



# Team Capstone Project

---

## PROJECT GROUP 1

YUJIA FU

ZHEN CHEN

PURVA KATTA

SHIVANI ADSAR

SHRADDHA GOPALAKRISHNAN

# AGENDA

Introduction

Industry Analysis

Data Analysis

Business Recommendations

References

# Introduction

---

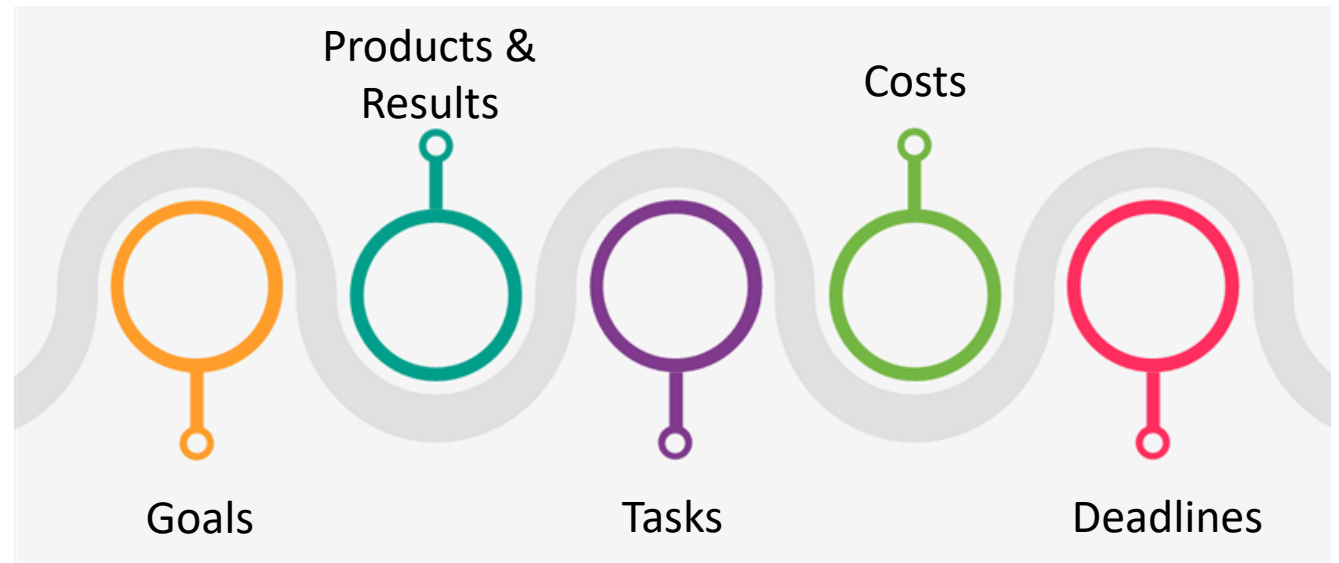
- At Home – A Retail Superstore Chain
- More than 225 stores covering 40 states across
- Full spectrum of home décor styles ranging from traditional to country, vintage and modern

Furniture	Mirrors	Rugs	Wall arts	Curtains
Flowers	Trees	Pottery	Vases	Candles
Gardens	Visual Merchandise	Housewares	Seasonal Products	

# Project Scope

---

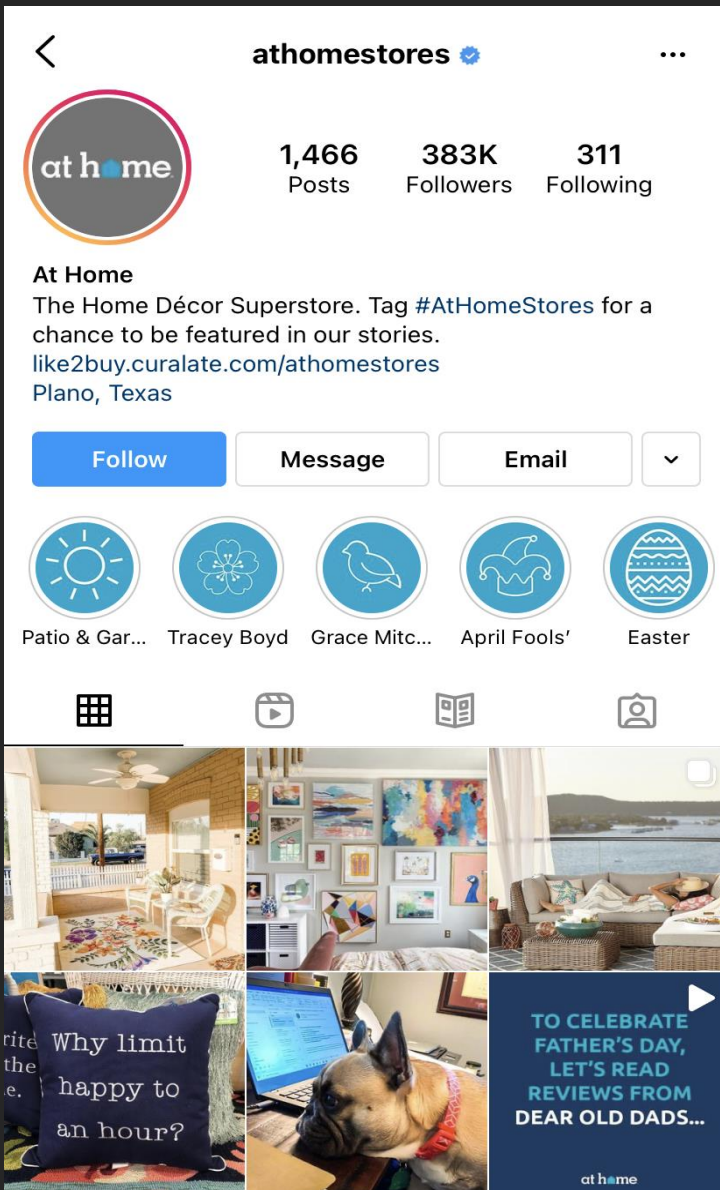
- Understanding the home décor sector, laying out some basic background questions from the data
- Drawing analysis and extracting actionable insights
- Providing recommendations to grow the store's business



# SWOT Analysis

---

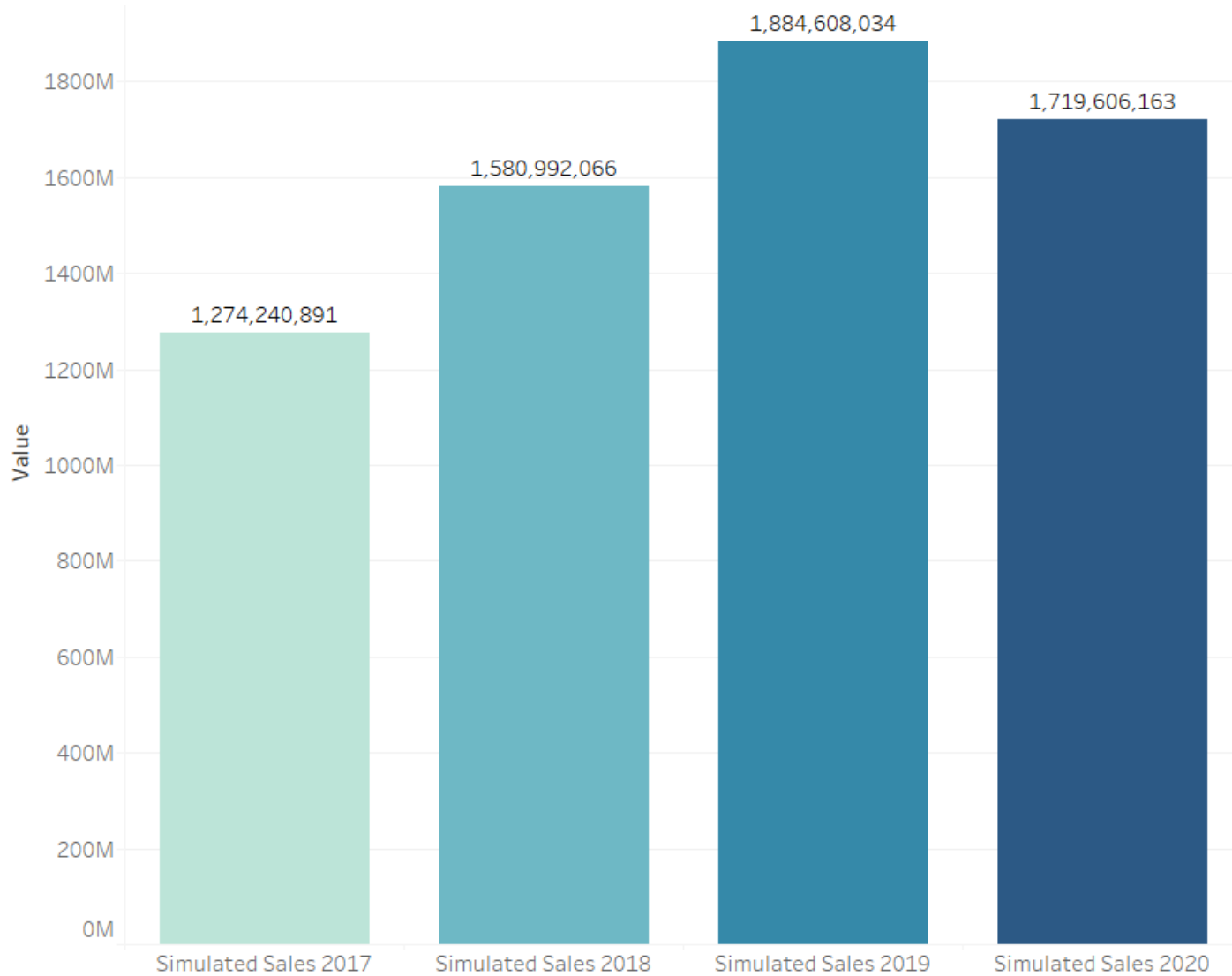
<b>Strengths</b> Have the widest selection of products Strong relations with suppliers Excellent and stable workforce	<b>Weaknesses</b> Cash flow continues to be unpredictable Challenges of seasonality of business Requires access to capital
<b>Opportunities</b> Benefiting from high levels of new home construction Changes in design trends can lead to sales Internet potential for selling products	<b>Threats</b> Competition from market Changes in design, creating less profitable inventory Local unemployment rate of citizens



# Company Analysis

1. Selling exclusive line of products
2. 85% of its customer base comprises of women.
3. An email database of over 500 million addresses.
4. More than 400 new products arrive on the shelves weekly.
5. They have a potential to expand to 600 stores in long-term.
6. Enhance direct sourcing of the products to provide everyday lower prices.
7. Reward programs for continued loyalty, insider perks loyalty program for frequent shoppers and leveraging the IT to gain visibility in customer preferences and spending patterns.
8. Working closely with 500 vendors that includes 36% domestic and 65% international including vendors from India, China, Vietnam, Turkey and Hong Kong.

Social Media is used extensively for marketing & sales.



# Catalyst

---

- Sales increased for 3 consecutive years but decreased for year 2020 as the result of pandemic.
- This gave us motivation to analyze At Home zip codes deeply to get meaningful insights



# Business Questions

---

How is the competition around At Home stores?

For which stores the strategies can be revisited?

How pandemic impacted the AHG?

Which states has scope for new stores?

How demographics like total population or median income, race/ethnicity can impact the sales and future strategies?





# Data Analysis

---

We divided our analysis into following categories -

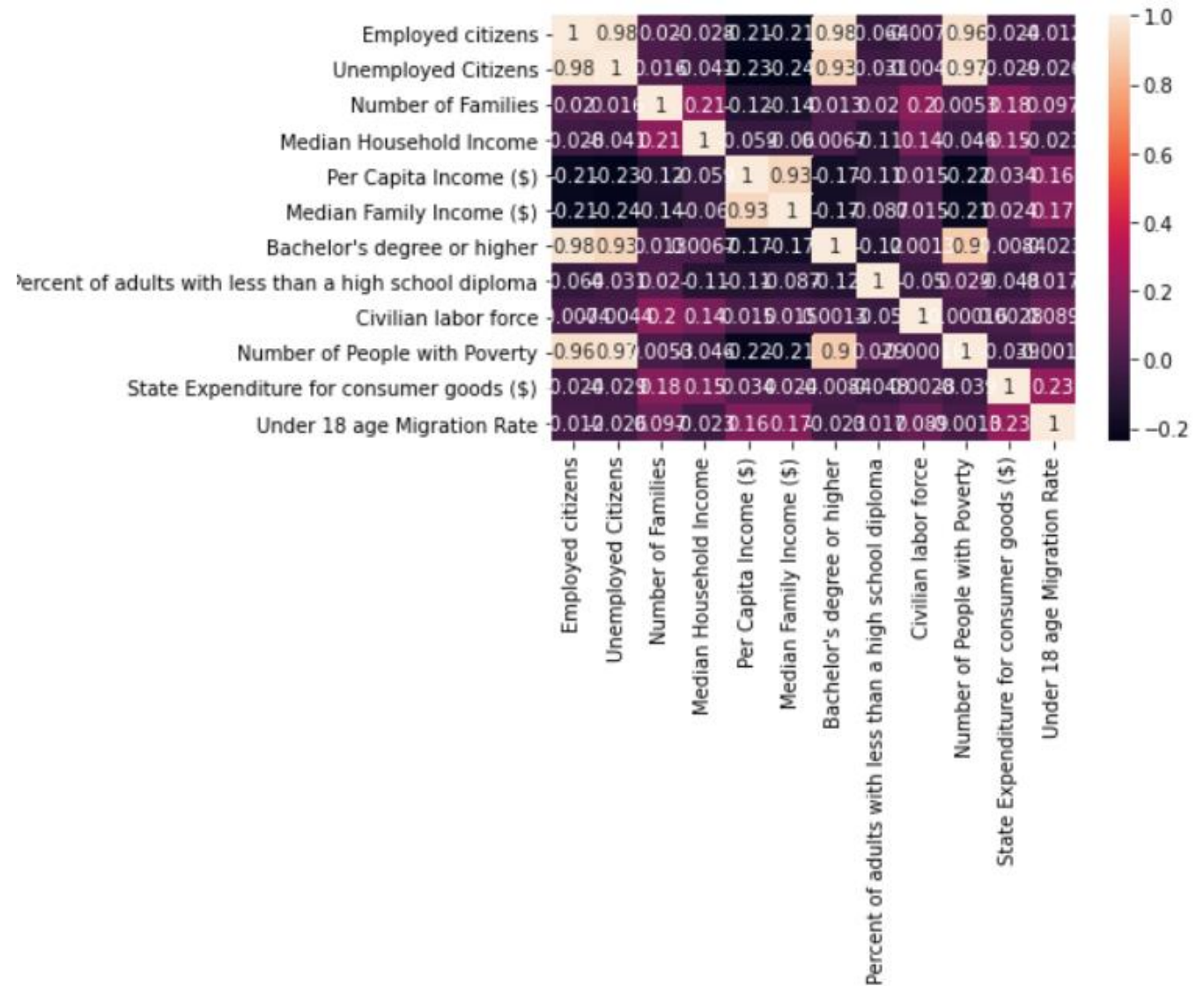
- Demographic Impact Analysis
- Potential Customer Analysis
- Spending Scope Analysis
- Competition/Store – Sales Analysis
- Strategy Analysis



# Demographic Impact Analysis

# Correlation Matrix

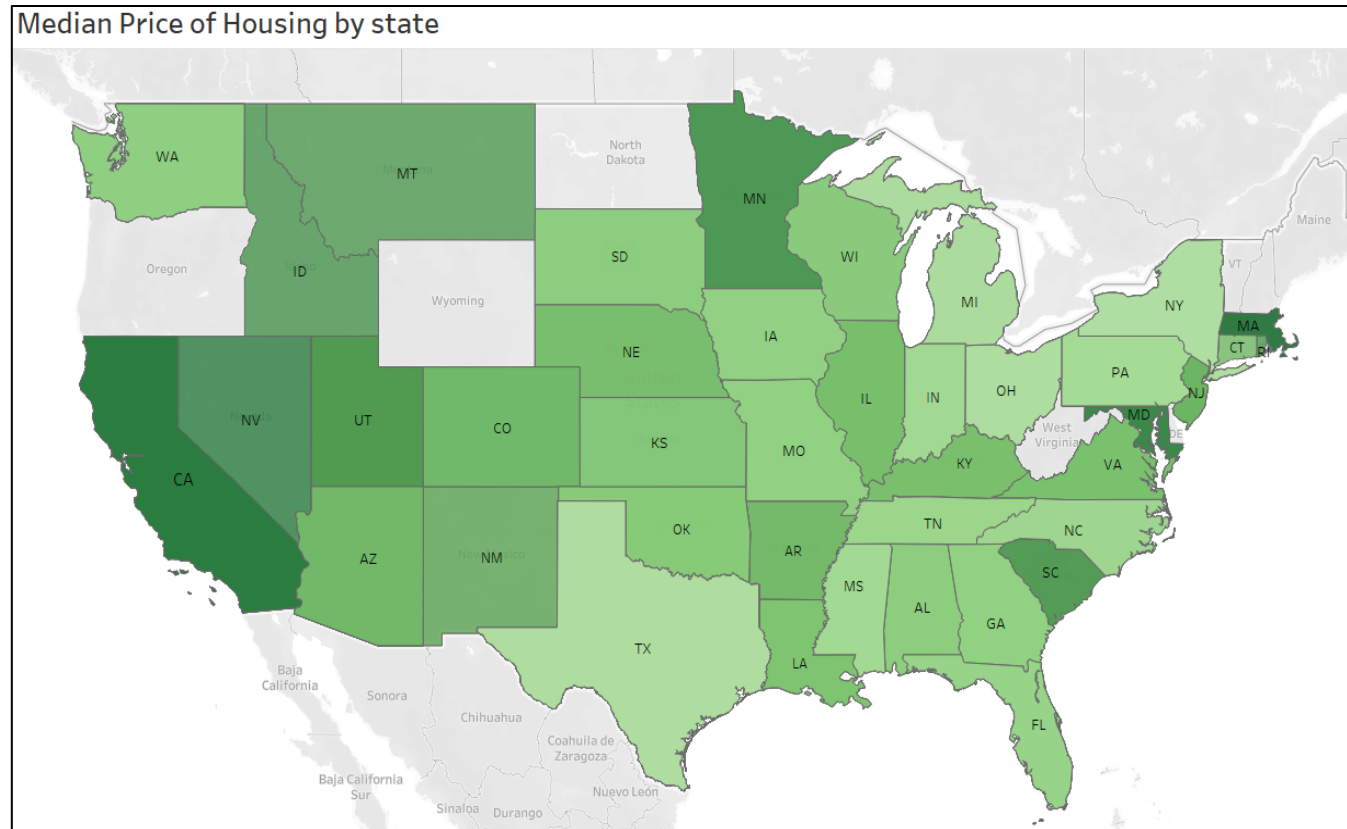
The correlation matrix helped in deciding data combinations and variable dependencies.



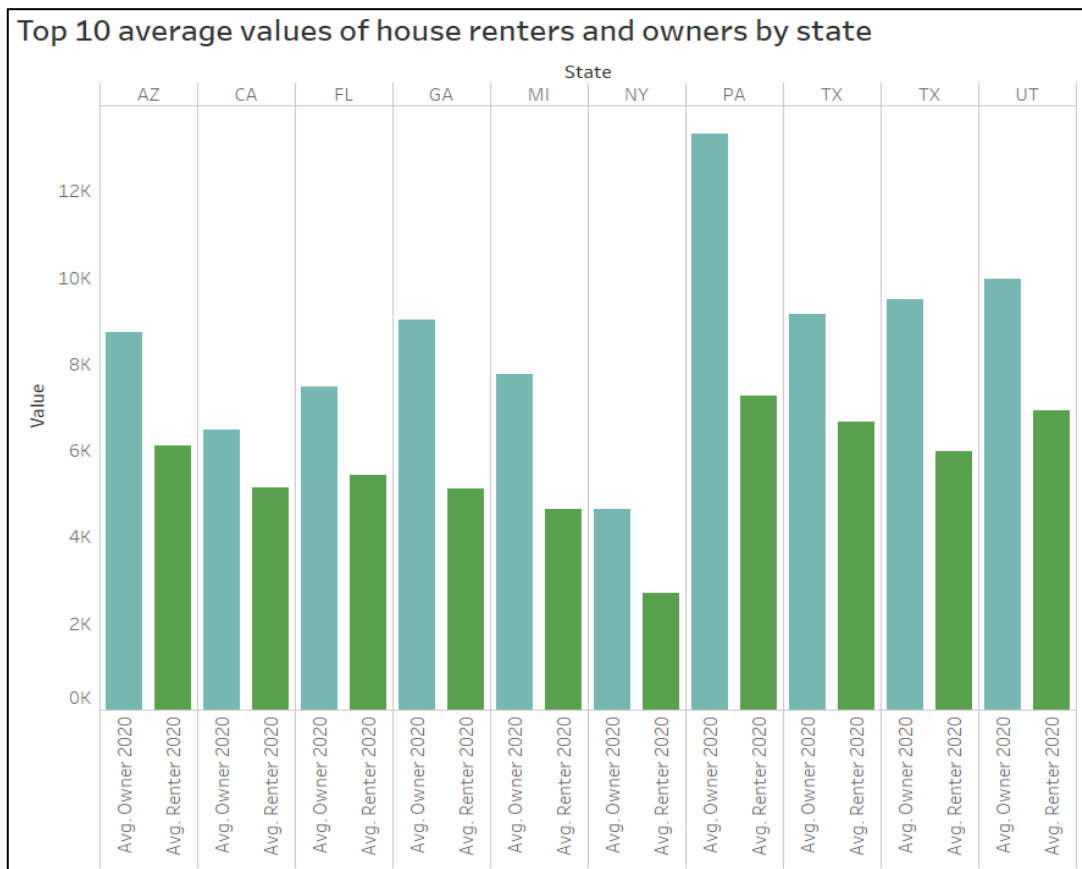
# Housing Price

- Observations:

Massachusetts has the highest median price of housing followed by California, whereas Missouri has the lowest price of housing

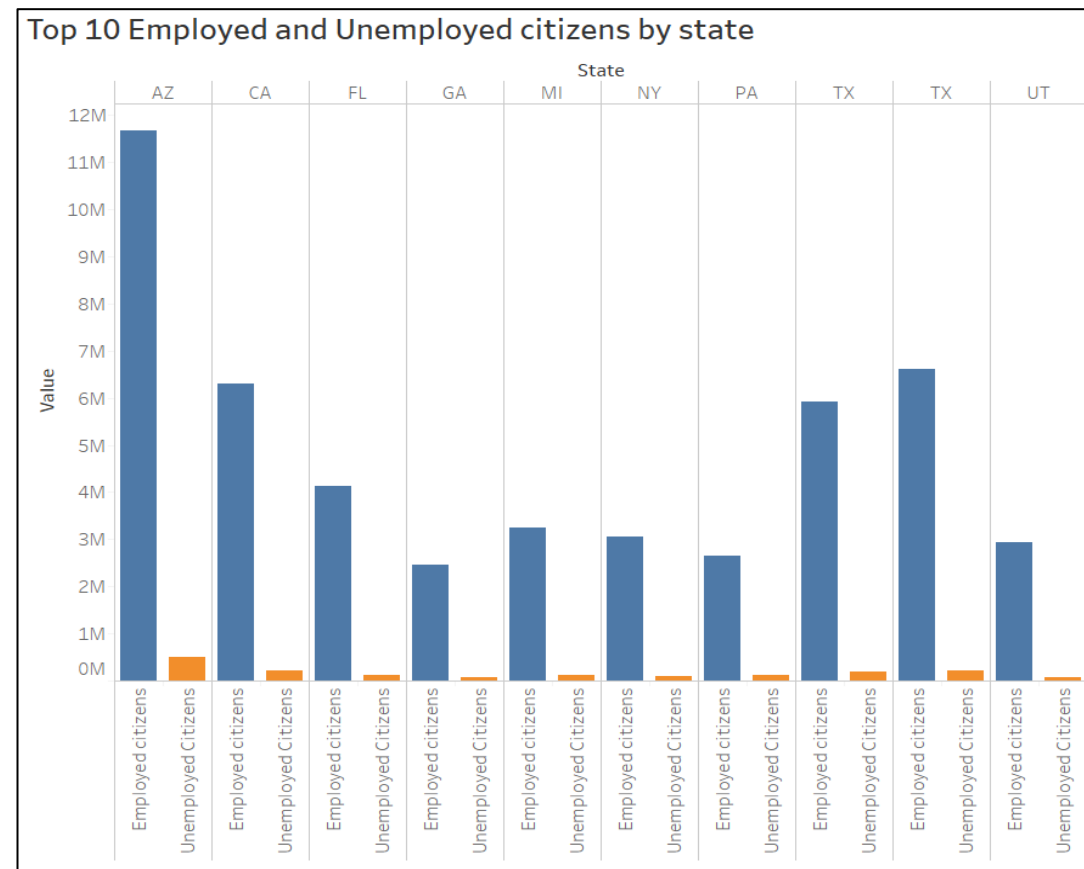


# Housing & Employment



- Observations:

Pennsylvania has highest number of average owners and renters, whereas New York has the least number of owners and renters



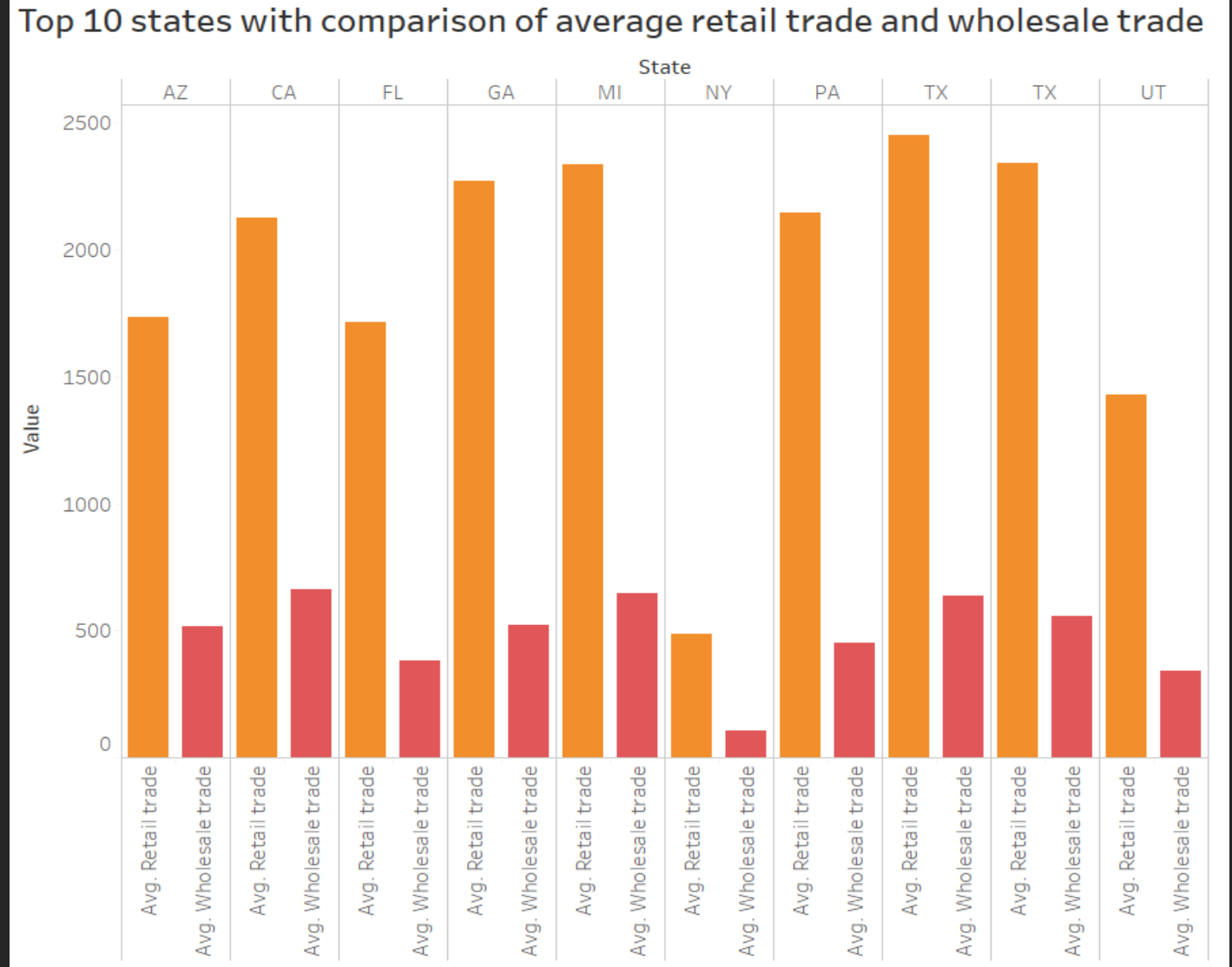
- Observations:

Arizona has the highest number of employed and unemployed citizens, whereas Georgia has the lowest number of unemployed and employed citizens

# State wise Average Trade Comparison

- Observations:

1. Texas has the highest average retail trade whereas California has the highest average wholesale trade.
2. However, New York has the least average retail and wholesale trade.



# Potential Customer Analysis



# Gender Distribution

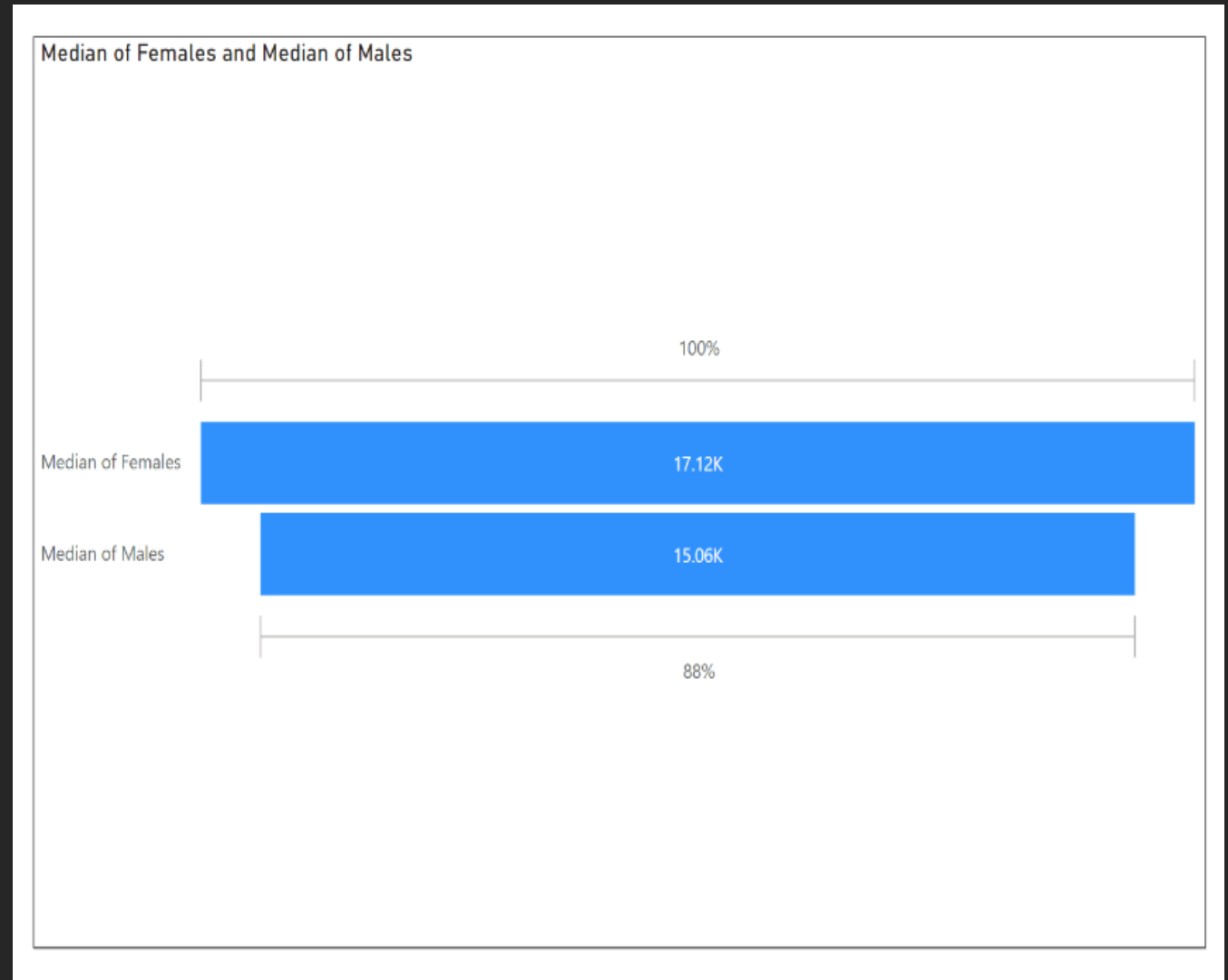
---

- Median Values-

Female- 17.12K

Male- 15.06K

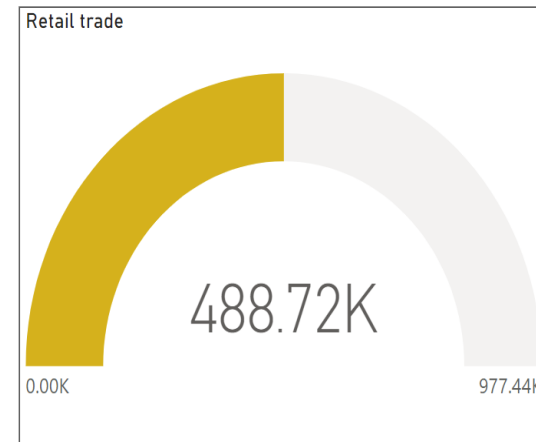
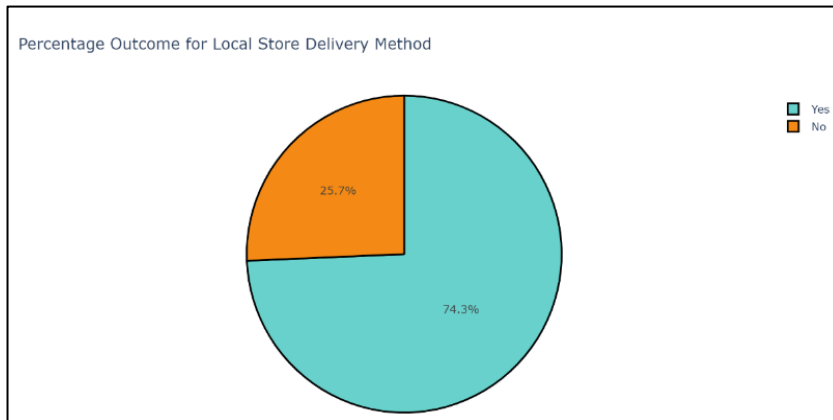
- Reason for choosing median values is Outliers do not affect the median as strongly as they do the mean. Also, Median measure considers every value in the column Variable.



# Trade Comparison & Store Delivery

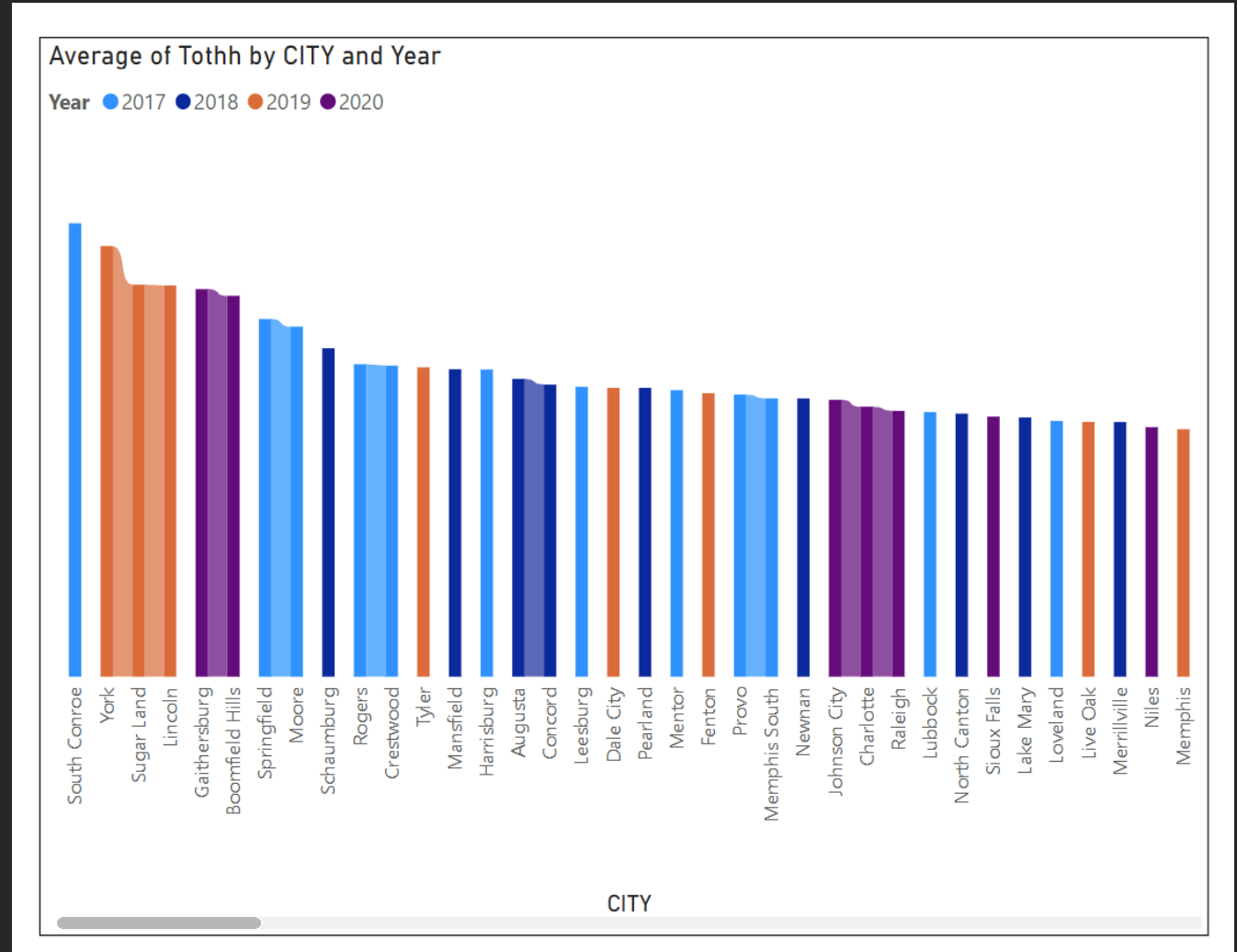
---

- From the graphs it is visible that retail trade is higher compared to wholesale trade which means the profit margin for the company is high.
- But on the other hand, investment capital is low.



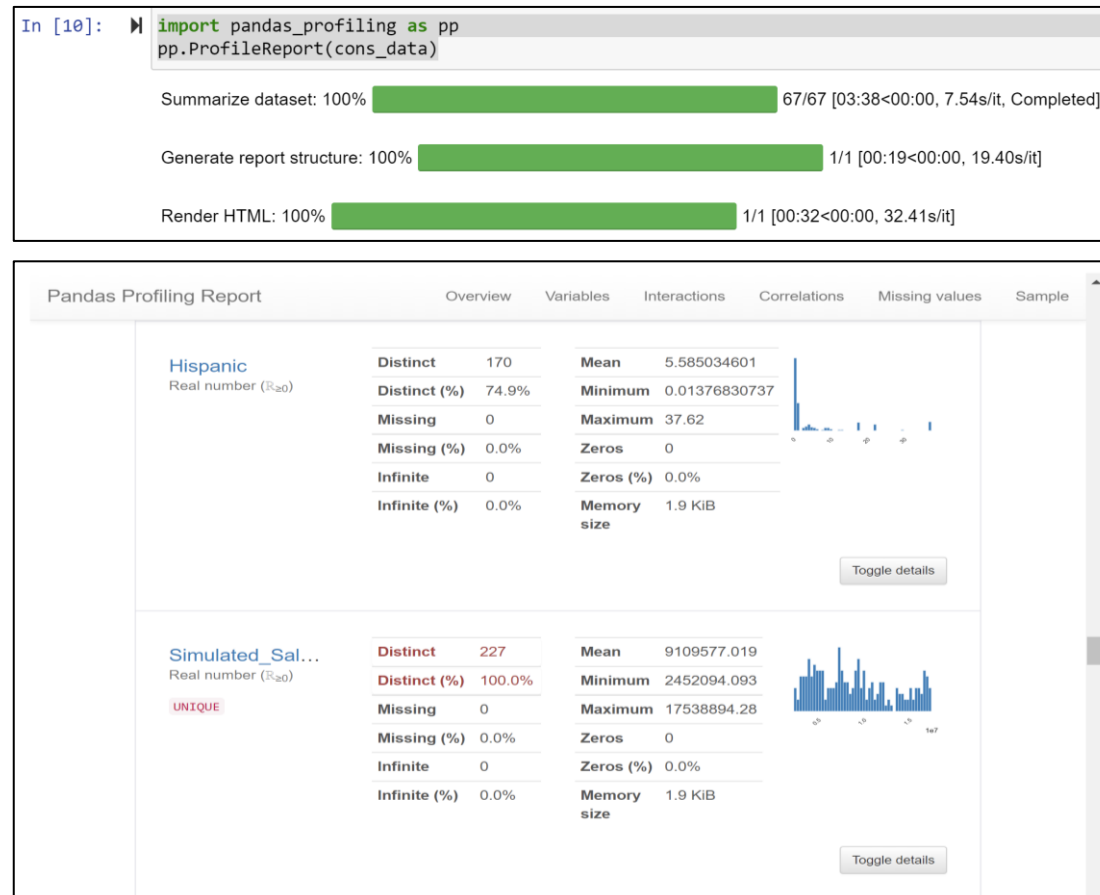
# Total Household Year wise

- The graph shows total number of households are being depicted for the years 2017 to 2020 ranked by city.
- Ribbon charts are effective at showing rank change with the highest value always displayed on top for each time period.



# Python – Pandas Profiling Report

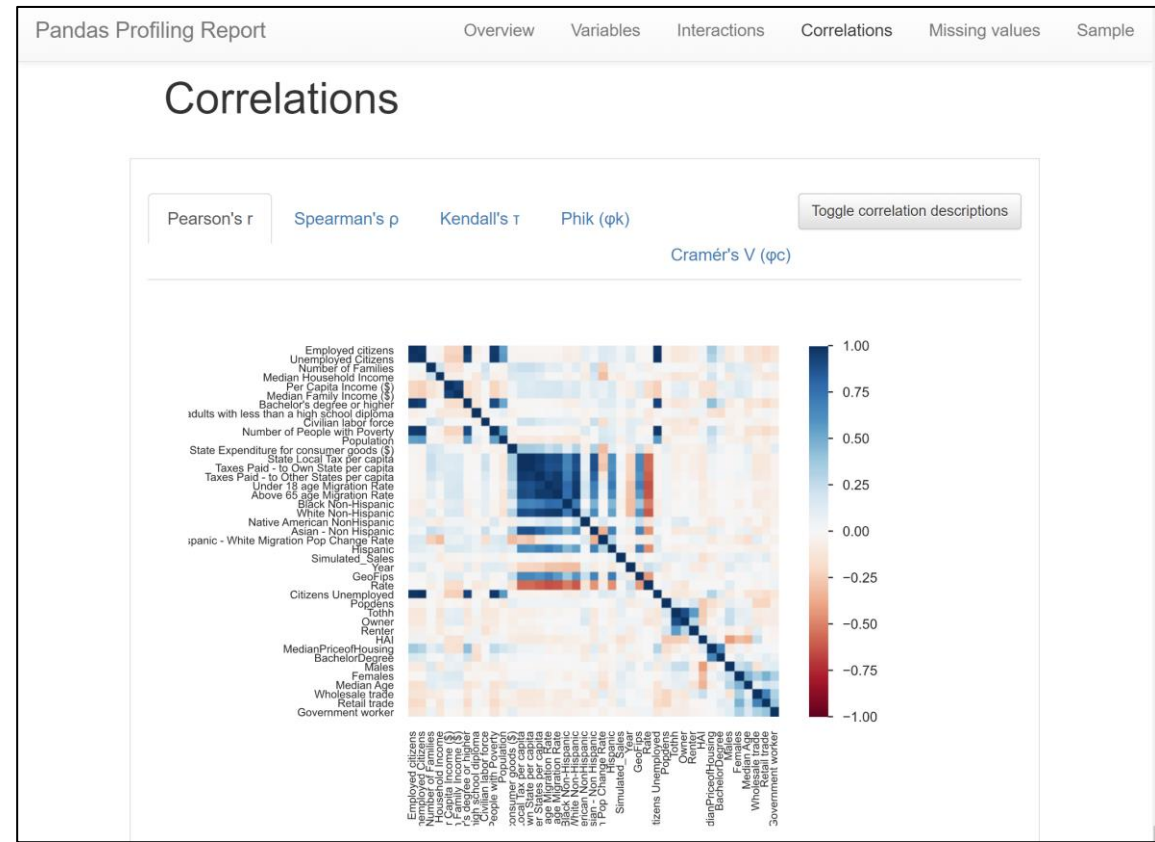
- Pandas Profiling report is an interactive HTML report to detect every column's deeper analysis, check on extreme/missing values, find relations and interactions between variables, correlations, and a summary of all the statistics.
- This is a representation for Simulated Sales as it is the most important variable of our dataset.



# Python – Correlation Matrix

An additional feature within this report is the amazing Correlation matrix for not just one but 5 different hypothesis tests.

- Pearson's  $r$
- Spearman's  $\rho$
- Kendall's  $\tau$
- Phik ( $\phi_k$ )
- Cramer's  $V$  ( $\phi_c$ )

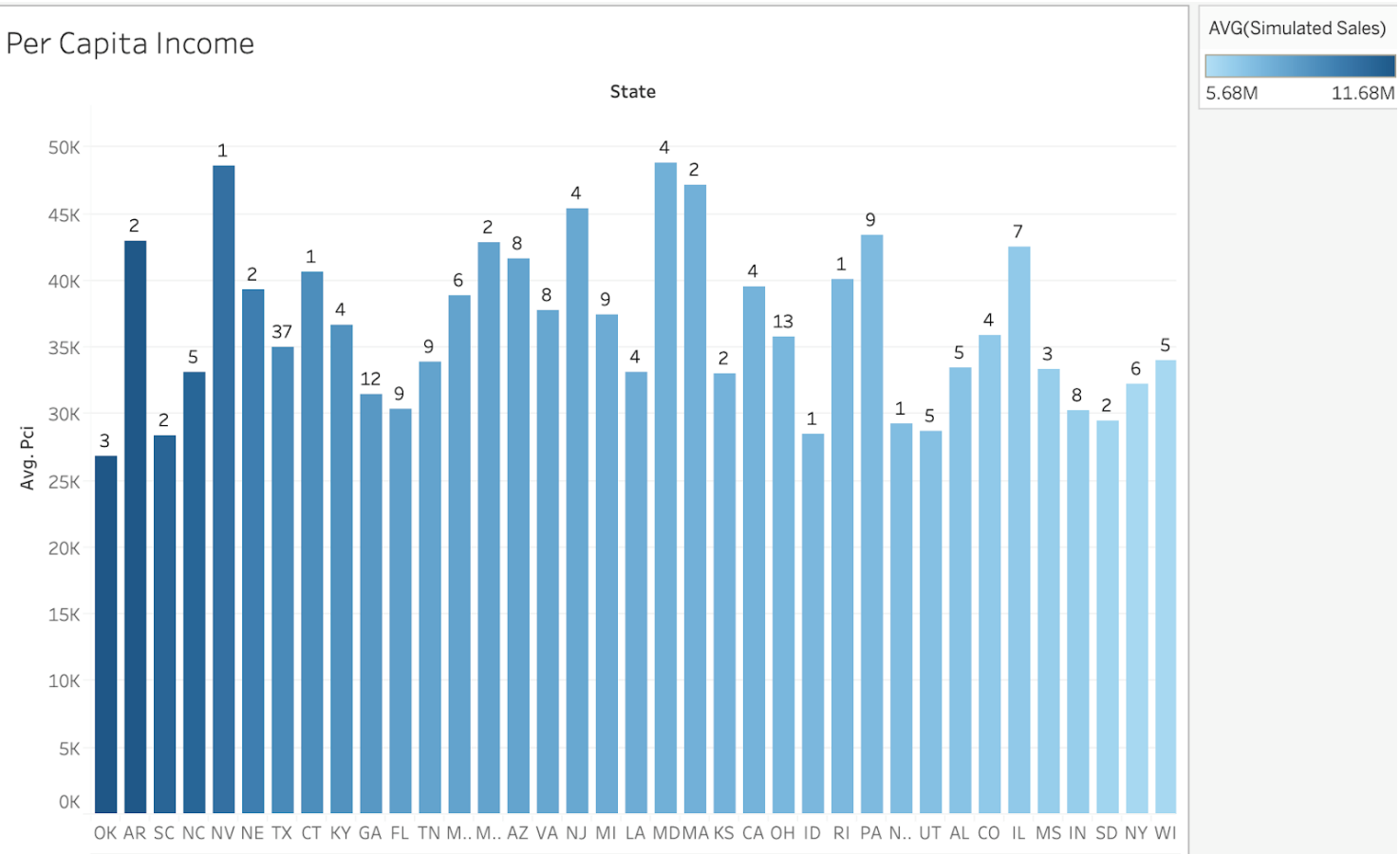


# Spending-Scope Analysis

# Per Capita Income

- Shows the related average per capita income with each state's average simulated sales.
- The number of stores for each state shown on top of each bar.
- Arkansas and Nevada can be potential states to open new stores because they have relatively high average PCI and average sales, but only 1 or 2 stores opened in these two states.

Per Capita Income

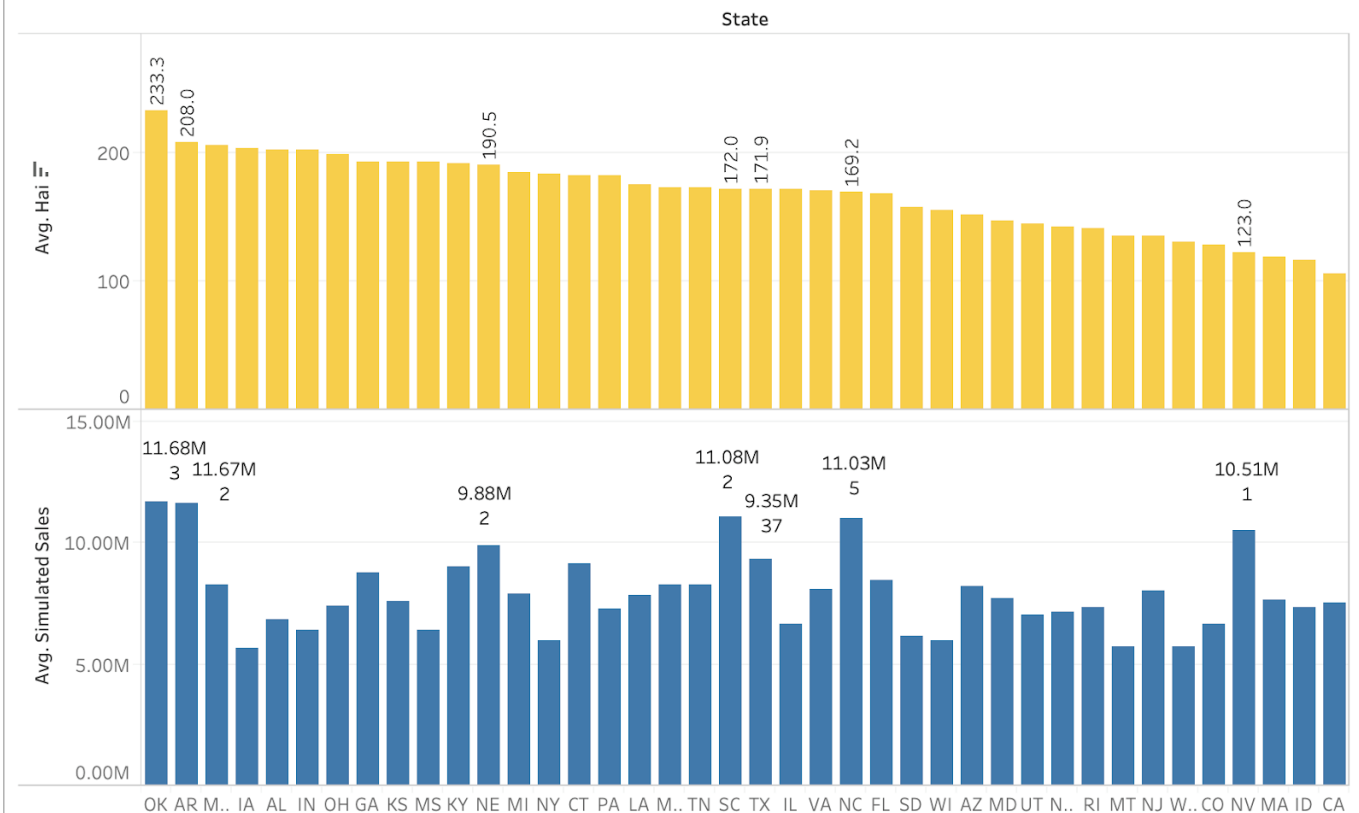




# Housing Affordability

- Shows the average housing affordability index and average sales for each state.
- Oklahoma and Arkansas have the greatest potential to open new store because their HAI are higher than Texas, but fewer stores are opened in these two states compared with Texas.

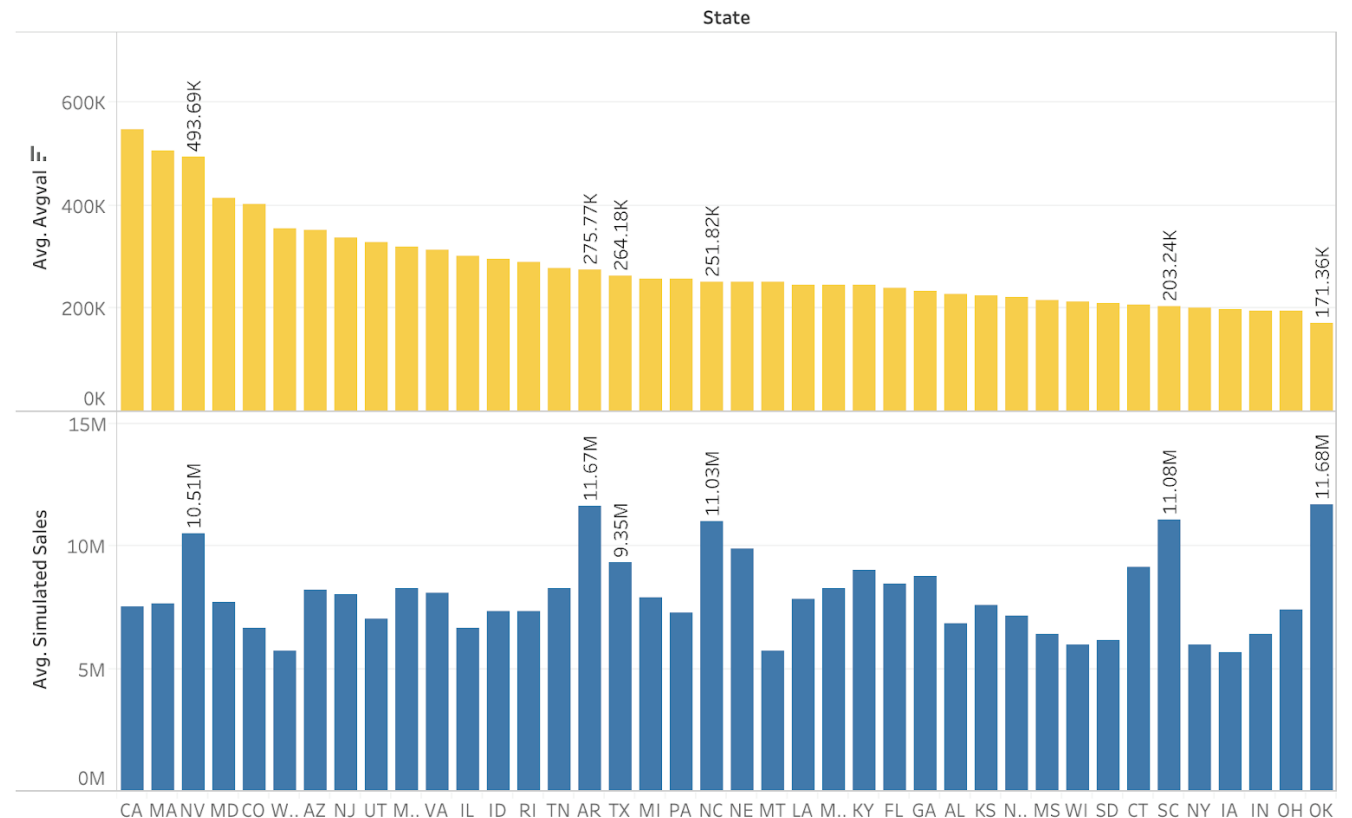
Housing Afordability



# Average Home Value

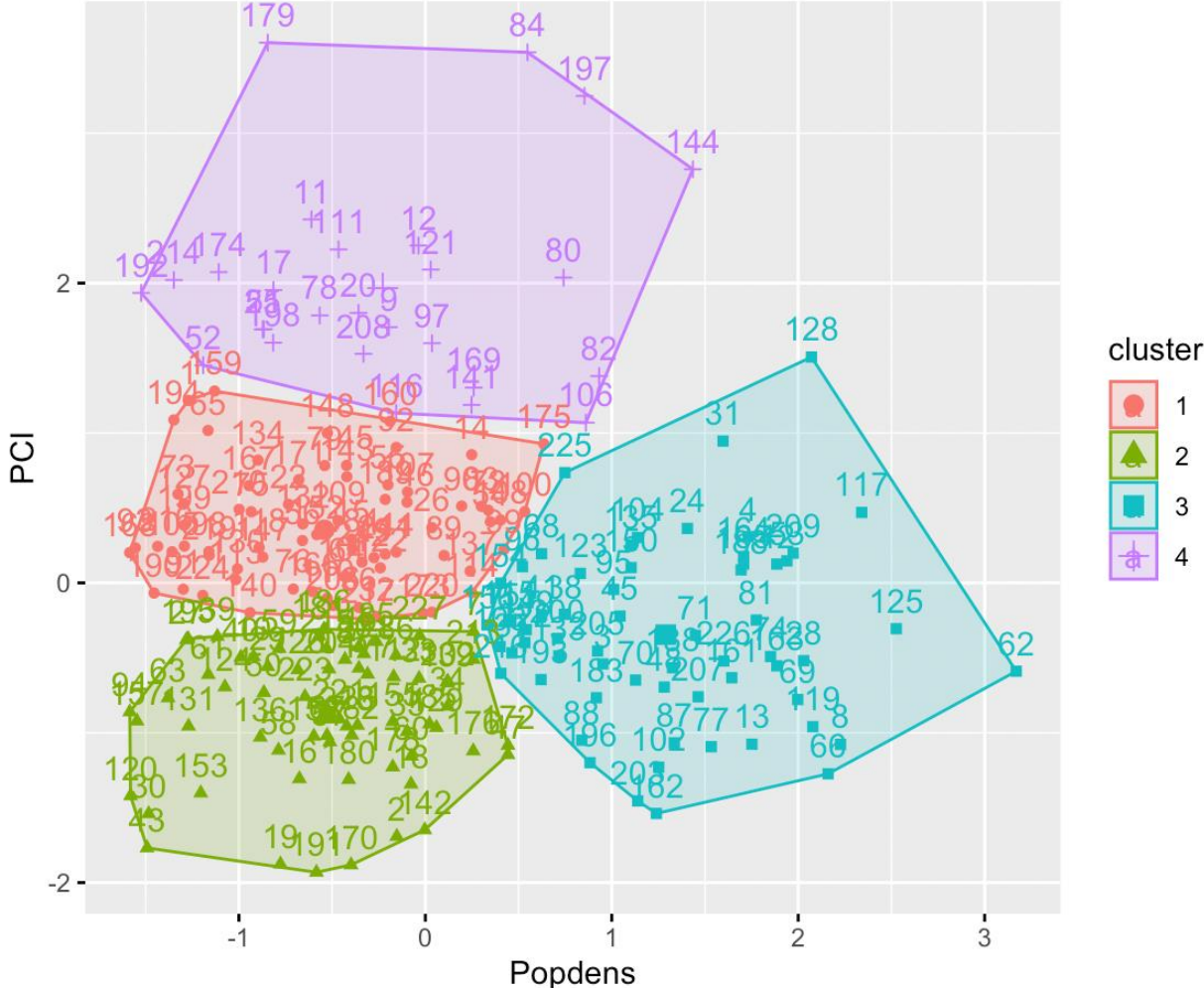
- Nevada and Arkansas have higher average home value and average sales. Higher home value indicates that people are more willing to spend for their houses. Thus, Nevada and Arkansas can be candidates for opening new stores.

Avg Home Value

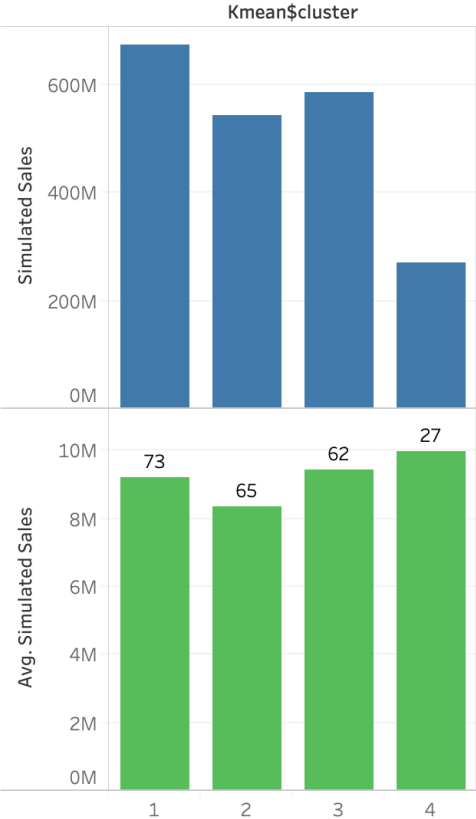


# Kmean-Combined Factor

## Cluster plot



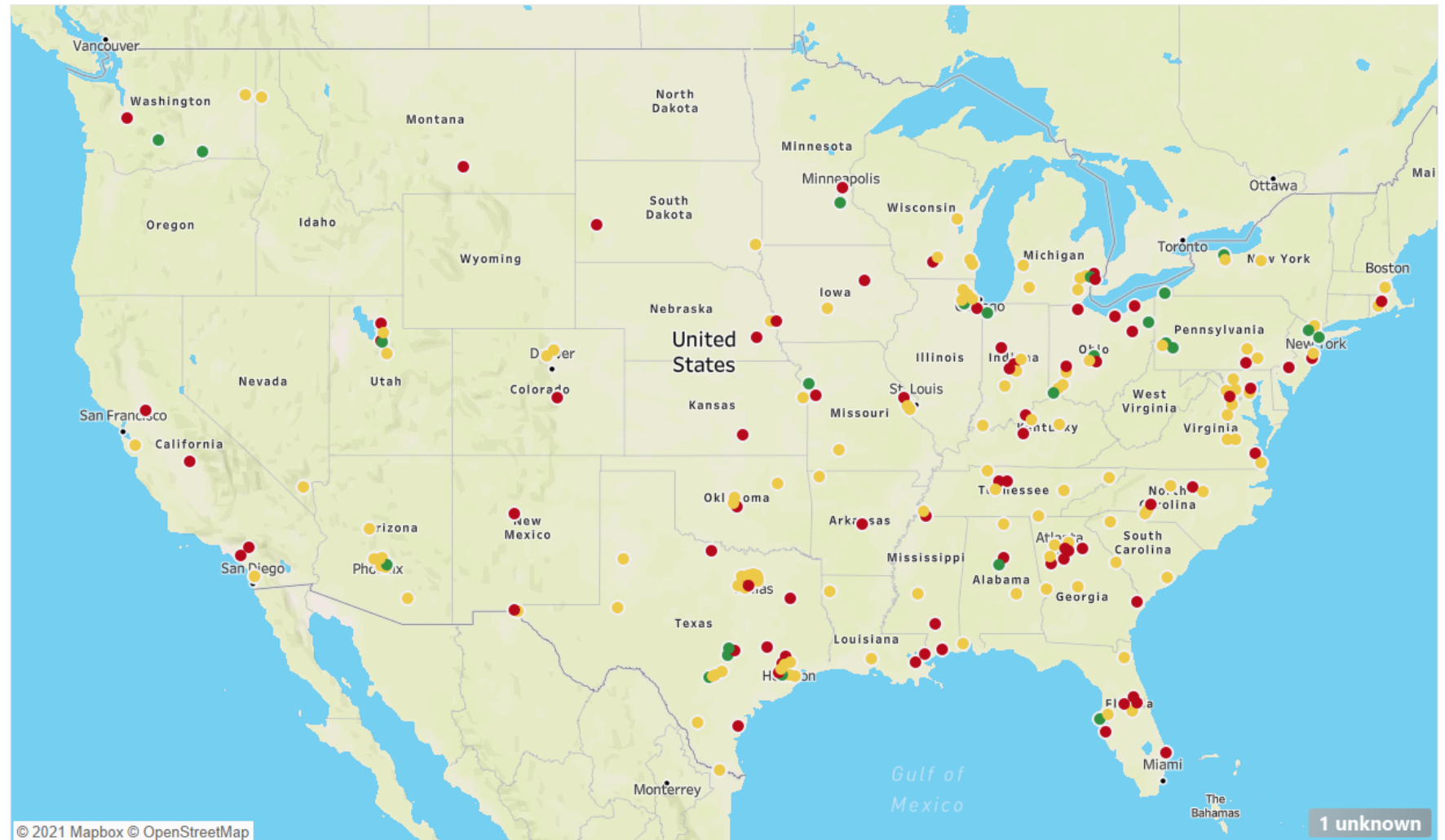
## Cluster vs Sales



# Competitive & Store-Sales Analysis

### At Home vs Walmart vs Macy's

- Arizona & Nevada has no Walmart or Macy's nearby, thus giving an upper hand in retail stores.
- Louisiana again is an state with potential for opening a new store.
- For the states like Florida, Virginia, Ohio, Pennsylvania where At Home stores are in considerable distance with Walmart, the business can think of introducing low cost, variety home décor products than Walmart.
- For New York, business can have more office décor products or customized products to suit the corporate lifestyle.

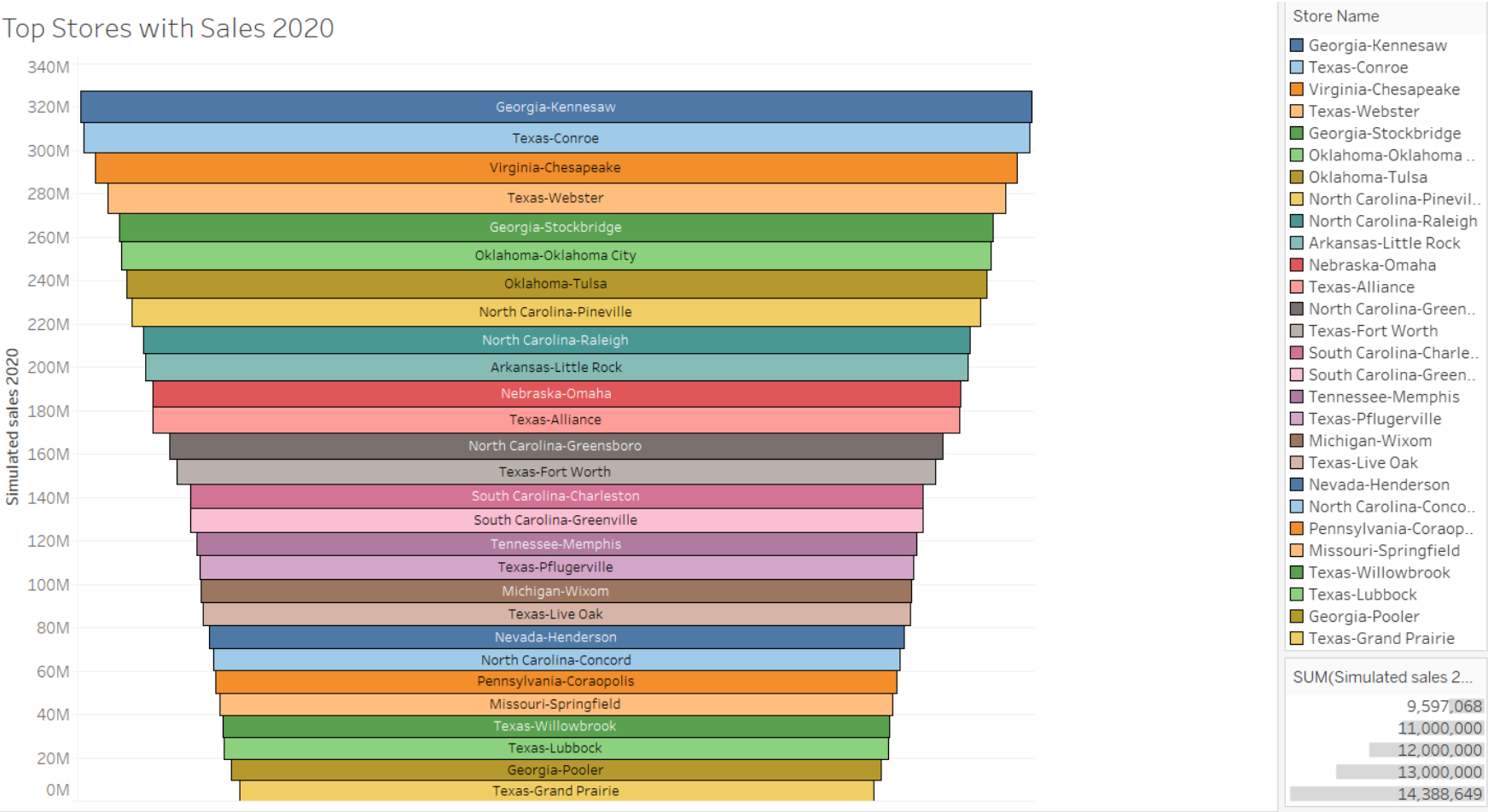


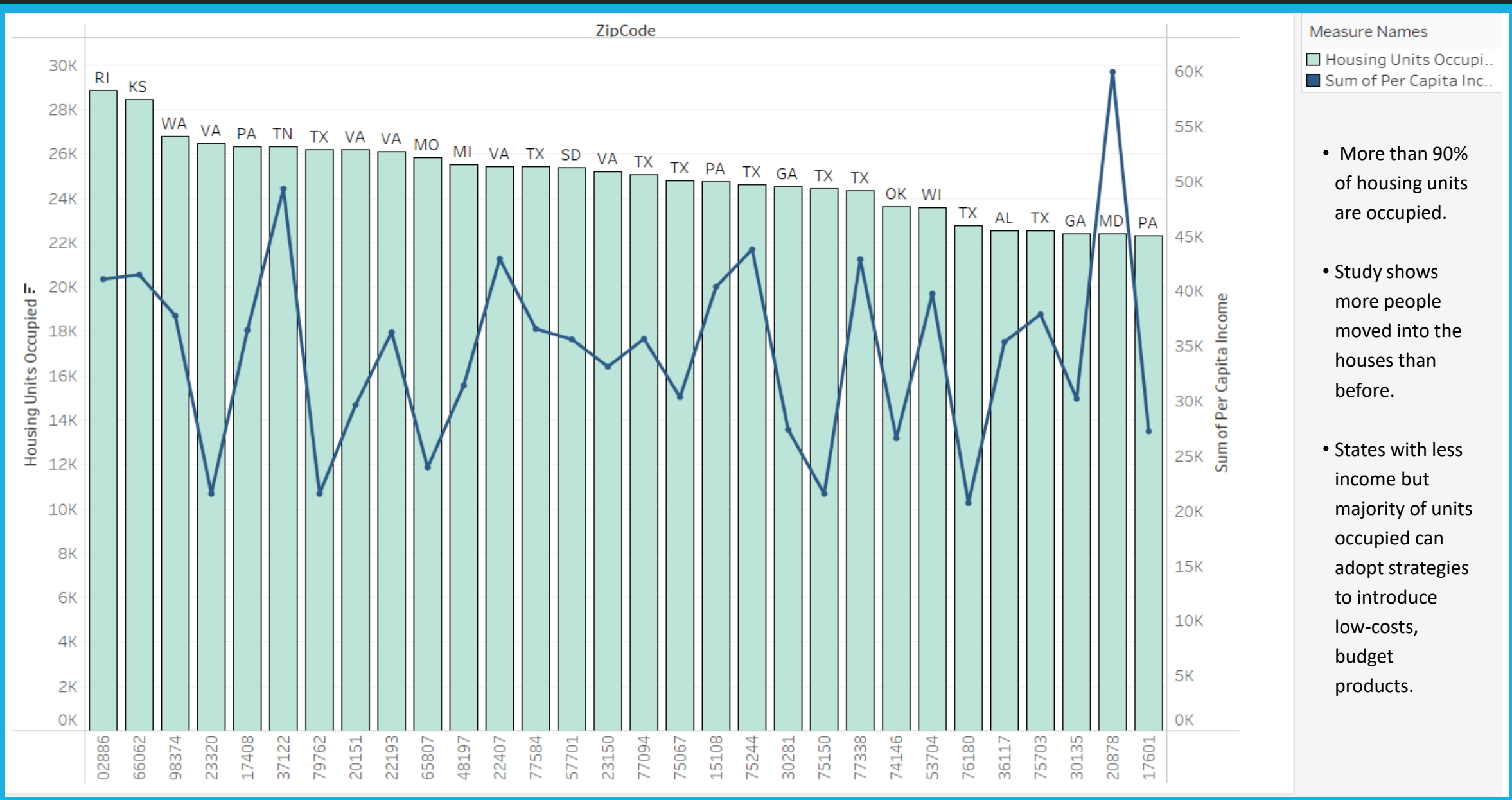
Georgia – Kennesaw [zip code - 30144] contributed the most towards the total sales in 2020.

It provides all the 3 services like ‘pickup in store’, ‘curbside pickup’ & ‘local store delivery’.

The same trend follows for the next 9 stores in line and ahead.

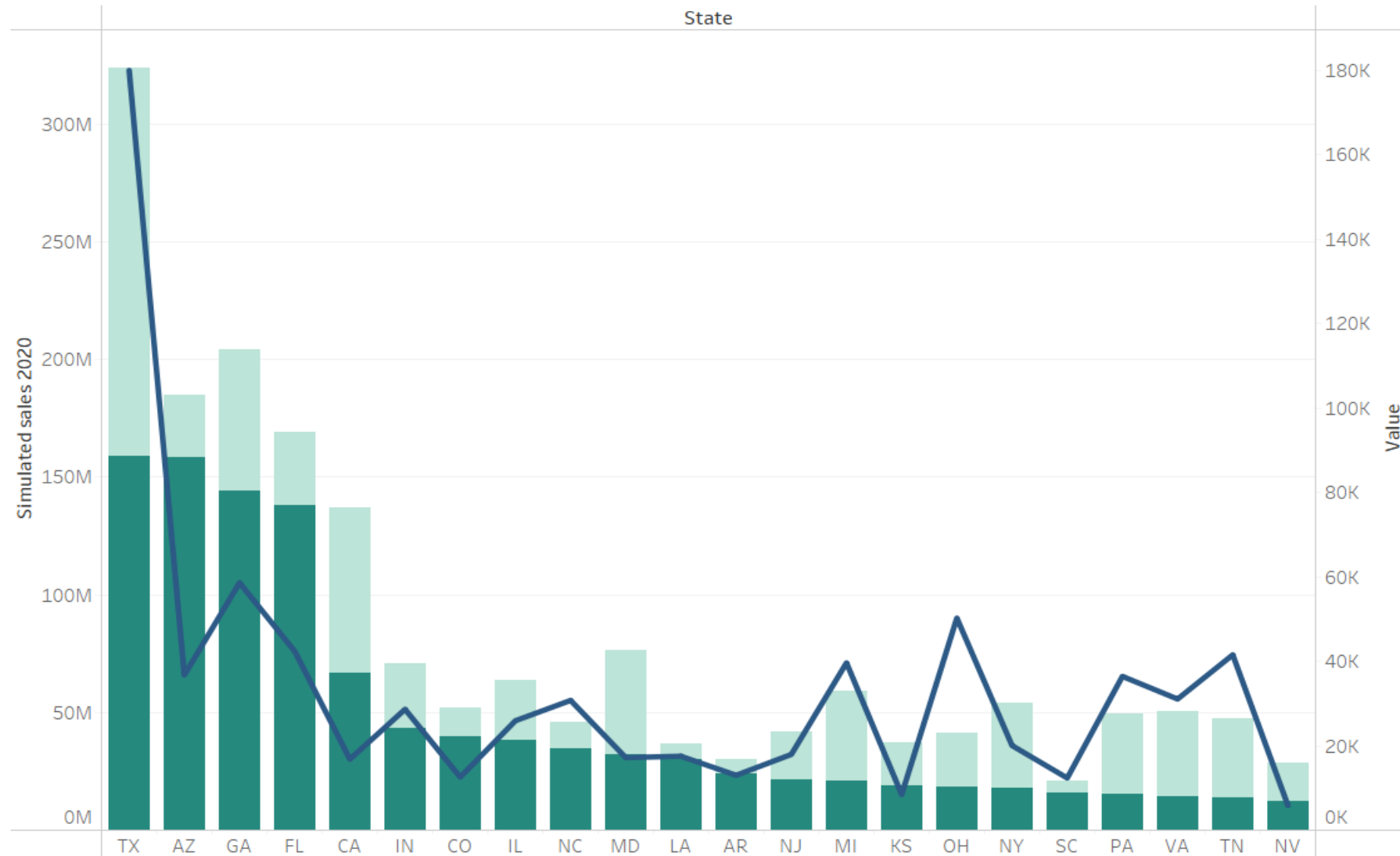
Starting with the local store delivery options can proved to be an effective strategy for other stores like Arkansas - Little Rock.







## Top states with Sales and diverse population

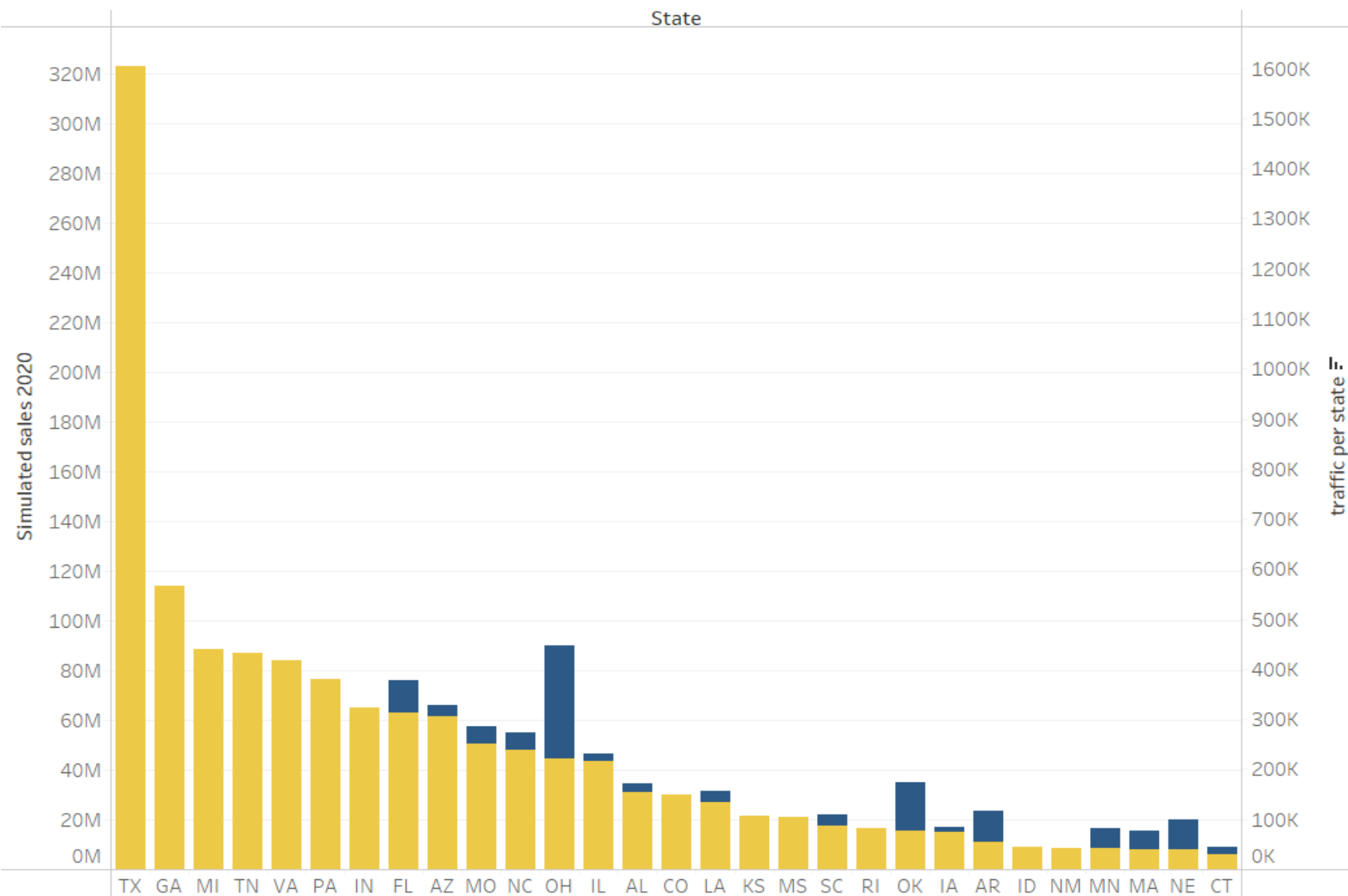


### Measure Names

- Simulated Sales 2020
- Asian
- Hispanic/Latino

- Texas has highest number of Hispanic/Latino as well as Asian population.
- Recent study shows these races will gradually increase over the years.
- AZ, GA, FL has more Hispanic/Latino concentration.
- States like New York (NY), Pennsylvania (PA), Virginia (VA) and Tennessee (TN), Maryland (MD) have more Asian concentration and thus AHG in those clusters can think of working on the line of products that matches Asian taste.

## Population per State vs Sales 2020



### Traffic Analysis

- Simulated Sales 2020
- traffic per state

- Texas, Georgia, Michigan, Tennessee, Virginia, Pennsylvania have generated equal number of sales w.r.t to the population 2020.
- Ohio, Oklahoma has biggest scope to open a new store where sales generated > population.

# Strategy Analysis

Differentiated  
Merchandising

- Gaining a competitive edge in the marketplace
- Product design, marketing, packaging and pricing

Self-service  
Model

- Minimize in-store staffing requirements
- Save time and streamline processes

New Store  
Model

- Expand the number of stores
- Enable new stores to generate cash flow early on (mature within 6 months)

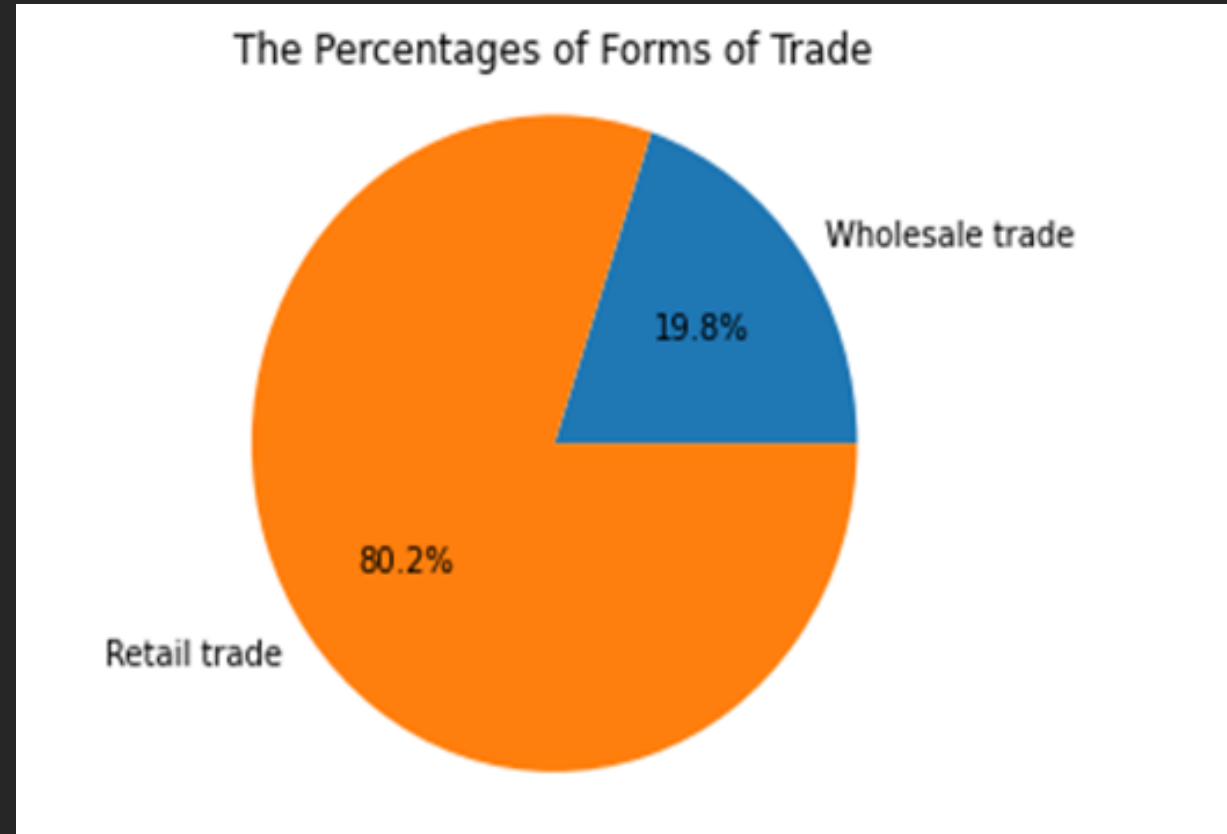
## Current Strategy

---

# The forms of Trade

---

1. The main trade mode of At Home Group is Retail Trade
2. At Home Group's main form of trade is selling goods to consumers in small quantities for personal use, rather than for resale or commercial use.



# Strategic Plan

---

## Marketing and Advertising

- Increase brand awareness through targeted marketing
- Understanding the real needs and preferences of customers is the focus

## Low Price Discount

- Products are purchased directly to reduce costs
- Implementing a self-service model to reduce staff costs and thus reduce product costs

## Enhanced customer experience

- Capture customer feedback in real time
- Understanding customers and building emotional connections with them

# Business Recommendations

---

## Spending Recommendations

- ✓ Arkansas can be the state with greatest potential to open new store because of relatively high PCI, HAI, and home value compared with Texas. Arkansas also has only two stores with high average sales compared with Texas.
- ✓ AHG also need to focus on the area with characteristics of high PCI and low population density because the Kmean clustering analysis suggests that this kind of area has higher average sales and only 27 stores opened compared with other areas with over 200 stores.

## Customer Recommendations

- ✓ Statistics proved that the retail home furnishing sales declined by 21% due to pandemic and thus, At Home must think of introducing "home delivery" service especially for the metros.
- ✓ Pandemic has changed the way people use to shop and statistics showed that Amazon & Wayfair hold the biggest share in home furnishings/décor market and thus At Home must also think of introducing an ecommerce website keeping in mind the customers preferences, current and future market trends.
- ✓ Trends have shown that ethnicity affects the sales and thus it becomes very important to attract and retain every race by introducing products that matches their taste and likings. States with heavy concentration of Asians should lure them by importing more products from India & China or introducing more ethnic products.

## Demographic Recommendations

- ✓ Texas has the highest average retail trade whereas California has the highest average wholesale trade. This will help the At Home store management in deciding the states to be targeted for opening new stores based on the retail and wholesale trades of those locations.
- ✓ Pennsylvania has highest number of average owners and renters, whereas New York has the least number of owners and renters. This analysis will help the store in understanding the number of renters and owners, which benefit the store management in planning out the products and stores at various locations.



# References

---

[1] Rajagopal, Pitt, Michael, & Price, Samantha. (2010). Measuring sales performance of home décor products. *Journal of Retail & Leisure Property*, 9(2), 105–124.  
<https://doi.org/10.1057/rlp.2009.25>.

The study in this paper reveals balance in all the sales activities and how those affect the overall performance of an organization. Moreover, it emphasizes effectiveness depends on amount and quality of information getting generated within a business. Monitoring and control of the sales tasks must include negotiating, prospecting & qualifying, delivery method, approach, and problem-solving demo-able solution.

[2] Bumblauskas, D., Nold, H., Bumblauskas, P., & Igou, A. (2017). Big data analytics: transforming data to action. *Business Process Management Journal*.

This paper deals with an amalgamation of theoretical processes for operations and managers in order to collect, analyze & respond upon the data conquered extracted from the large datasets. An example of a case study with a dashboard further epitomizes quality of data and context of data binge.

[3] Adler, J., & Safari, an O'Reilly Media Company. (2016). *Data Governance* (1st edition).

A business-driven initiative for overview and trends of data governance. Role of IT as a critical role. Also, a high-level model has been introduced in the segment for efficient communication and responsibilities in the data success.



# Thank You

---

ANY QUESTIONS