

EDA on US Census Data and Migration Populations

Group 10

Mark, Sarthak, Preeya, Conghao, Harshith



Motivation

Why data analysis for US migration within the US?

- **Economics:** more people means a larger economy
- **Desirability:** moving is a result of a person's decision to migrate (ideally)
- **Diversity:** what are the social characteristics
- **Politics:** demographic population implies politics

What factors influence migration more ?

- The question from which our team framed the analysis
- Factors: age, income, sex, race, housing





Methodology



- Downloaded the American Community Survey reports from data.census.gov
- Used the resulting csv files to organize the data into Pandas DataFrames by category



- Data was cleaned via removal of non-numeric values, non-relevant entities
- Proportions in each category are then evaluated per year
- Some data was normalized by category (denoted “normalized”)



- Visualization

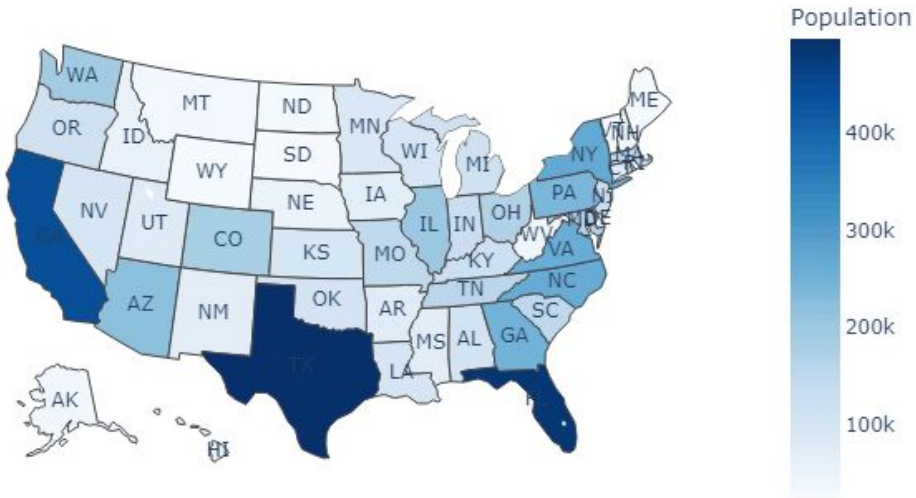


Sample Data

	GEO_ID	NAME	S0701_C01_001E	S0701_C01_001M	S0701_C01_002E	S0701_C01_002M	S0701_C01_003E	
0	id	Geographic Area Name	Estimate!!Total!!!Population 1 year and over	Margin of Error!!Total!!!Population 1 year and ...	Estimate!!Total!!!Population 1 year and over!!A...	Margin of Error!!Total!!!Population 1 year and ...	Estimate!!Total!!!Population 1 year and over!!A...	Ei
1	0400000US01	Alabama	4849509	3840	232921	4431	799000	
2	0400000US02	Alaska	722063	1360	41409	1863	128858	
3	0400000US04	Arizona	7200620	6015	349610	6068	1211941	
4	0400000US05	Arkansas	2989054	2800	154577	3830	515685	
5	0400000US06	California	39084048	10760	1949664	11349	6513225	
6	0400000US08	Colorado	5701658	4038	270224	4503	929018	
7	0400000US09	Connecticut	3531986	2674	147297	3092	546834	
8	0400000US10	Delaware	964817	1555	45314	1618	149685	

Which state has the highest migration from other states?

Population Moved from a Different State in 2010

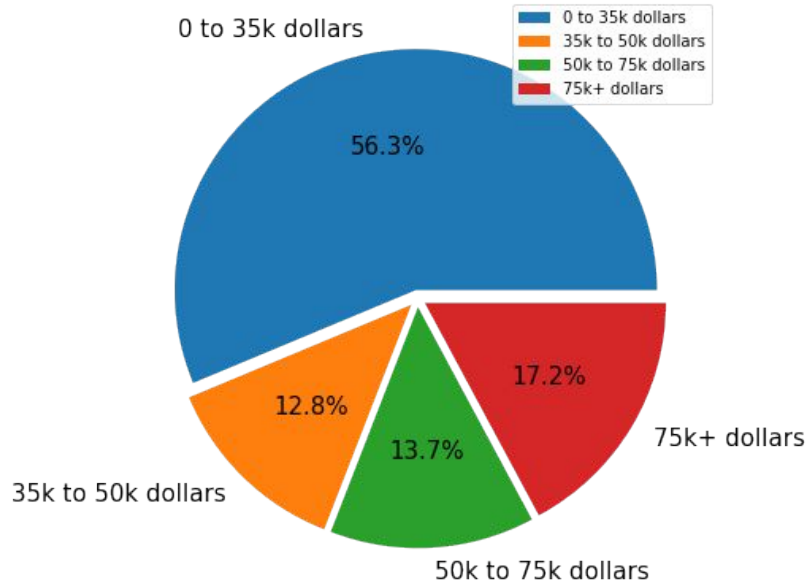


Top States:

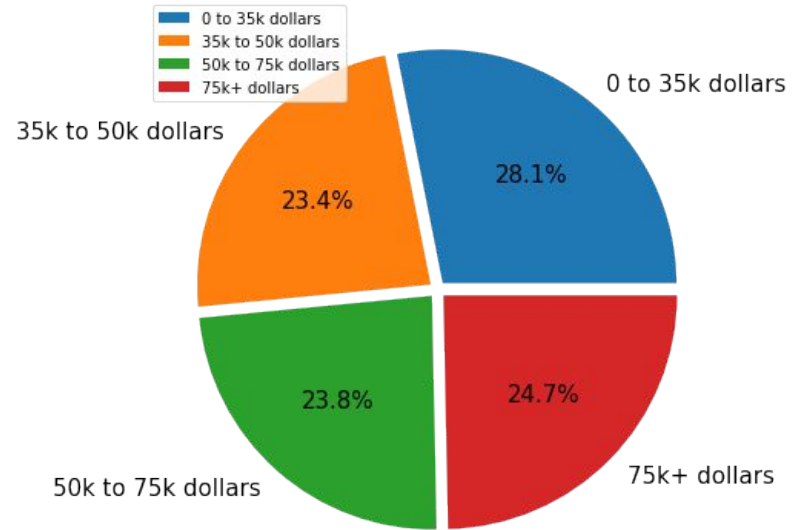
- California
- Texas
- Florida

Low income people migrate more

Income trend of migrating people for the year 2019

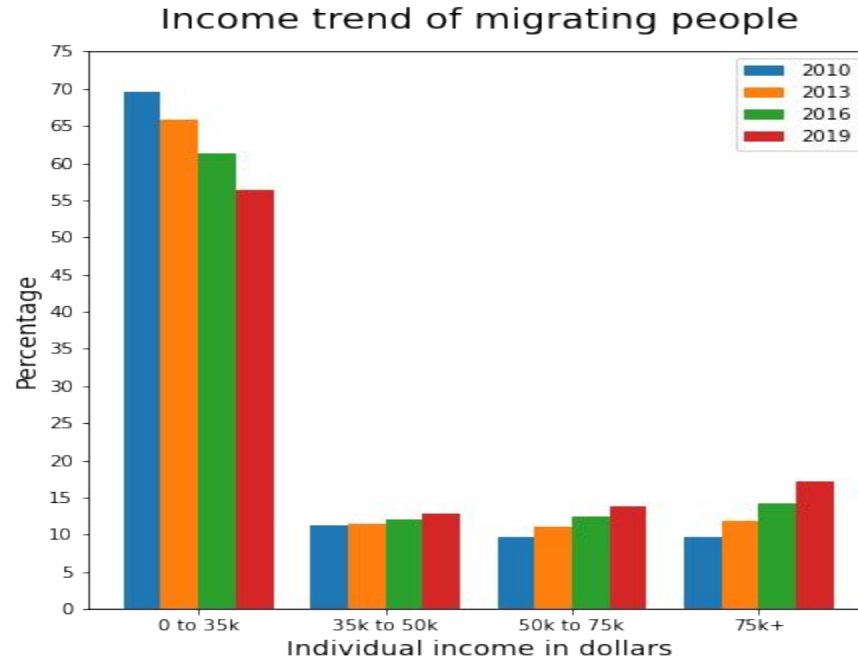


Normalized Income Based Migration Trend for 2019





Migration vs Income Group: Trend Over Time

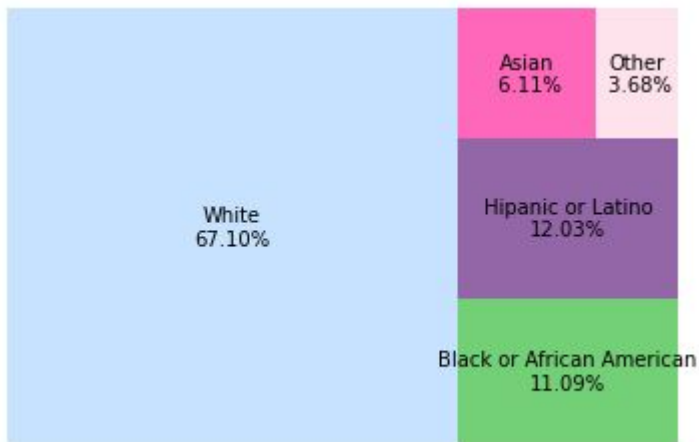




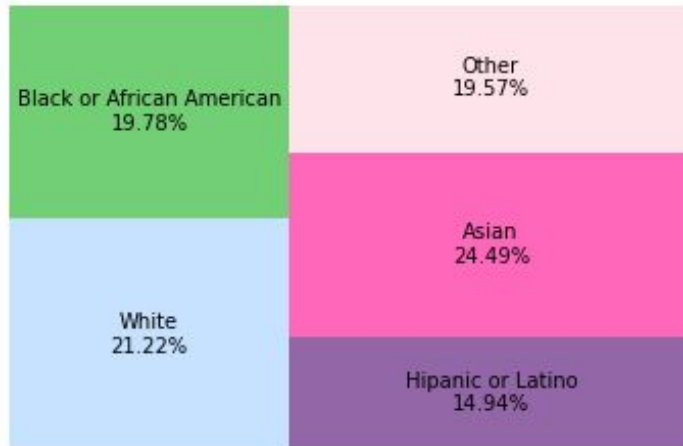
Migration on the basis of race

There is not much difference between the proportions of race groups moving year wise, so the overall proportion in any year is more relevant to get insight on migration data based on races

Race Migration 2019



Normalized Race Migration 2019

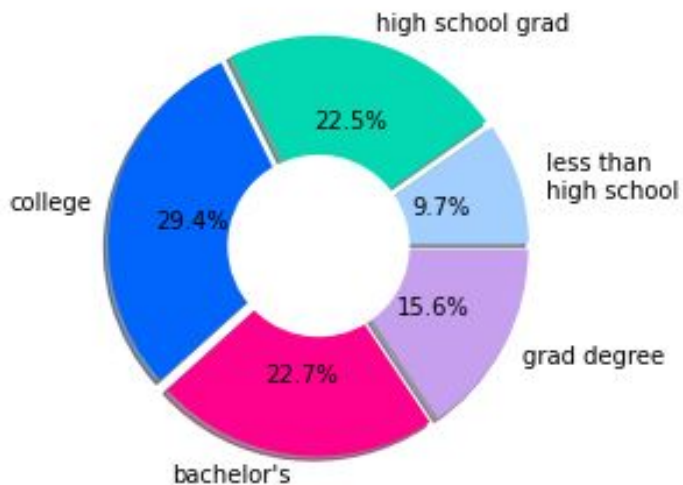




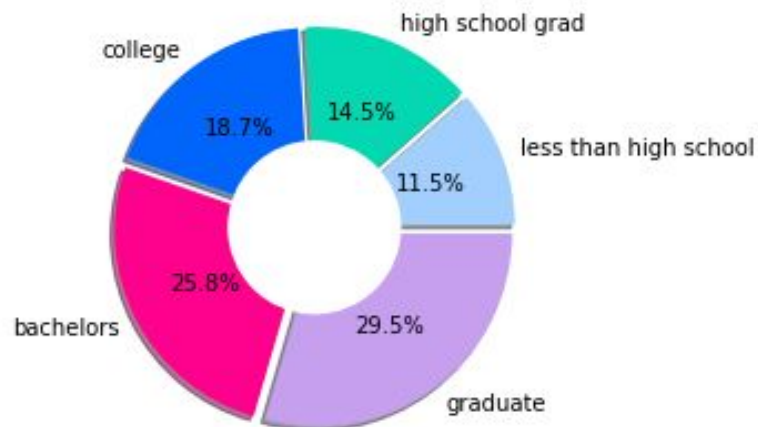
Education group migration

The trend remained the same almost for all the years.

Fraction of education groups 2019



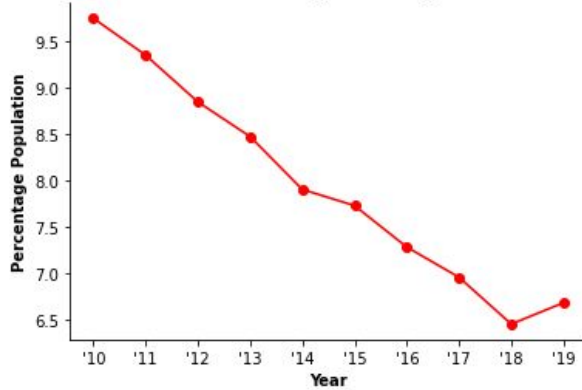
Normalized Fraction of education groups 2019



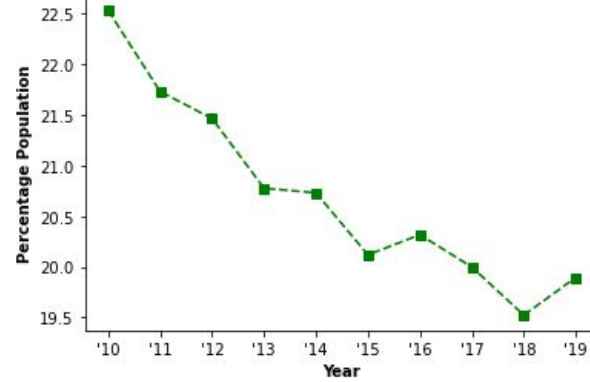
Migration on the basis of education over time



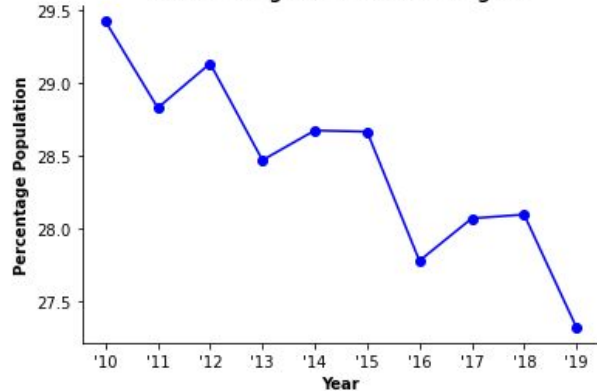
Less than high school grad



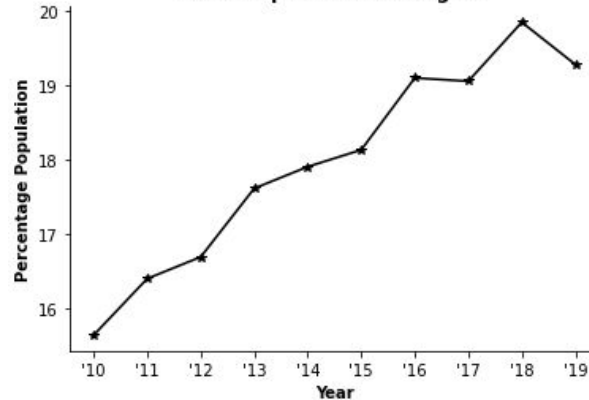
High school graduate including equivalency



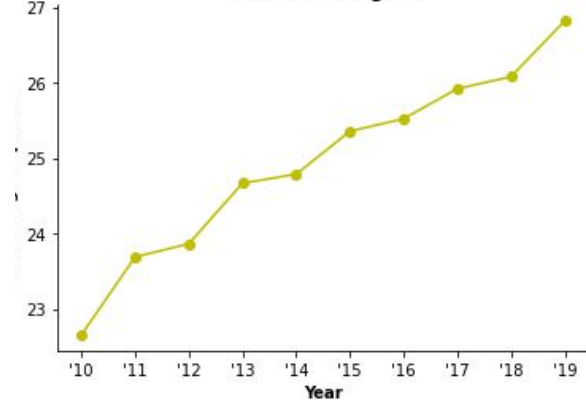
Some college or associate's degree



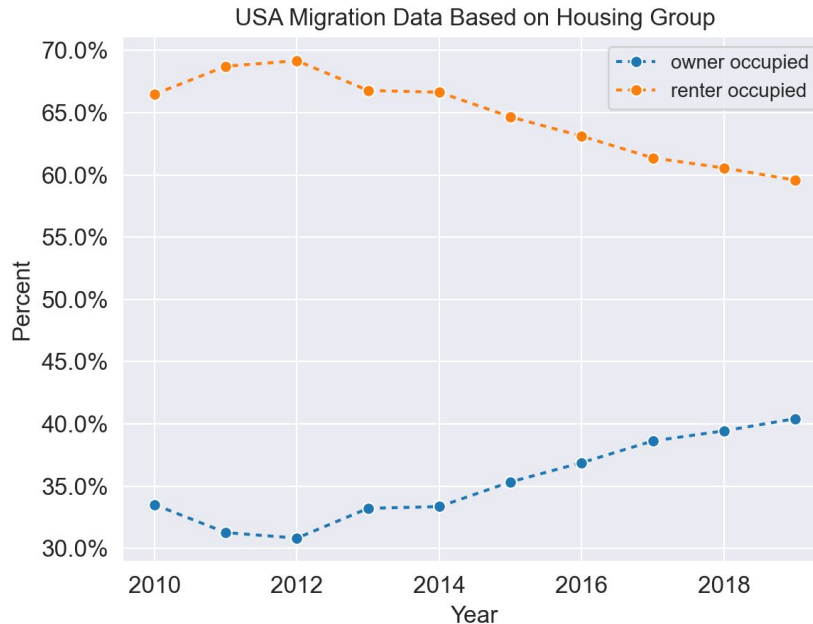
Grad or professional degree



Bachelor's degree



People who rent housing tend to migrate more?

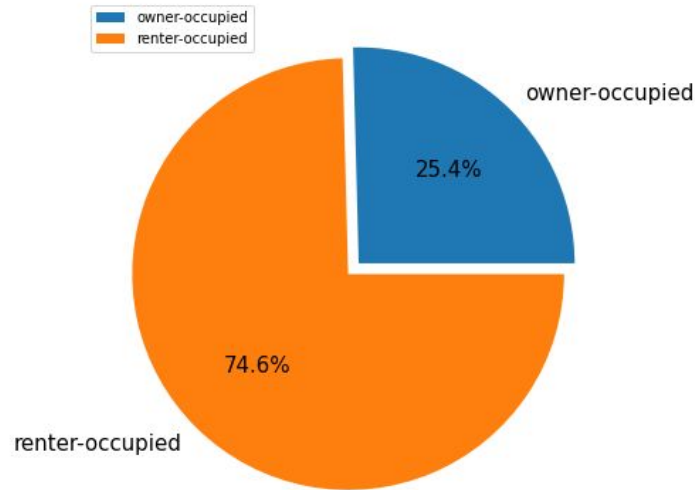


- This plot demonstrates which category of people in the housing group migrates more during 2010 to 2019.
- It can be seen that people who rent the house are migrating more



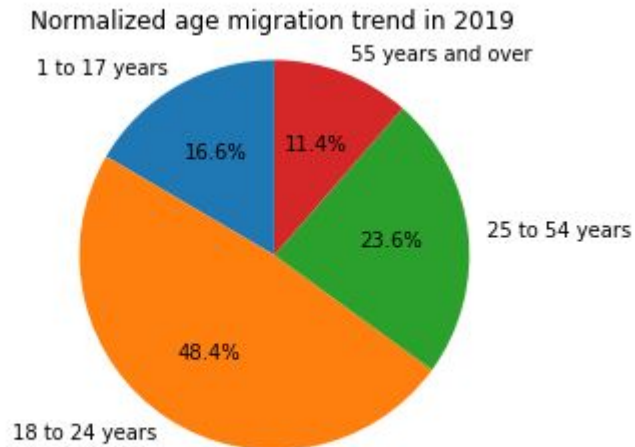
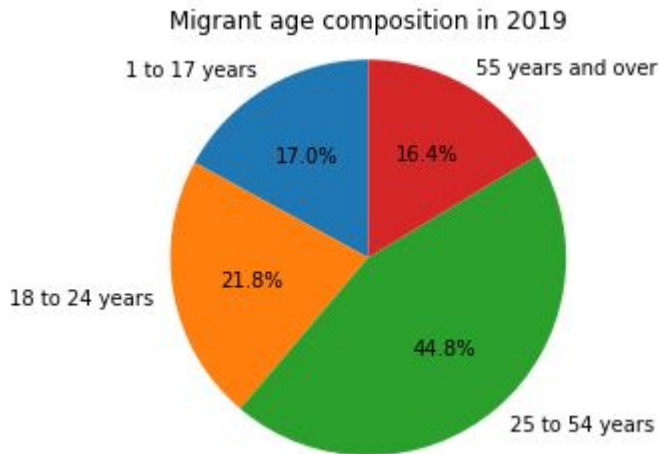
Normalized Trend based on housing

Normalized Housing Migration Trend for 2019



What about age?

- Largest group is the working age 25 to 54
- Proportions have changed very little 2010 to 2019
- Intuitive: working class is largest

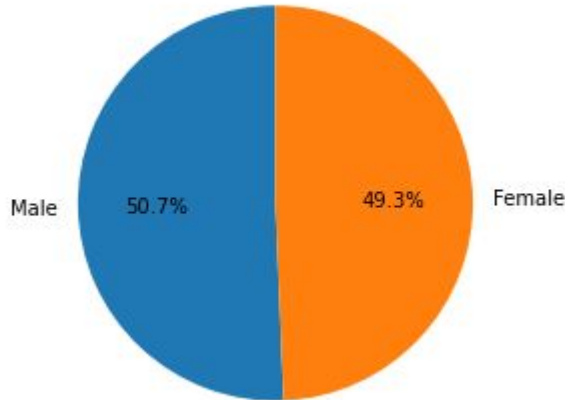




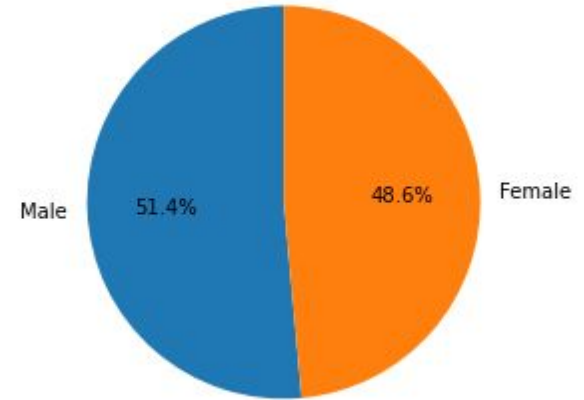
What about gender and sex?

- Less than 2 percent difference between the number of male and female migrants, similar propensity

Male vs female migrants % in 2019



Normalized Male vs Female Migrants % in 2019





Summary

Effect of different factors on migration:

- Demographic factors have tangible effects on migratory patterns
- Highest likelihood amongst each factor:
 - Income: 0 to 35k
 - Education level: bachelors and professional grad
 - Housing: renter-occupied
 - Age: 18 to 24
 - Race: Asian
 - Sex: ~equally likely



Thank you !!