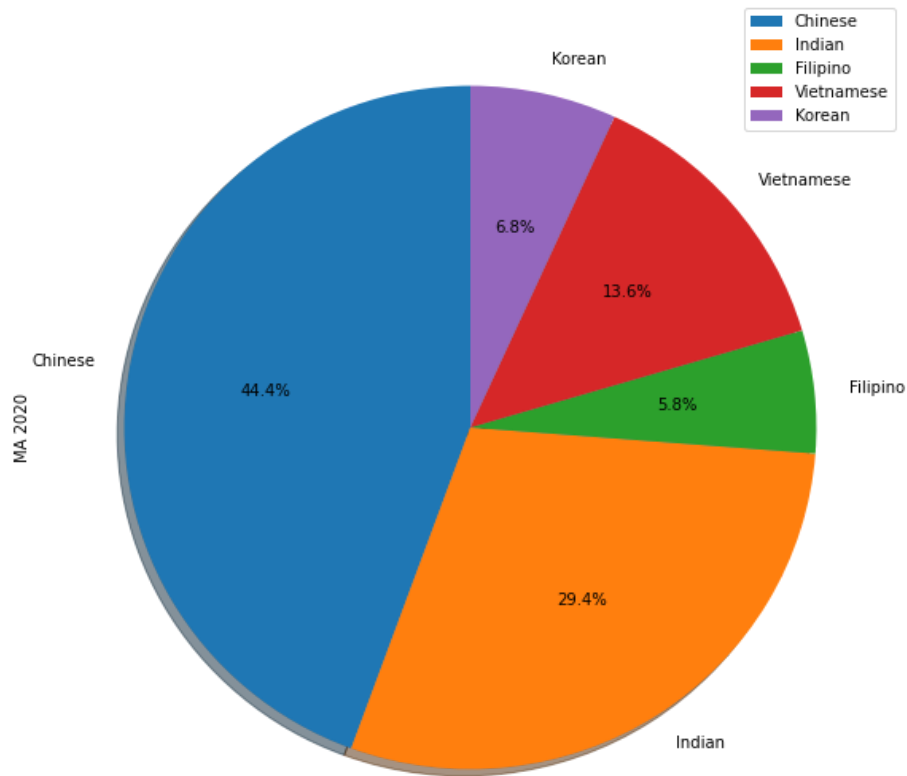
*Figure 13:*

The graph shows that asians make up most of the population in Massachusetts for higher incomes for minorities compared to other races. They make the most amount of money compared to the other races. Their income is mostly around 20000 and 90000 which is a lot compared to other races. This might indicate that Asians tend to have jobs that are about low-paid and mid-rated. This shows that there are only a few Asians who can have high wages. Most of Asian population got a middle range wage. This relates to the income analysis of Asians and we will continue to do some research and try to find out the reason for this observation.



*Fig 14*

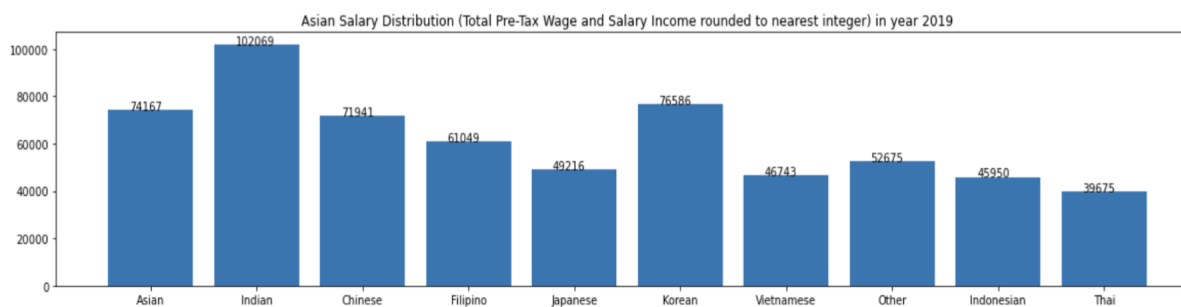




**Fig 16. Top 5 Asian American Ethnic Groups Population in MA in 2020**

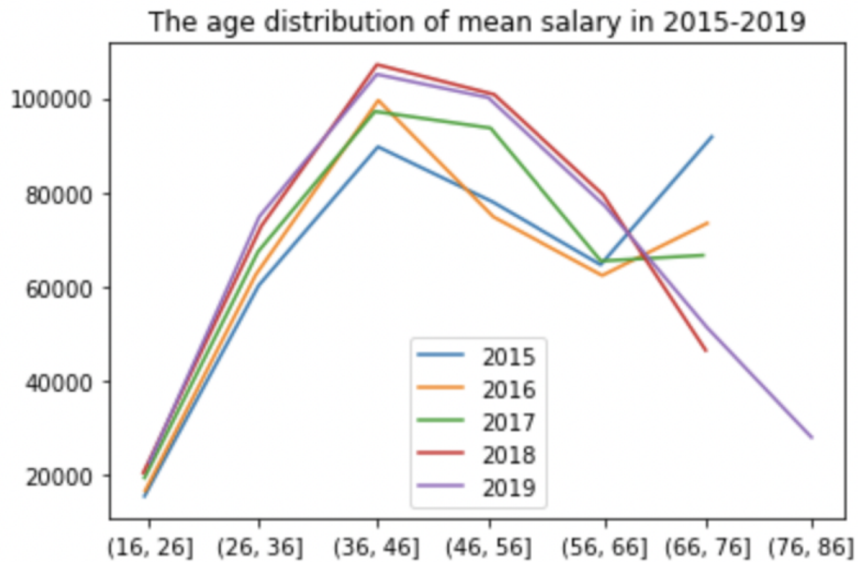
In this graph you can see the largest asian population in Massachusetts is the Chinese population. The second largest population is the Indian population. The smaller groups of Asian population are Korean, Vietnamese and Filipino populations.

ere are total of 2887 labor force in Asians in 2019



**Fig 17. Top 5 Asian American Ethnic Groups Population in MA in 2020: Chinese, Indian, Vietnamese, Korean, Filipino**

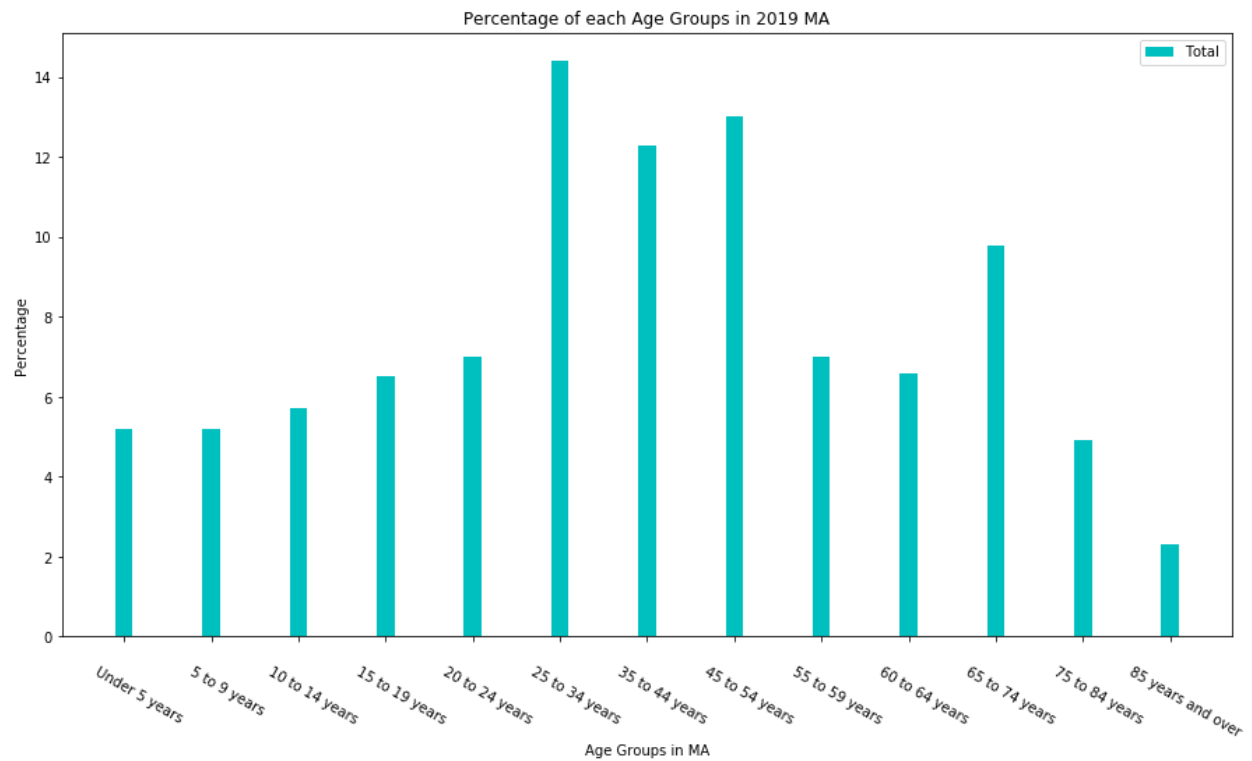
## Age distribution



The highest salary is within the [36,46] and [46, 56] range.

*Fig 18. Age Distribution*

During 2019 and 2018 you can see that majority of the highest salary distribution is for ages [36, 46] and [46, 56]



### ***Citing Figure 9: Asian Population Percentage of Different Age Groups in MA in 2019***

The highest Salary in 2019 is within the [36, 56] range.

The highest Asian population in 2019 is within the [25,54] range.

We believe that one of the reasons for the ages 25 to 35 to be making less money is because the majority of the incoming graduates have a lower starting salary compared to more experienced workers.

We can see that from [26 to 36 ] and [36 to 46] there is a significant salary increase. Another possible reason is that there are huge numbers of immigrants who come for jobs at the ages of 25 to 44, and they are making less money than others.

## **CONCLUSION**

1. In the above analysis, we dug into total and Asian population change in MA, and we found an overall increase trend in both total population and Asian population from 2010 to 2020, which follows the common trend. In several specific counties (Norfolk, Suffolk, and Middlesex county), the increase is relatively larger and faster than others. Not much surprise with their population change, we then try to find the reasons for the increasing population. We think a large portion of the increased population is due to immigration. The possible reason for this trend may be because of the growth of the economy during 2019 producing job opportunities for Asian immigrants. We predict that there will be an increase of Asian immigrants in the future because in the pie chart we can see that there is a noticeable difference in the incoming population of Asian immigrants compared to all of the minorities. In the future, if the economy becomes better in the US we will most likely see a noticeable increase in Asian immigrant population than before.
2. Based on the analysis of Asian population and total population in the Boston Area, we found that the trend of Asian population in the MA and Boston Area is increasing fast. Therefore, we decided to analyze the increasing trend by the factor of wage and income.

When analyzing the graph it was evident that the increase in Asian population in the Massachusetts and Boston area is that the average income in these areas is much higher than the average income of the United States. From Figure 5, we can see that the initial average wage in 2013 in MA or Boston is much higher than it of the United States. In addition, the growth rate of the average income is also higher. Thus, the generally high income in MA and Boston could be one reason that attracts so much new Asian residences to MA and Boston.

Another reason for the rising population of Asians in the Boston area could be that the MA is willing to offer more jobs with both low payments and decent payments. From Fig 6 and 7, we could see that most of the jobs with high income are offered to the Asian groups. Thus, with the relatively high wage compared to the whole country and the decent paid jobs, whether old or new residents are willing to stay in the Boston area.

The general trend for Asian population is promising in the Boston area. From Fig 2 and 3, generally each Asian subgroup has experienced an increase in the past few years, and the distribution of the age groups is in good shape. Most people are in the age of workforce, and the aging population is not large.

3. There is a correlation between ethnic groups salary and ethnic groups population. In the figure we can see that the high average wage of Indian and Chinese people help with the population growth in such ethnic group. It is evident that an increase in salary affects the increase in population.

## REFERENCES

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2. Massachusetts population 2021. Massachusetts Population 2021 (Demographics, Maps, Graphs). (n.d.). Retrieved November 17, 2021, from <https://worldpopulationreview.com/states/massachusetts-population>.