



Strategic Marketing for Real Estate: Targeted housing options for All

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agenda

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Introduction



Real estate is a business that can be very lucrative for the agents. However, there can always be room for improvement when it comes to marketing it to the right audiences. This research aims to optimize and maximise housing bookings/sales by finding the right variables to cater to the unique set of customers.

Objectives

- Based on this dataset, this research will explore on the generational difference in decision making when people are looking for houses.
- This project will further list down the variables that may affect a decision, will provide inferences on the preference of a certain age group, and will also make assumptions on the data gaps that is not present in the dataset (to be figured out when there is enough data to support the inference).



Ultimate Goal

Creating "Generational Sale Strategy Guide" on how to cater to a potential customers based on their attributes.

36 will be our threshold value later in the analysis

Why will the analysis be focused on the Young Vs. Senior Generation?

The typical first-time buyer was 36 years old.

14% of home buyers purchased a multigenerational home.

Among first-time buyers, 18% of buyers were unmarried couples, and 5% were other household compositions.

22% of recent home buyers were veterans and 1% were active-duty service members.

All these facts involves age differences and are important in house acquisition decision making, hence the need for generational comparisons!

Literature Review

National Association of Realtors. (2016, October 31). *Highlights from the profile of home buyers and sellers*. www.nar.realtor. <https://www.nar.realtor/research-and-statistics/research-reports/highlights-from-the-profile-of-home-buyers-and-sellers>

Data Preprocessing

```
graph LR; A[Data Preprocessing] --- B[FILTERING OUTLIERS  
Outliers are filtered using Interquartile Range]; A --- C[CLEANING OUT OF RANGE DATA  
Ex: Number of bedrooms <1]; A --- D[FILTER BY AGE GROUP  
Separated by age 36 (based on average age of homebuyers)]; A --- E[ASSIGNING THRESHOLD VALUES  
onto specific variables in order to plot more focused plottings]; A --- F[FILTER 'OWN_RENT'  
Separate owners and renter columns]
```

FILTERING OUTLIERS

Outliers are filtered using Interquartile Range

CLEANING OUT OF RANGE DATA

Ex: Number of bedrooms <1

FILTER BY AGE GROUP

Separated by age 36 (based on average age of homebuyers)

ASSIGNING THRESHOLD VALUES

onto specific variables in order to plot more focused plottings

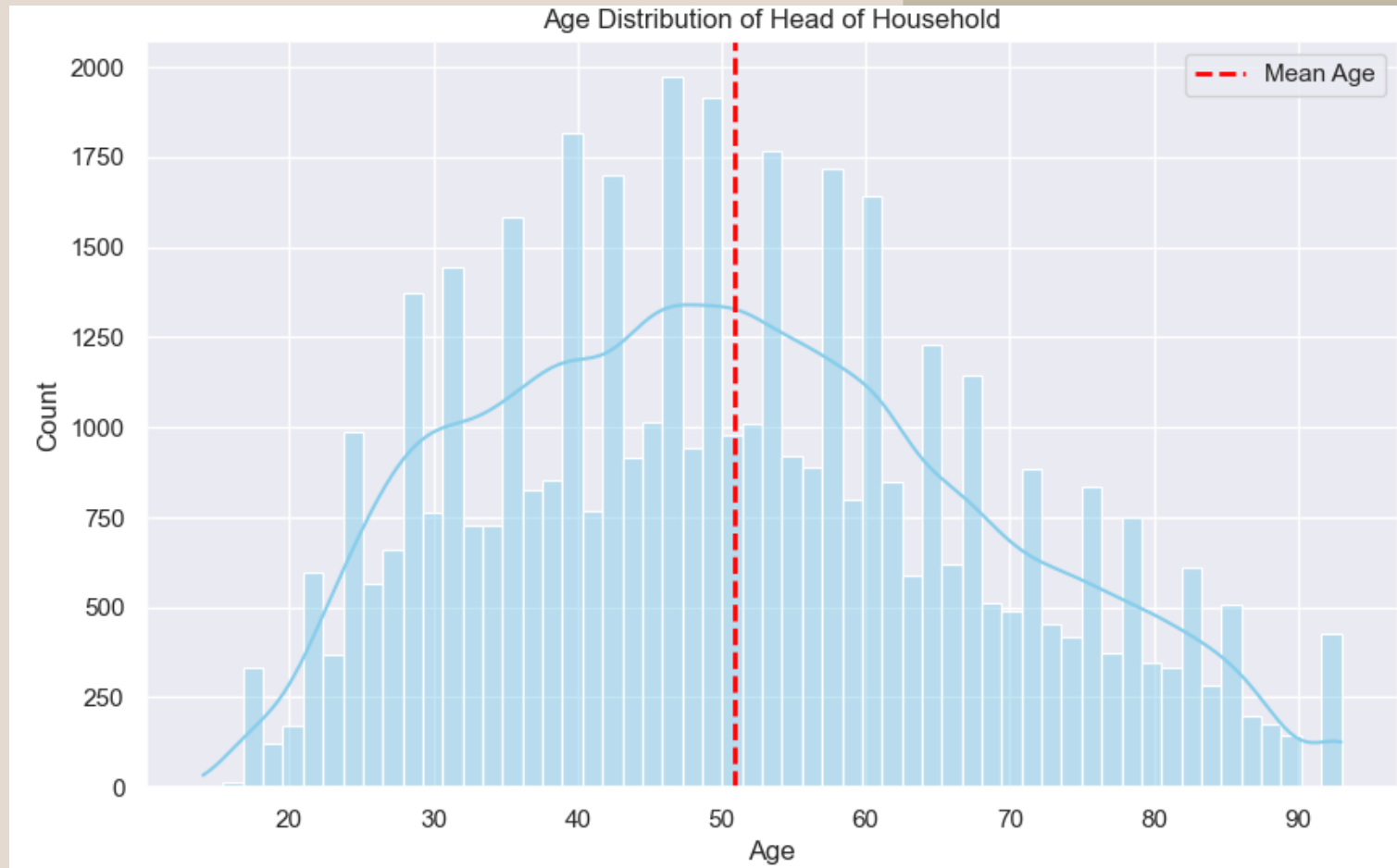
FILTER 'OWN_RENT'

Separate owners and renter columns

Data Science Questions

1. **What's the age distribution for the head of households?**
2. **What's the age group distribution for the young and senior (above 36) owner/renters ?**
3. **What's the distribution of number of person per household?**
4. **What's the distribution of number of person per household relative to their age group?**
5. **What is the most common number of bedrooms per house?**
6. **Does the senior age group have a lower burden on housing, assuming they're more financially stable?**
7. **How does the Fair Market Rent in the West compare to other regions?**
8. **Does the senior age group occupy houses with more number of bedrooms?**
9. **How does Affordability Metrics (FMR, AMI, Poverty Level Income) vary when compared with different age groups?**
10. **Do people with higher income spend less tax than those with lower income?**
11. **How is the housing cost disparity according to different metro area status?**
12. **How does the young and senior age group compare when it comes to picking housing unit types?**
13. **How do people with income below 20,000 compare when it comes to paying housing cost, relative to their unit types?**
14. **How does utility cost compare according to owner and renters with different household sizes?**

1. What's the age distribution for the head of households?



1. What's the age distribution for the head of households?

Observations

- The mean age of the head of households is ~51.
- The bar graph shows a normal distribution.
- There is no head of households below the age of 10 and above the age of 90.

Inference

- The head of households are usually in the senior generation.
- The normal graph shows that the mean age ~51 are more likely to be the age of head of households compared to other ages.
- Head of households cannot be too young or too old.



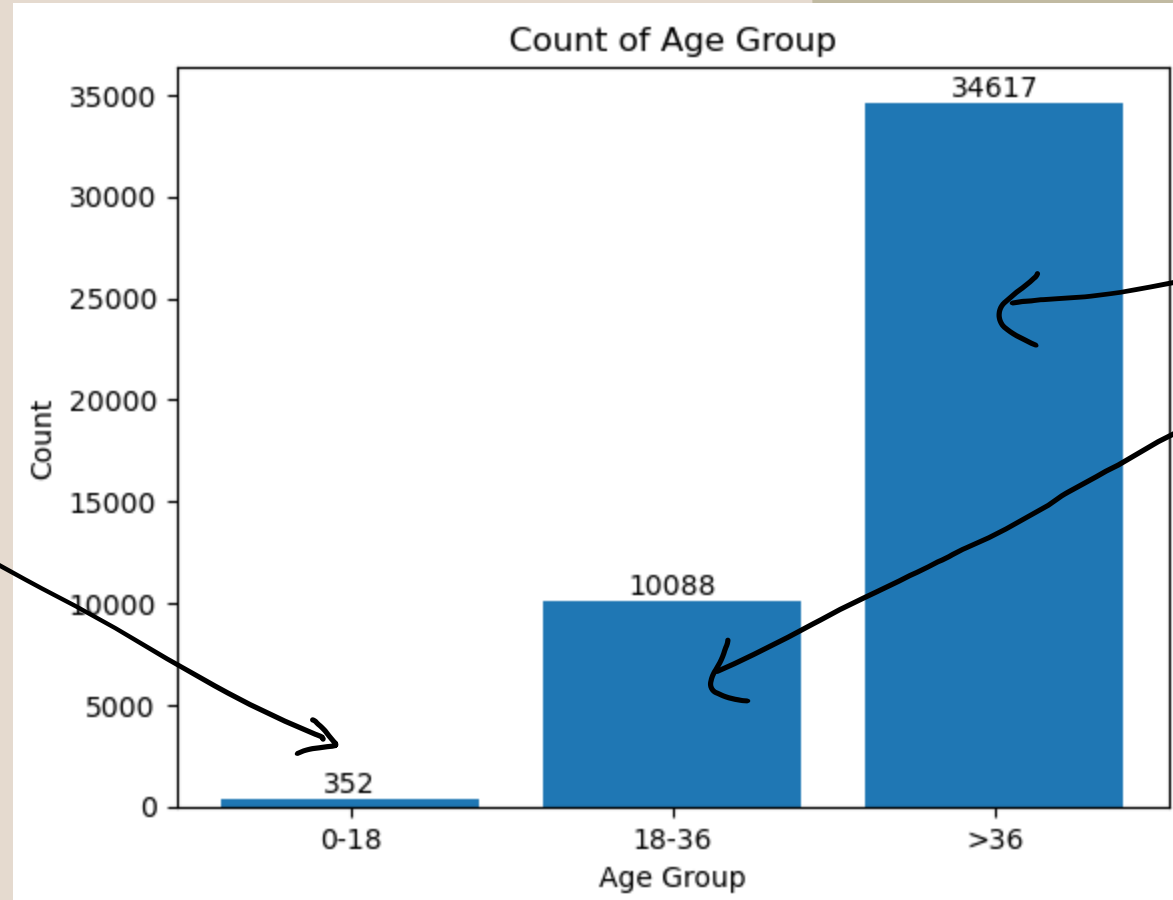
2. What's the age group distribution for the young and senior (above 36) owner/renters ?

18 is the minimum age for renting/buying in the US.

The 352 count here are special cases with assumptions that they might

- Sponsored by parents
- Owns a business

These variables are removed as the analysis are not meant for them.



Note: The threshold value age of 36 was selected because it is the average age a US Citizen become homeowners. Further analysis will show how different the young generation (does who are likely not homeowners yet) and senior generation (most likely homeowners) are.

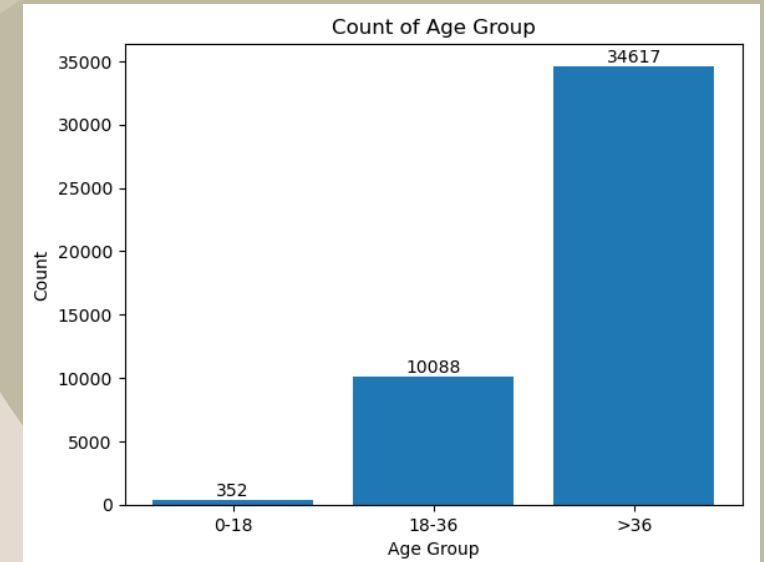
2. What's the age group distribution for the young and senior (above 36) owner/renters ?

Observations

- The dataset contains more count of senior generation than the young generation.
- The below 18 class is the minority class.

Inference

- The senior generation has own/rent more properties than the younger generation.
- The below 18 generation does not have the means to buy a house yet.

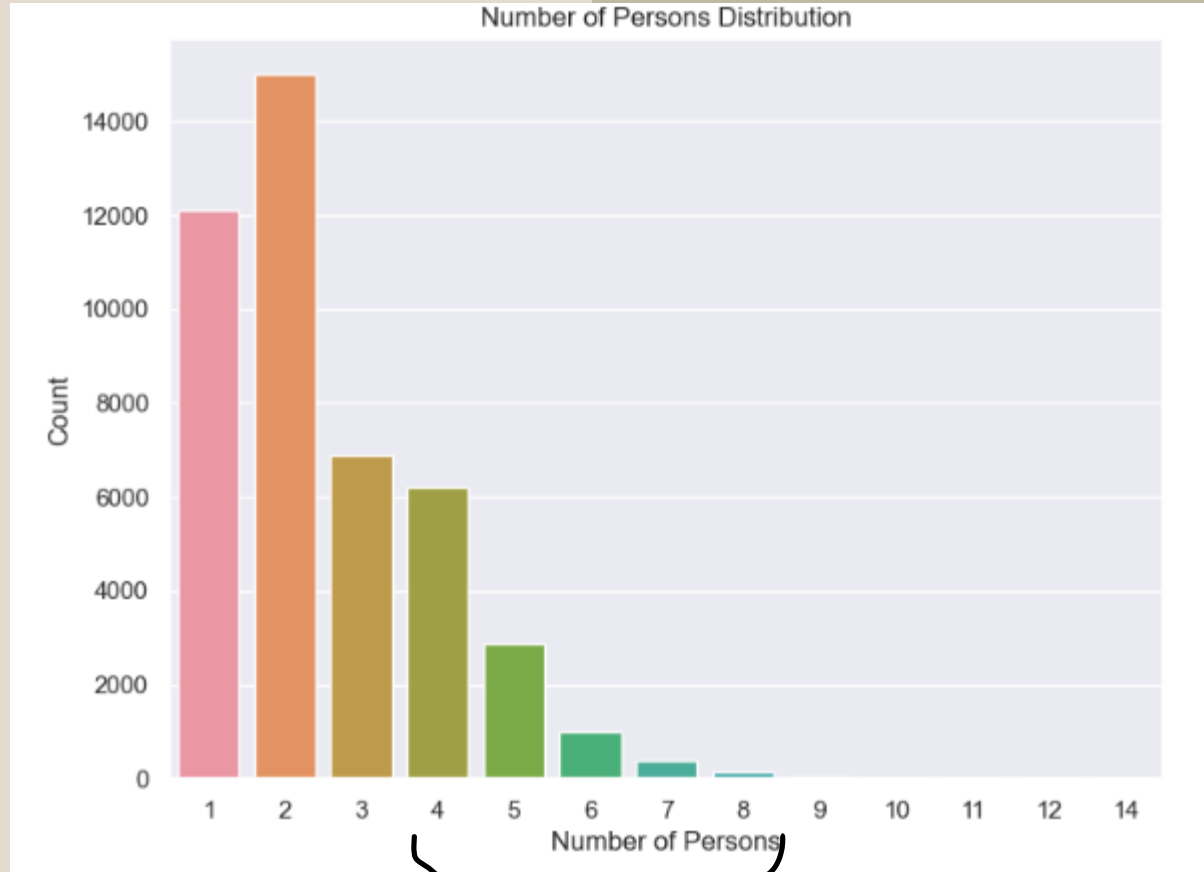


3. What is the distribution of number of person per household?

The number of person inside a household varies especially depending on the use case of the rental/home.

For instance, a house can have many people because there might be college students renting the place together, hence having >4 people in a building.

To see it clearer, we'll plot number of person distributions separately for young and senior age groups.



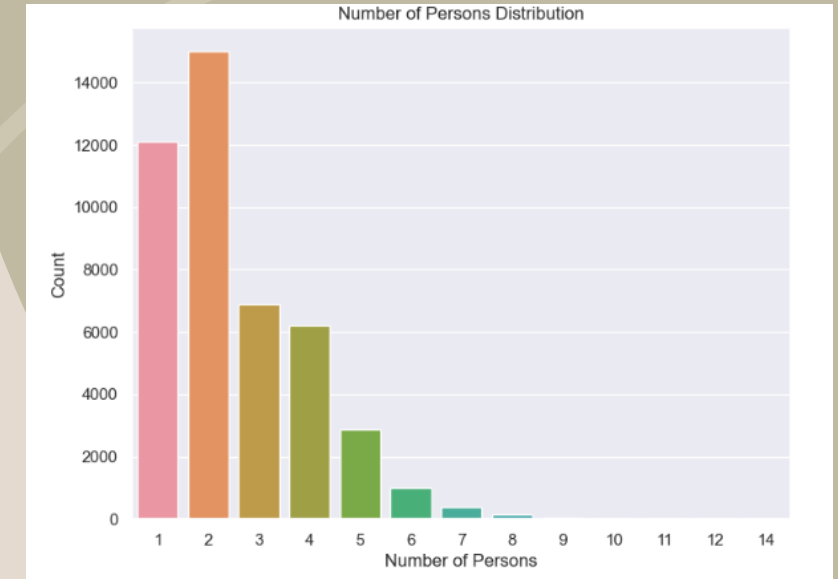
3. What is the distribution of number of person per household?

Observations

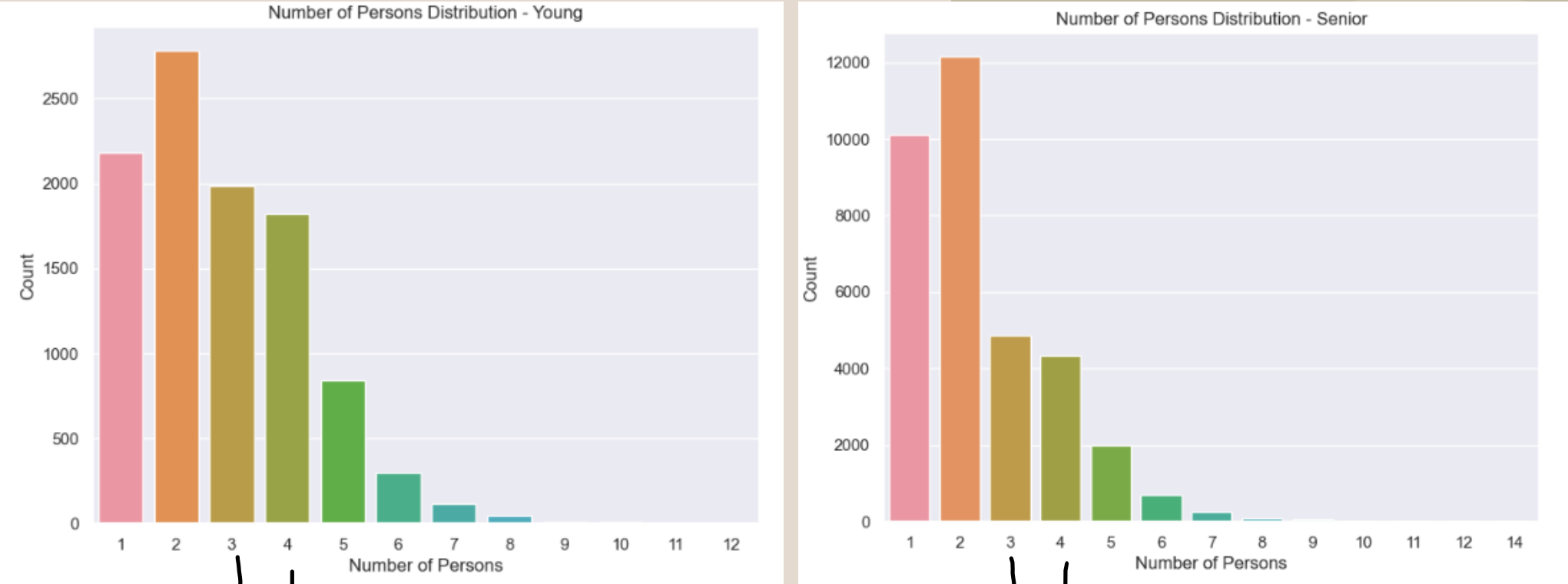
- Number of person per household increases from 1 to 2 people and decreases from 3-14 people.
- There is a significant amount of people who live alone.

Inference

- 1-2 people is the most common number of people per household, meanwhile the others are not very common.
- There is a market to cater to people who prefer to live alone, maybe young executive professionals.



4.What is the distribution of number of person per household relative to their age group?



3 and 4 people in a household shows an increase in the younger generation.

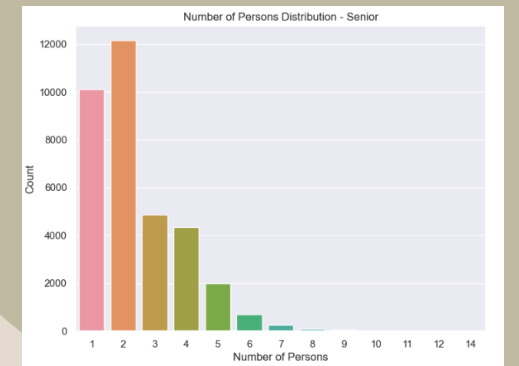
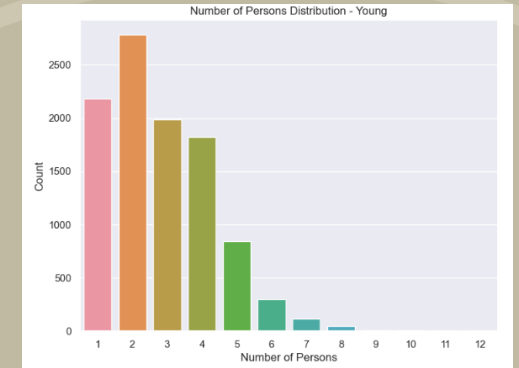
4. What is the distribution of number of person per household relative to their age group?

Observations

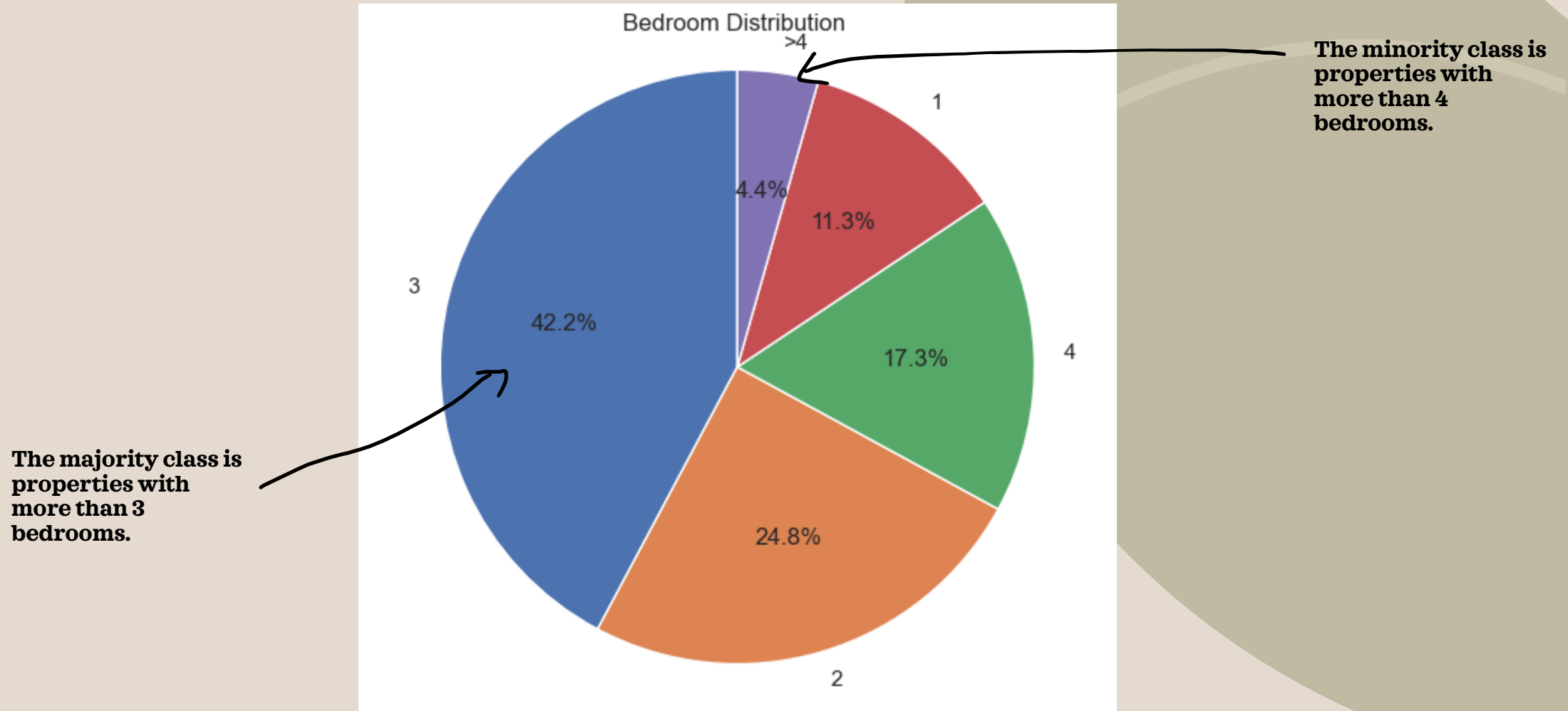
- Significant increase in 3-4 person per household in the younger generation.
- The mode for the number of person per household is both 2 in both generations.

Inference

- This maybe because young executives prefer to live together to share the cost of rental.
- This maybe because there are a large number of couples/partners living together.



5. What is the most common number of bedrooms per house?



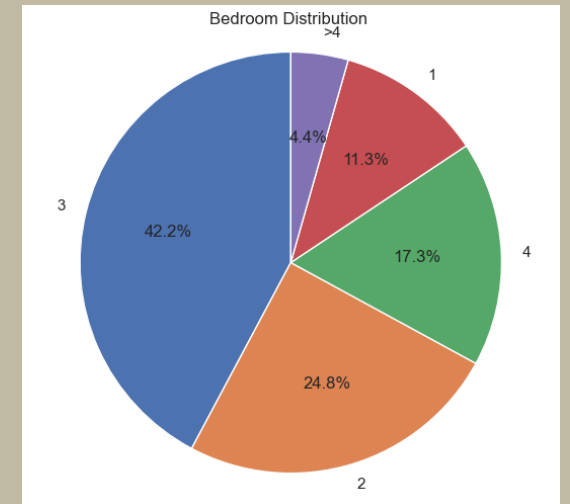
5. What is the most common number of bedrooms per house?

Observations

- The majority class is 3 bedrooms.
- The minority class is more than 4 bedrooms.

Inference

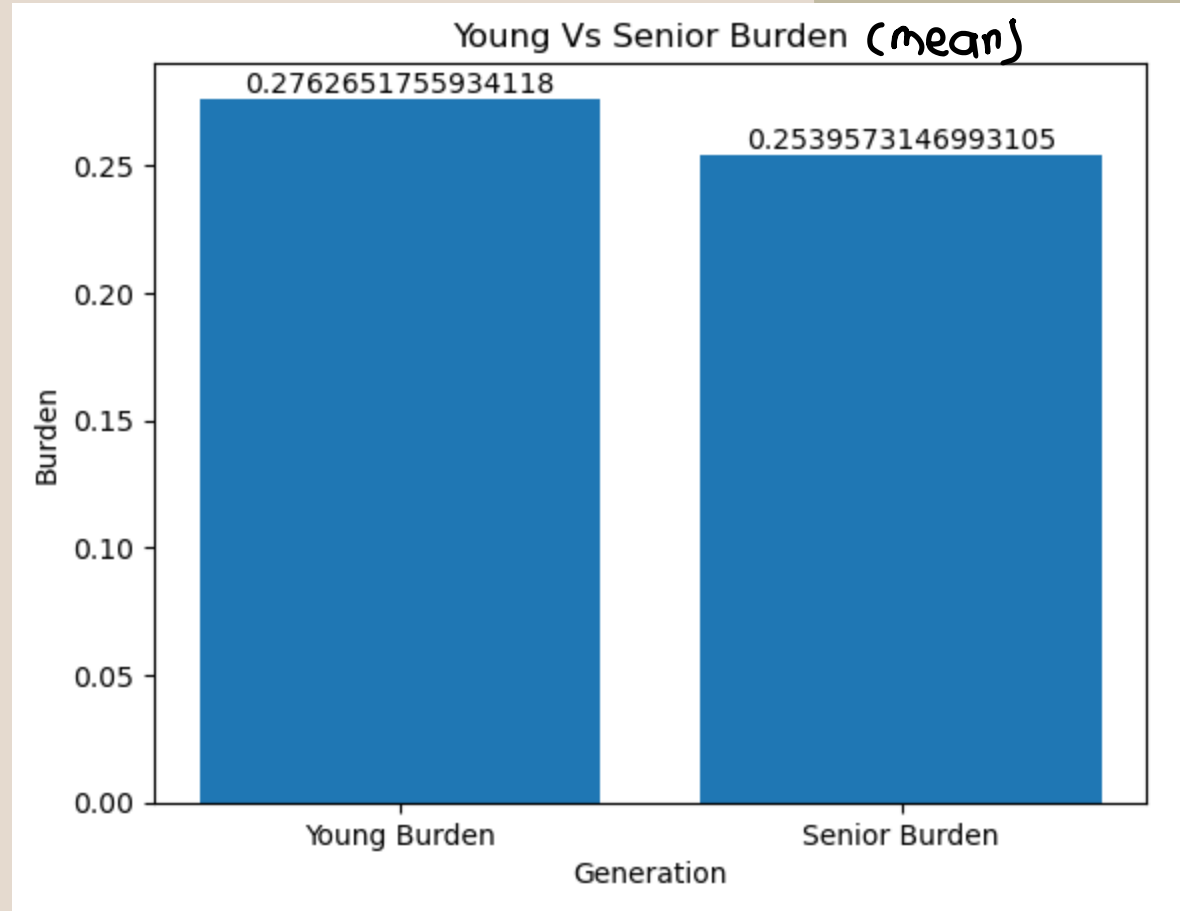
- 3 bedrooms is the preferred choice by majority of people.
- >4 bedrooms is not a popular choice for most people.



6. Does the senior age group have a lower burden on housing assuming they're more financially stable?

Seniors have less burden when occupying houses when compared to the younger generation.

However, there is only minimal difference in the mean burden value.



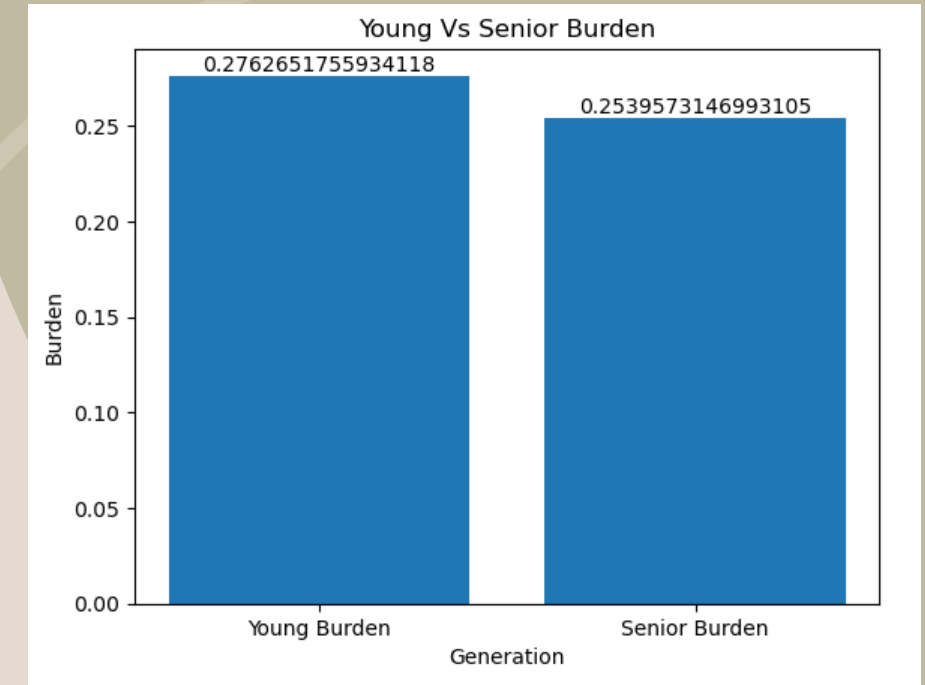
6. Does the senior age group have a lower burden on housing assuming they're more financially stable?

Observations

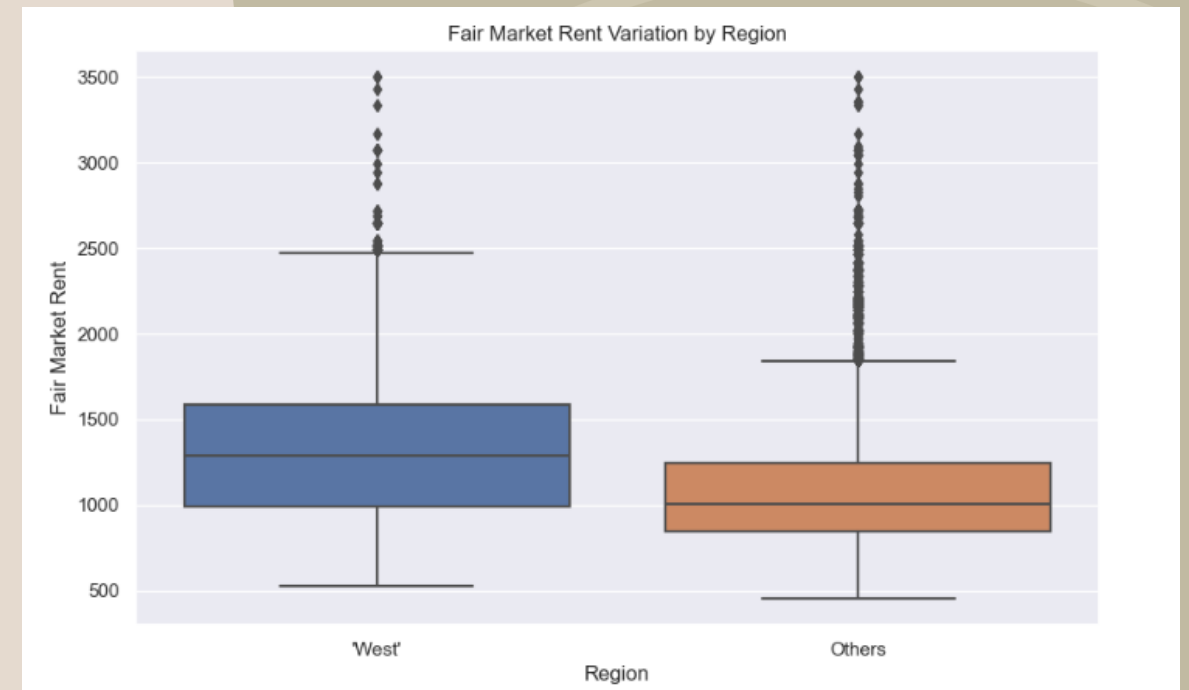
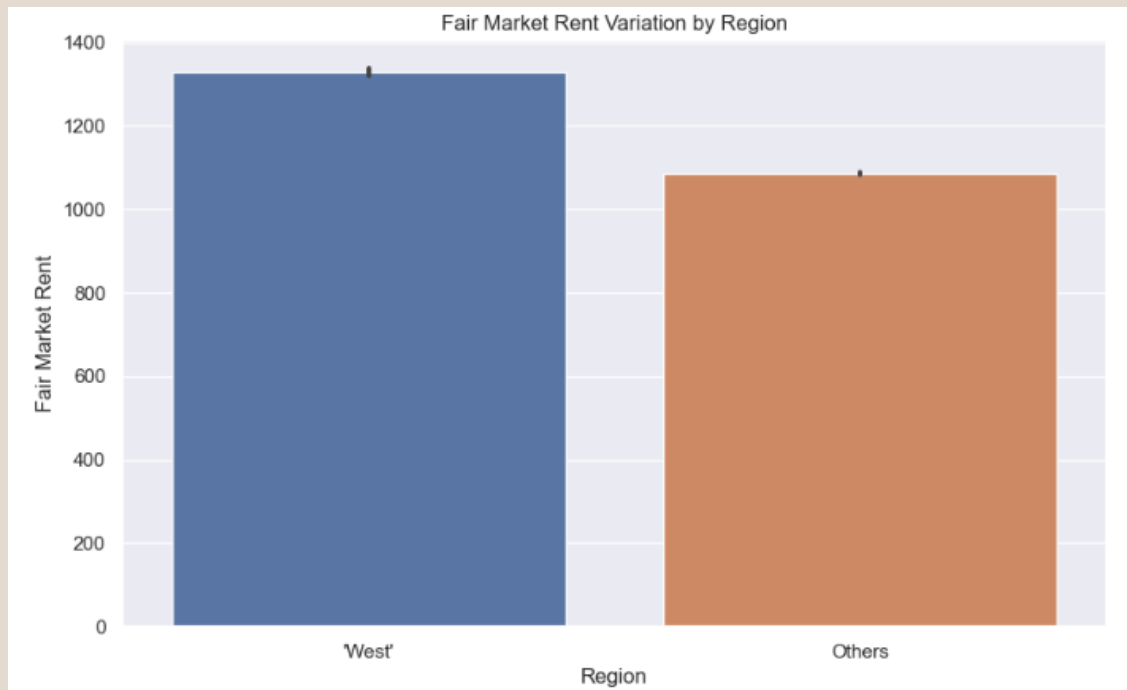
- The mean of burden of housing cost is lower on the senior generation.

Inference

- The senior generation is more financially stable than the younger generation.



7. How does the Fair Market Rent in the West compare to other regions?



Note: FMR is max amount of household can afford to spend on housing (30% of their income)

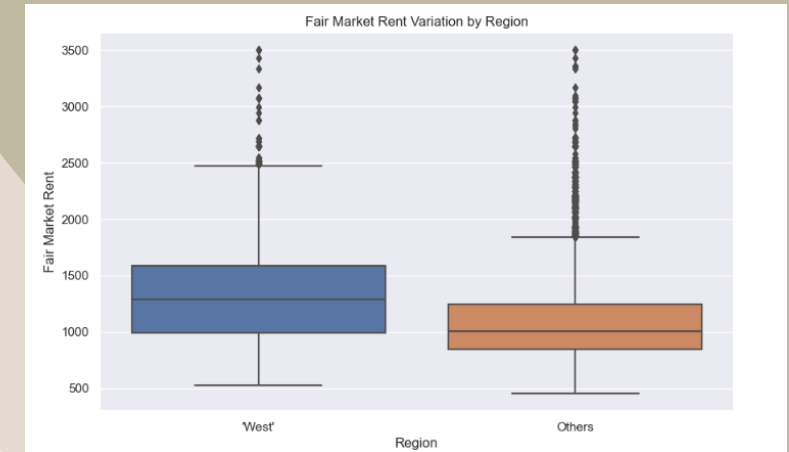
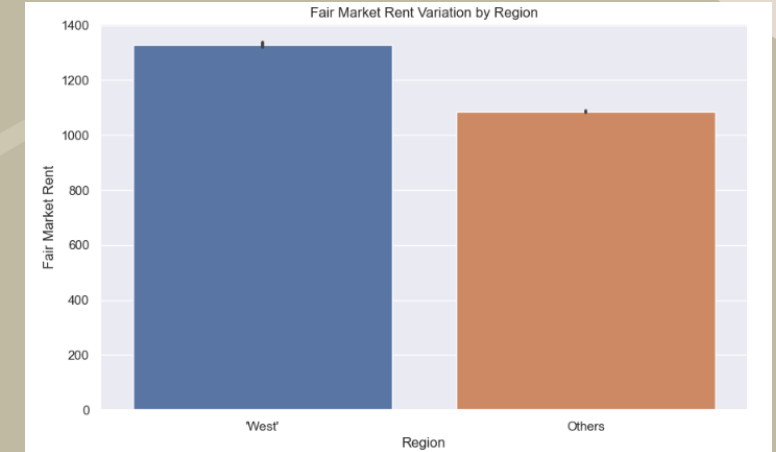
7. How does the Fair Market Rent in the West compare to other regions?

Observations

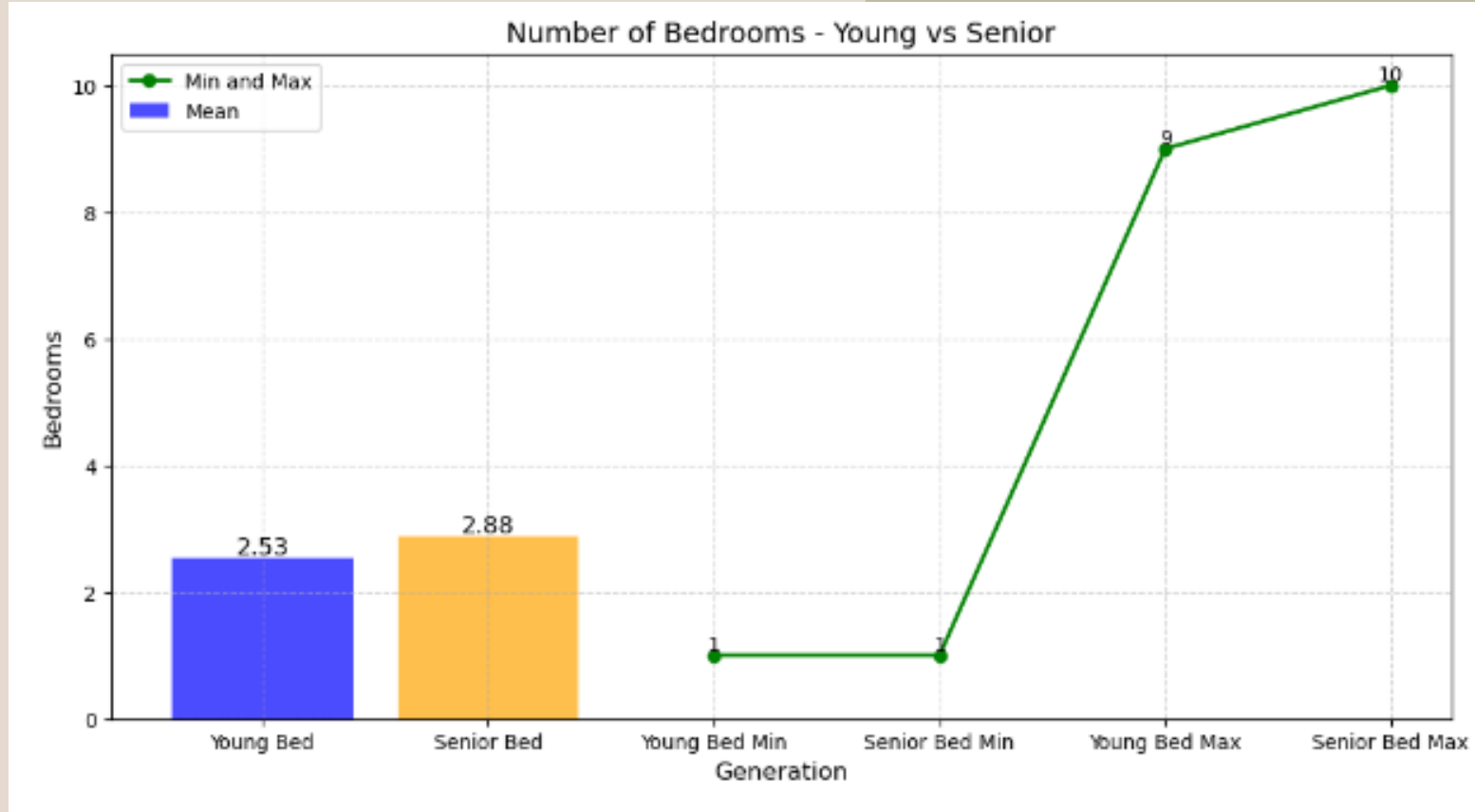
- The West Region has the higher Fair Market Rent when compared to other regions.

Inference

- Homeowners/Renters in the West Region has the highest buying power.



8. Does the senior age group occupy houses with more number of bedrooms?



Note: Data is cleaned with removing properties that have <1 bedrooms.

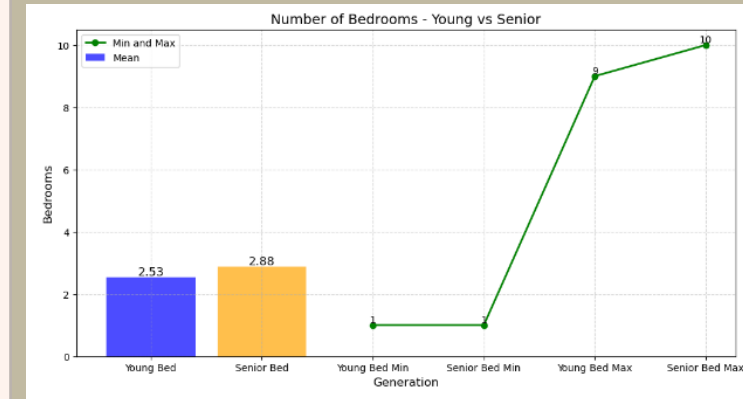
8. Does the senior age group occupy houses with more number of bedrooms?

Observations

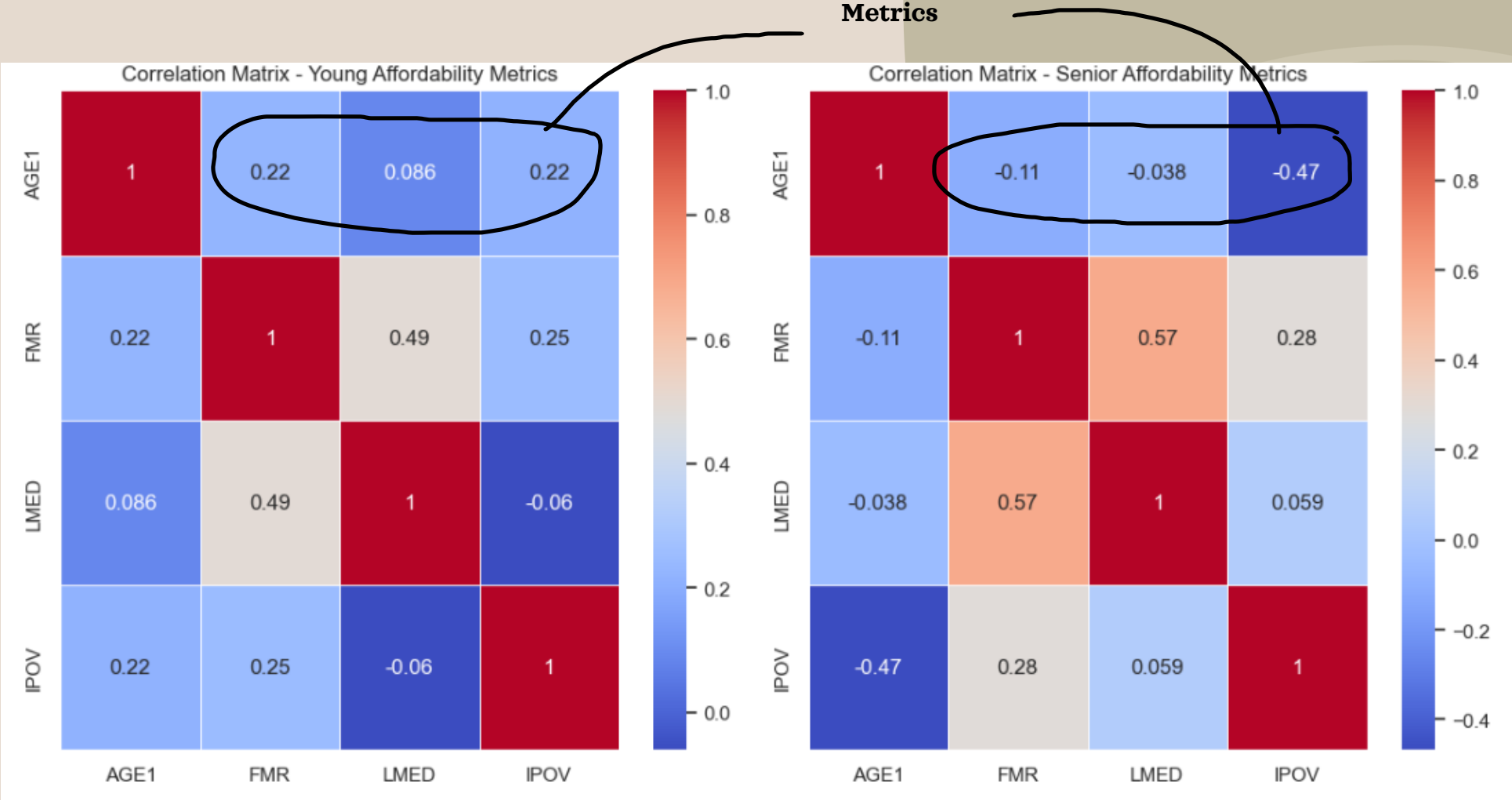
- The senior generation has higher mean of number of bedrooms when compared to younger generation.
- The maximum for young generation is 9 and the maximum for senior generation is 10.

Inference

- The senior generation might need unit with more rooms to fill in their family members.
- The younger generation most probably won't need more than 9 rooms.



9. How does Affordability Metrics (FMR, AMI, Poverty Level Income) vary when compared with different age groups?



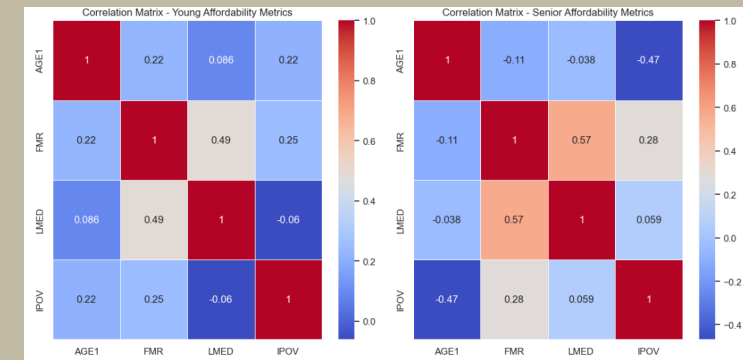
9. How does Affordability Metrics (FMR, AML, Poverty Level Income) vary when compared with different age groups?

Observations

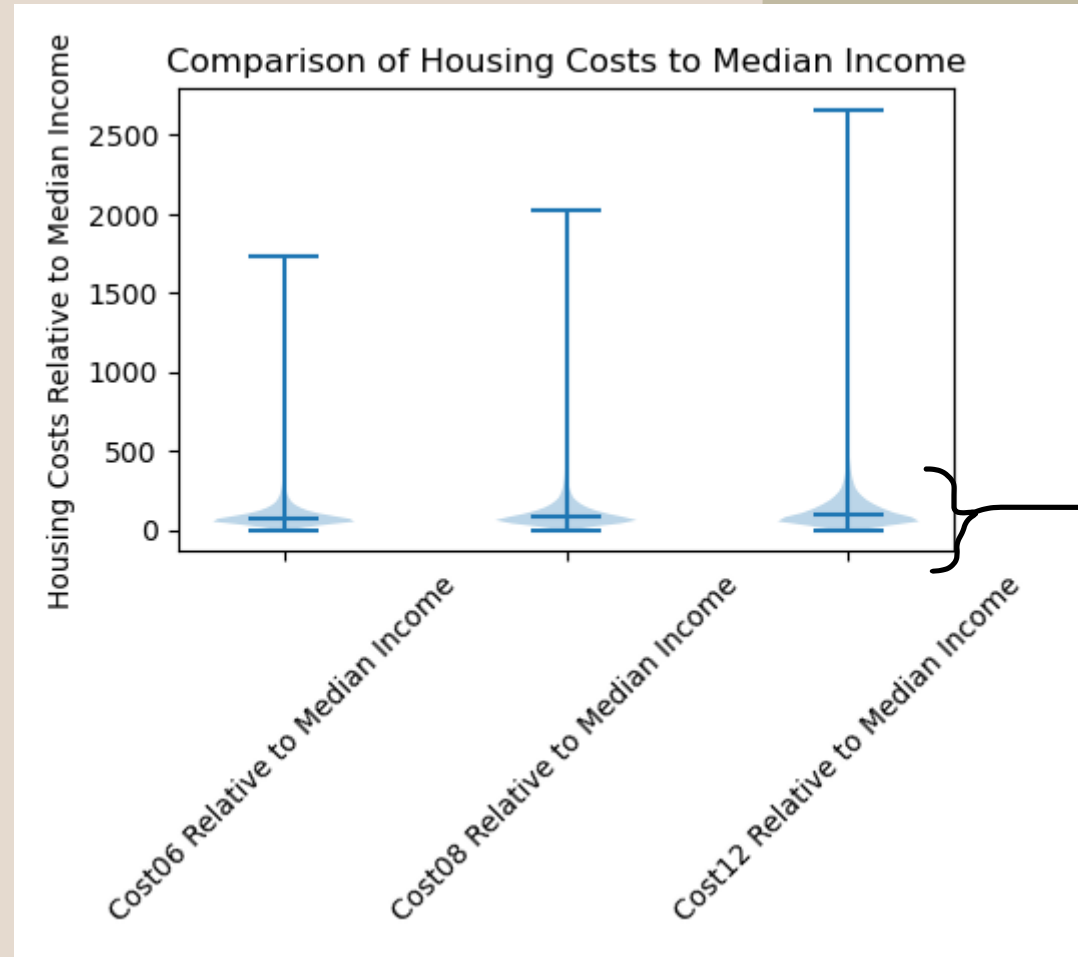
- **Young generation:** negative correlation with affordability metrics
- **Senior generation:** positive correlation with affordability metrics

Inference

- This change in correlation shows that the older a generation is, the more affordable housing are for them (and vice versa).



10. Do people with higher income spend less tax than those with lower income?



The average is about the same. However, the local maximums differ alot.

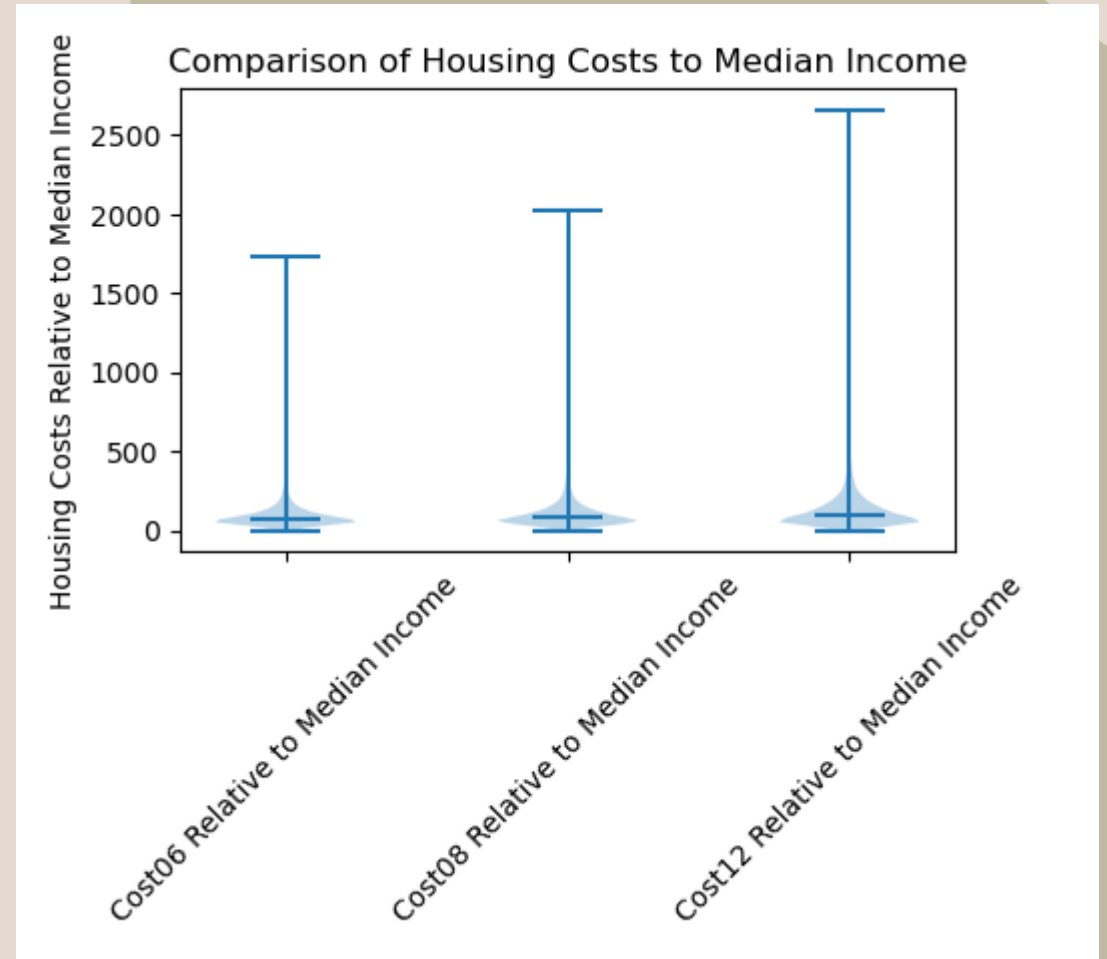
10. Do people with higher income spend less tax than those with lower income?

Observations

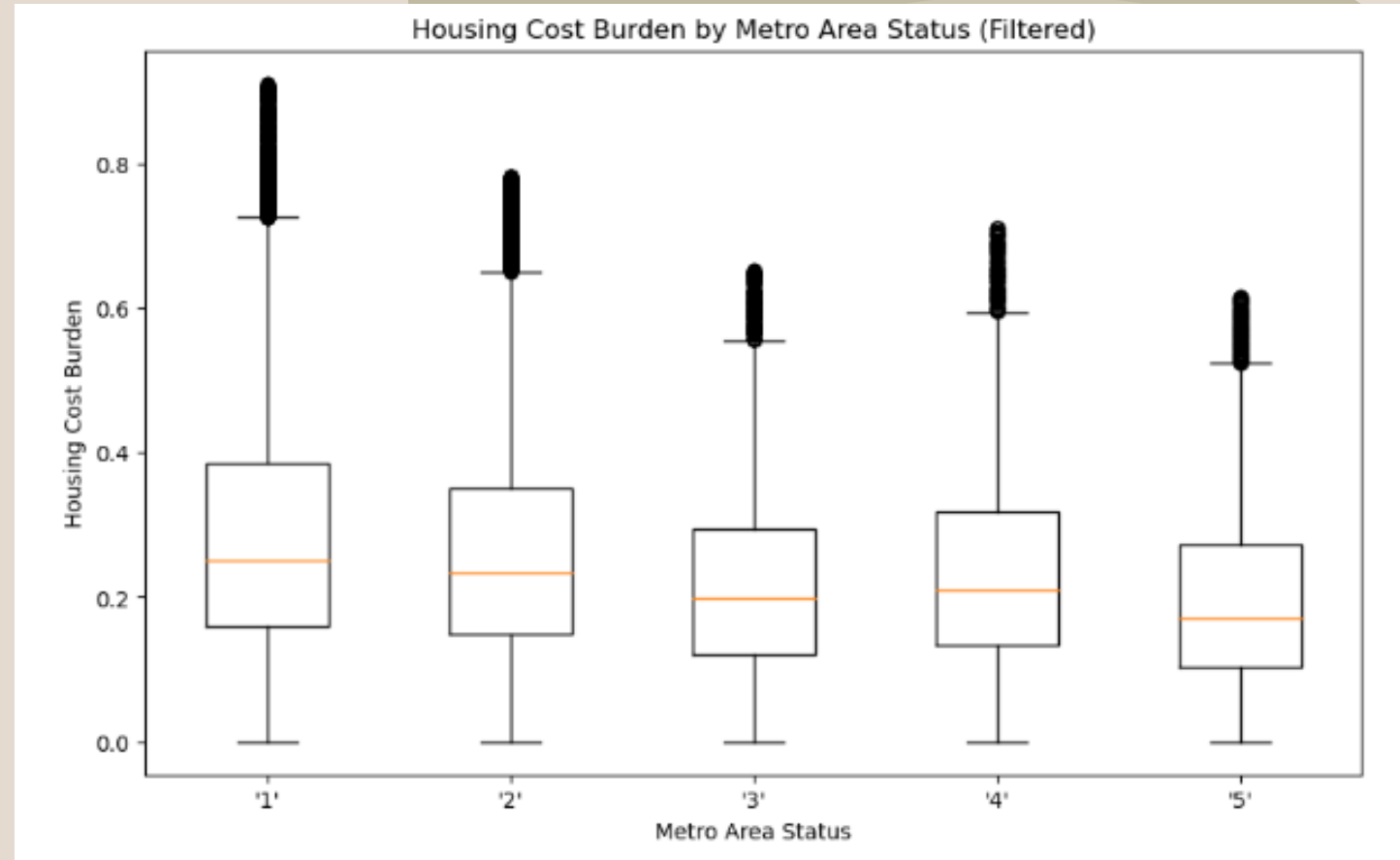
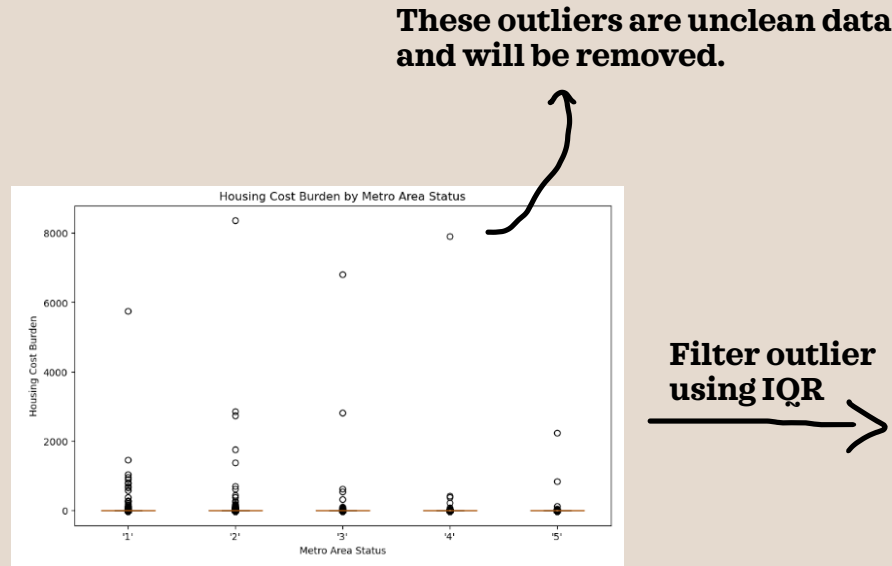
- The 12% cost interest rate has the highest median income compared to other cost interest rates.

Inference

- The higher the income, the more tax one will have to pay.



11. How is the housing cost disparity according to different metro area status?



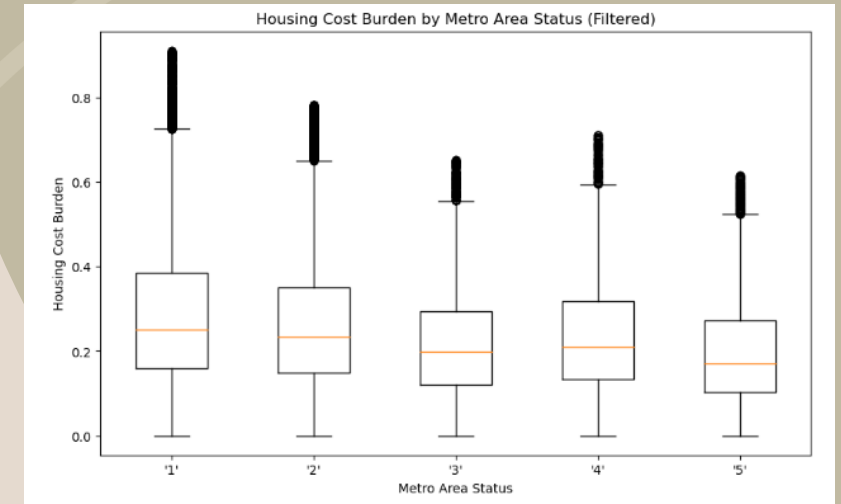
11. How is the housing cost disparity according to different metro area status?

Observations

- The metro areas have almost the same housing costs according to the boxplotting.
- However, the maximum of metro area status 1 is the highest.

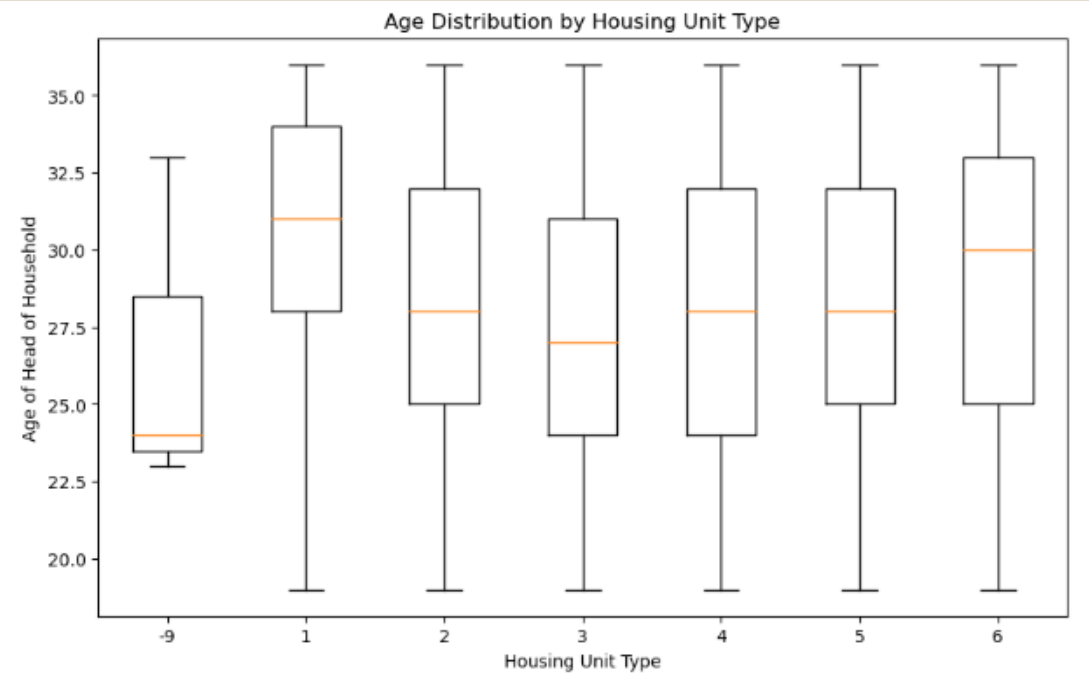
Inference

- Metro Area 1 can be a hotspot to sell luxury units

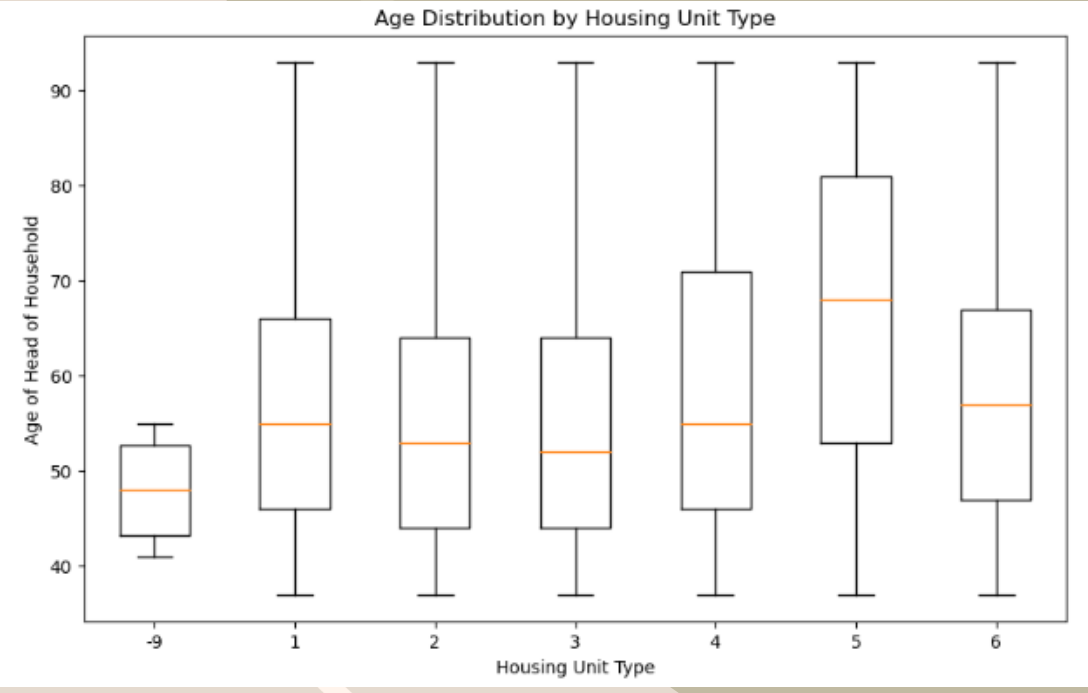


12. How does the young and senior age group compare when it come to picking housing unit types?

Young



Senior



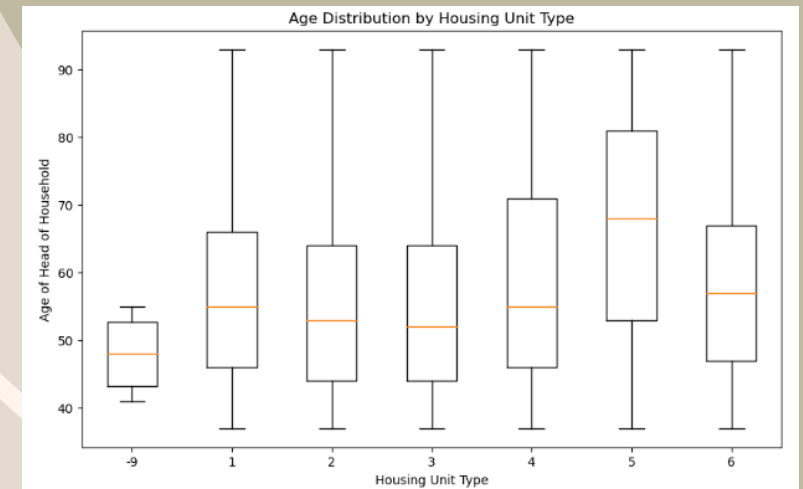
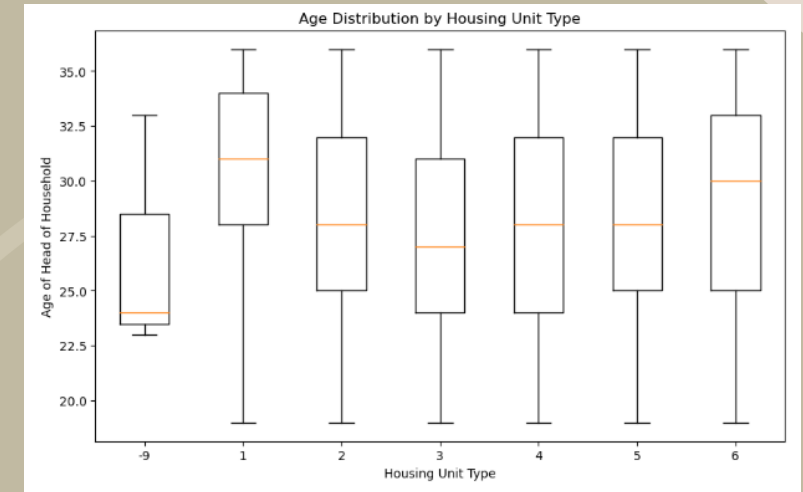
12. How does the young and senior age group compare when it come to picking housing unit types?

Observations

- The age of household in each generation does not vary much when picking housing unit types.

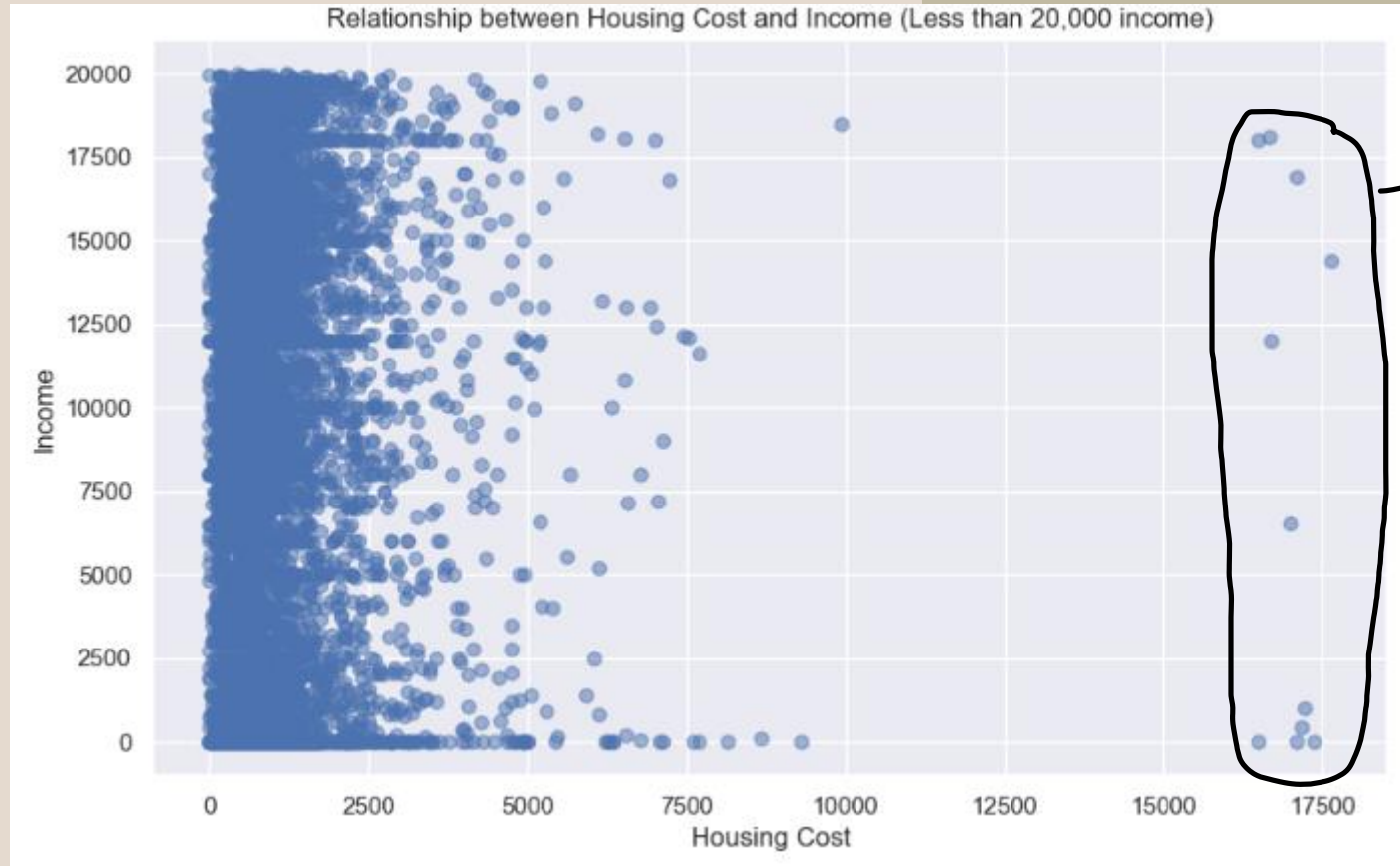
Inference

- Age should not be a factor when recommending housing unit types as each individual has their own wants and needs.



13. How do people with income below 20,000 compare when it comes to paying housing cost relative to their income?

This is with the assumption of 20,000 USD a year (not month).



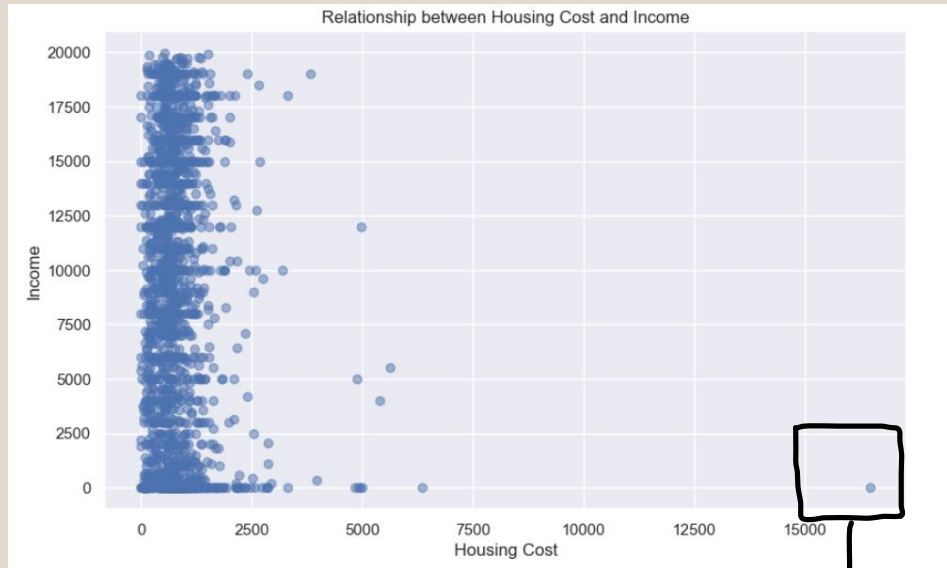
This suggest that:

- **Someone else is paying for their rent. (Parents paying for kids rent)**
- **Sharing the rent with others (Partners paying the bills together)**

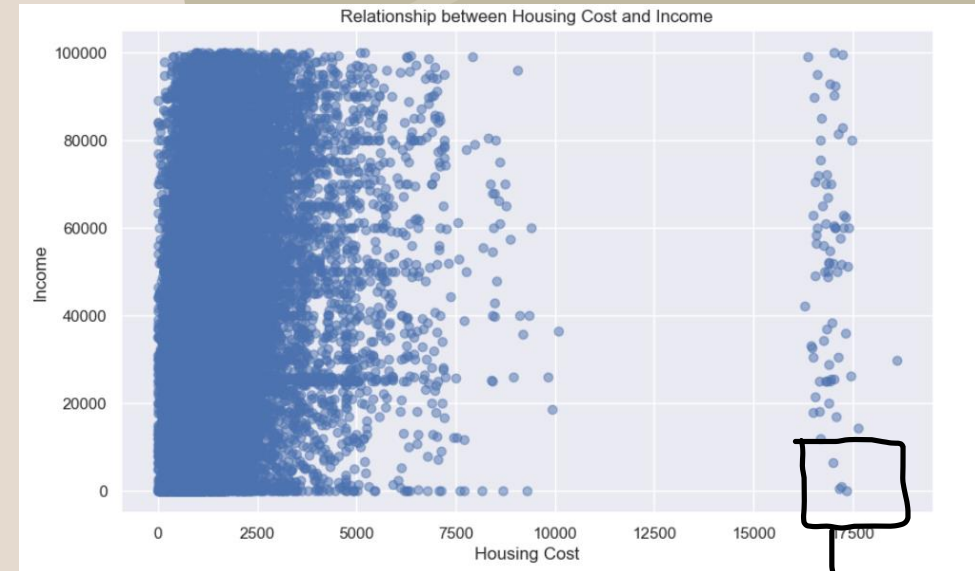
We'll have to look at different age groups to see clearer (next slide).

13. How does the young and senior age group compare when it comes to paying housing cost relative to their income?

Young



Senior



Surprisingly, more seniors are paying expensive housing although their income is quite low.

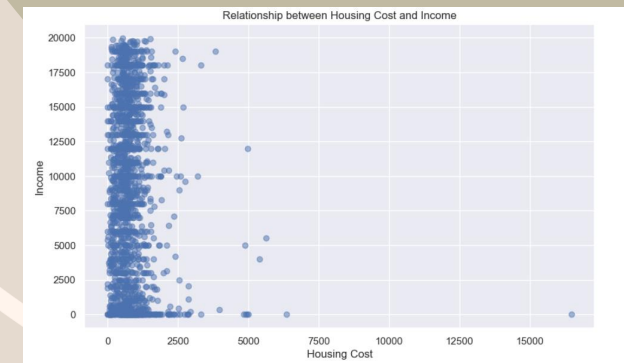
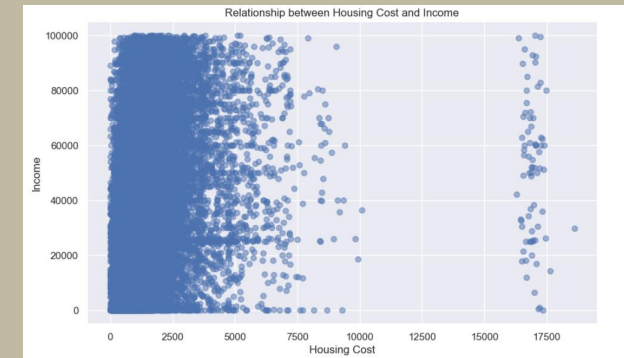
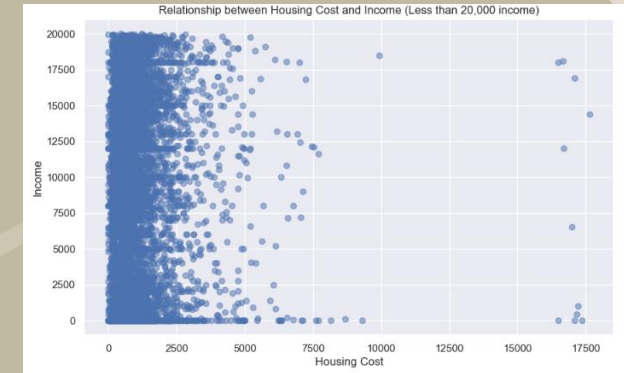
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Observations

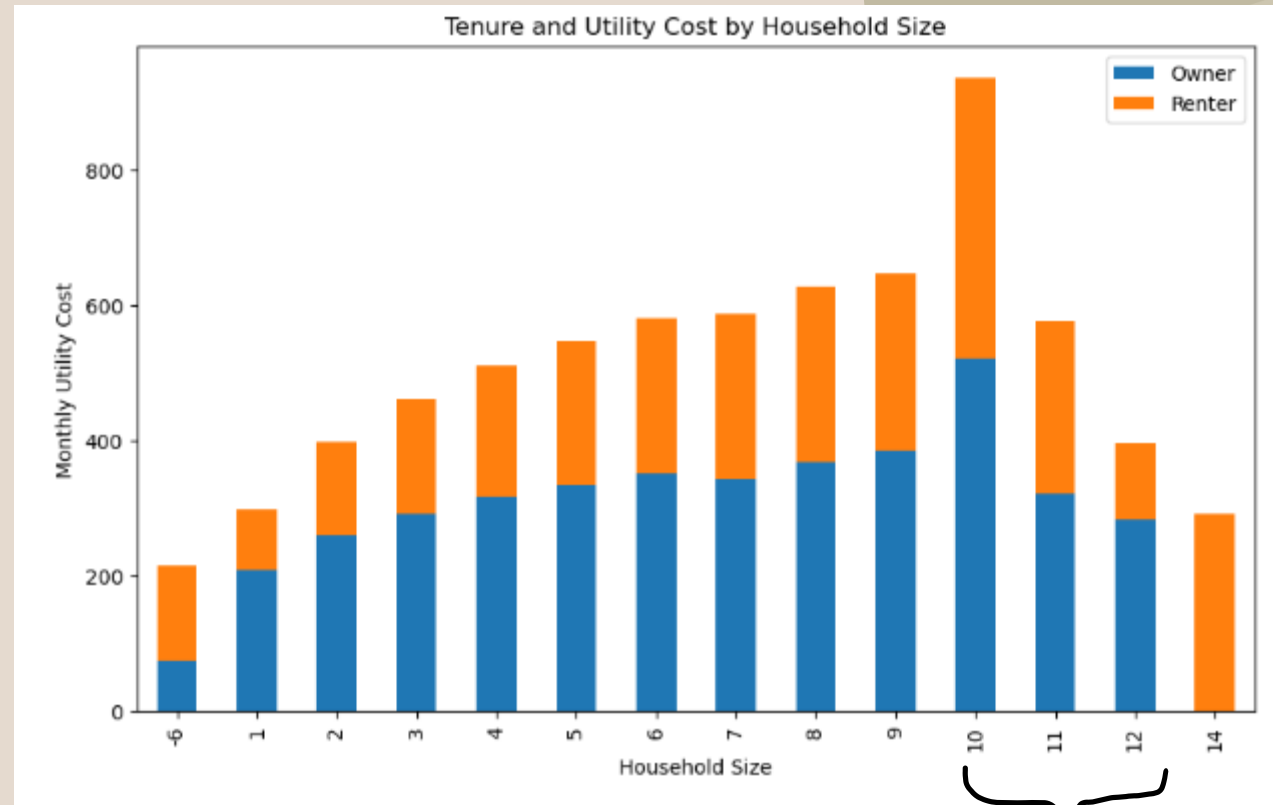
- There are a significant increase in the senior generation who pays expensive housing costs even though their salary is quite low.

Inference

- The senior generations are more likely to make joint loans with their children later on in life.

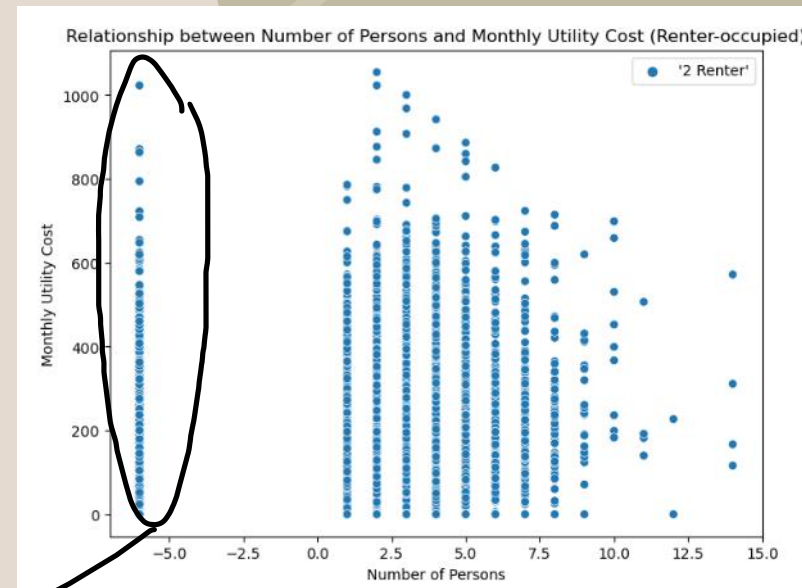
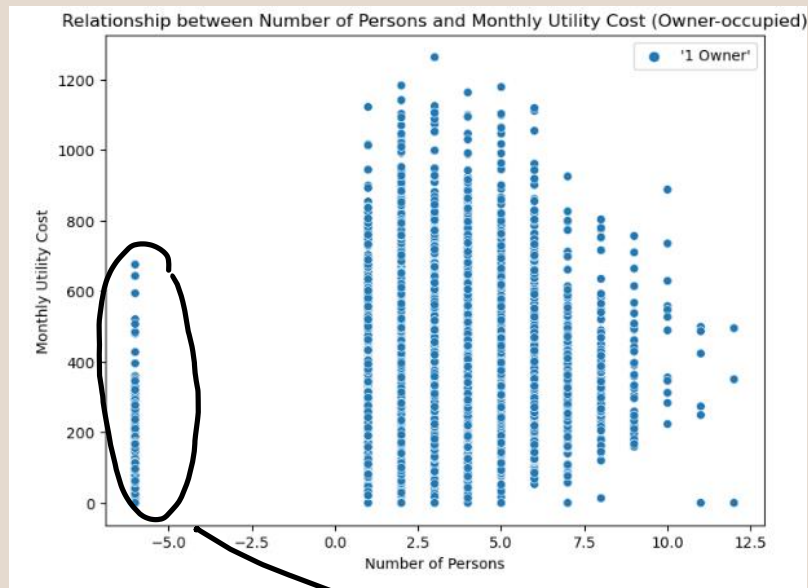


14. How does utility cost compare according to owner and renters with different household sizes?



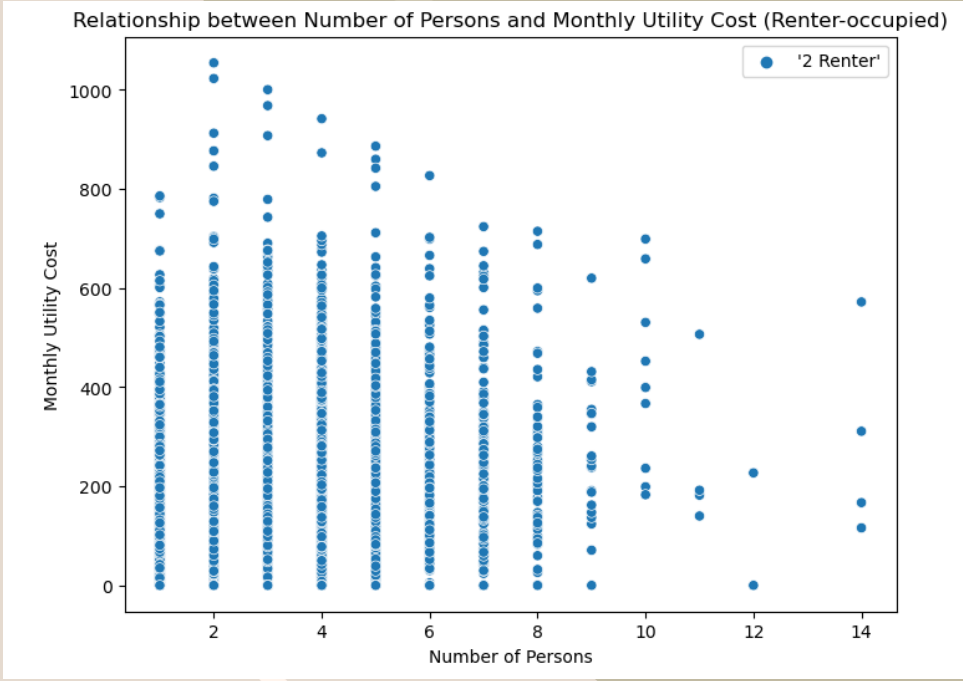
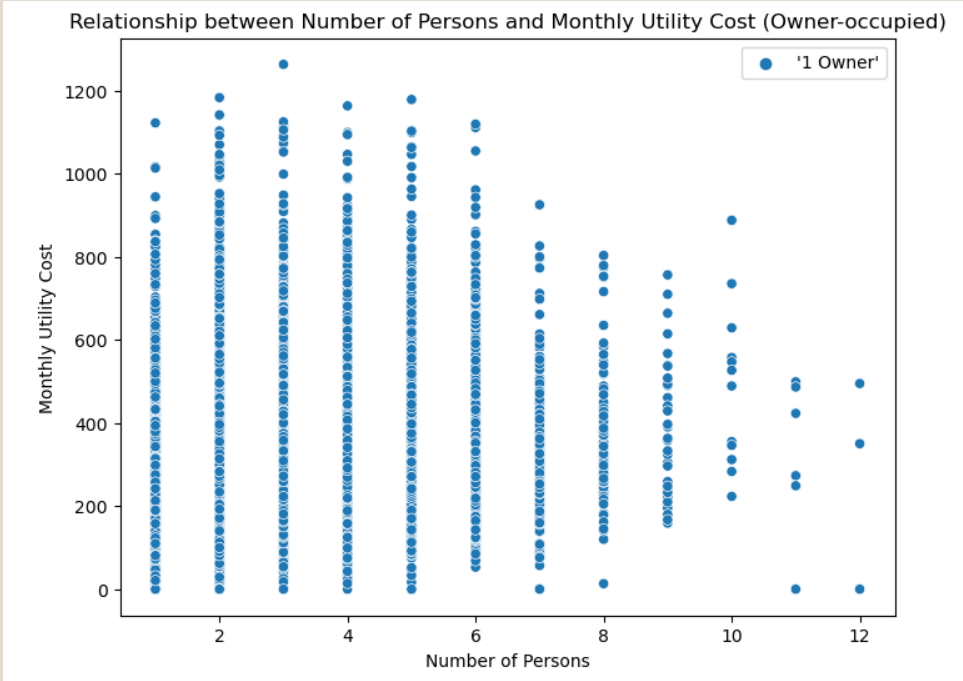
Surprisingly, the cost of utility decreases after >10 people in a household.

14. How does utility cost compare according to owner and renters with different household sizes?



Needs cleaning since
the number of person
is negative

14. How does utility cost compare according to owner and renters with different household sizes?



Cleaned

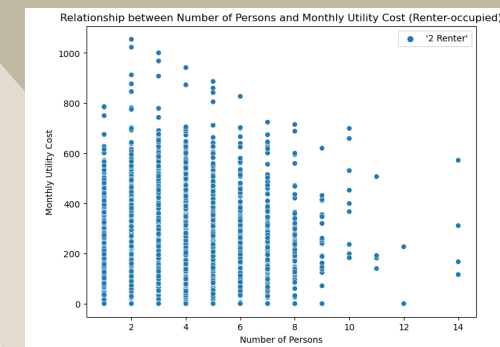
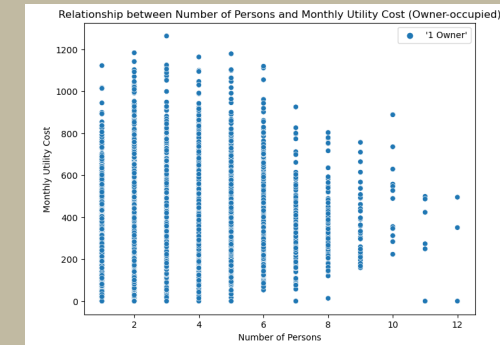
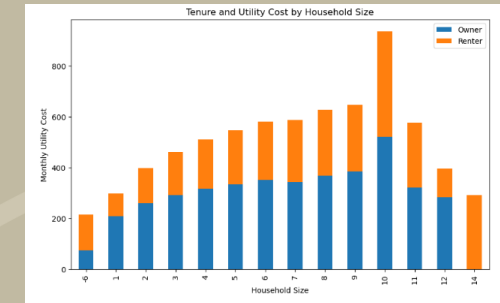
14. How does utility cost compare according to owner and renters with different household sizes?

Observations

- The cost for utility decrease when the number of households is more than 10.
- Owners with household sizes more than 10 pay significantly less than renters.

Inference

- Houses with large household sizes might be used as a second home for owners, which is why renters pay more if their household size is also large (because they live in the building).



Final Results

Generational Sale Strategy Guide (1)

Q	Attributes	Strategy from Insights
1	Customer's Age	<ul style="list-style-type: none">• There are no heads of households below 10 and above 90.• The mean age of head of households will be 51.
2	Generation Count	<ul style="list-style-type: none">• There are more senior generations who own and rent.• Customers below 18 might be a no show.
3	Number of Person Per Household	<ul style="list-style-type: none">• Focus on marketing to both generations who want to live with 1-2 people.• Focus on marketing to the younger generation who want to live alone.
4	Number of Person Per Household	<ul style="list-style-type: none">• Focus on marketing to the younger generations who have 3-4 numbers of people per household.• Young and senior generations both have a large tendency to live as a couple.
5	Number of Bedrooms per house	<ul style="list-style-type: none">• It is easier to sell 3 bedrooms as it is widely accepted by the majority of people.
6	Housing Cost / Burden	<ul style="list-style-type: none">• It is easier to sell units to the senior generation as it will cost them less burden.
7	Region	<ul style="list-style-type: none">• It is recommended to sell units in the West Region as it has the highest Fair Market Rent and highest buying power.

Final Results

Generational Sale Strategy Guide (2)

Q	Attributes	Strategy from Insights
8	Number of Bedrooms - Young Vs Senior	<ul style="list-style-type: none">• Senior generation usually needs more rooms to fill in more family members.• Younger generation will never need more than 9 rooms.
9	Affordability Metrics (FMR, AMI, Poverty Level)	<ul style="list-style-type: none">• The older the customer, the more affordable housing options are for them.
10	Housing Tax	<ul style="list-style-type: none">• Customers with higher income are more likely to be willing to pay higher taxes.
11	Metro	<ul style="list-style-type: none">• Metro Area 1 can be used as a hotspot in order to sell luxury units.
12	Housing unit types	<ul style="list-style-type: none">• This attribute does not have any significant pattern, so agents do not have to think about it as much.
13	Low Income vs. Housing Cost	<ul style="list-style-type: none">• The senior generations are more likely to make joint loans.
14	Utility cost vs. Tenure	<ul style="list-style-type: none">• Renters pay more for utility costs compared to owners.

The background features a light gray base with large, soft-edged organic shapes in muted red and olive green. A thin white line outlines a shape on the right. In the top left, there is a faint sketch of a leafy branch.

Thank you :)