



# Customer Lifetime Value Analysis

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# Outline



Approach



Output



Results



Next Steps



# Approach

# Business Understanding

- HomeTech is a smart home company focused on the integration of the latest and most secure smart home technology across the entire home. A state-of-the-art app and home panel lets customers seamlessly control all of their smart home devices.
- Customers are contract-based ranging from 2-5 years depending on product line
- Smart product lines include:
  - Home alarms
  - Life Alert
  - Cameras
  - Doorbells
  - Locks and garage door openers
  - Thermostats
  - Lighting
  - Appliances

# Analysis Goals

- HomeTech would like to implement CLV to address the following questions
  - How do we increase customer retention?
  - How do we increase customer margins?
  - Can we segment customers to utilize targeted marketing?

# Data Understanding

- Churn data
  - 31 columns
  - Approx. 240,000 rows
  - Churn data such as purchase counts/amounts/types by time frames.
- Margin data
  - 97 columns
  - Approx. 240,000 rows
  - Margin data such as transactional costs.
- Demographic dataset
  - 11 columns
  - Approx. 240,000 rows
  - Demographic data such as age, length of time at current residence and income

# Data Preparation

Some of our data preparation included:



Modify margin data to focus on annual numbers



Eliminate duplicate accounts



Join churn, margin, and demographic data by account



Create dummy variables for categorical variables when necessary



Filled (imputed) missing values with median for each column to account for outliers

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# Model Building

- We used a machine learning algorithm to produce churn and margin scores
- Calculated customer future value for each individual
- Used the churn and margin scores to divide individuals into four distinct quadrants based on two categories; retention likelihood and margin





Output

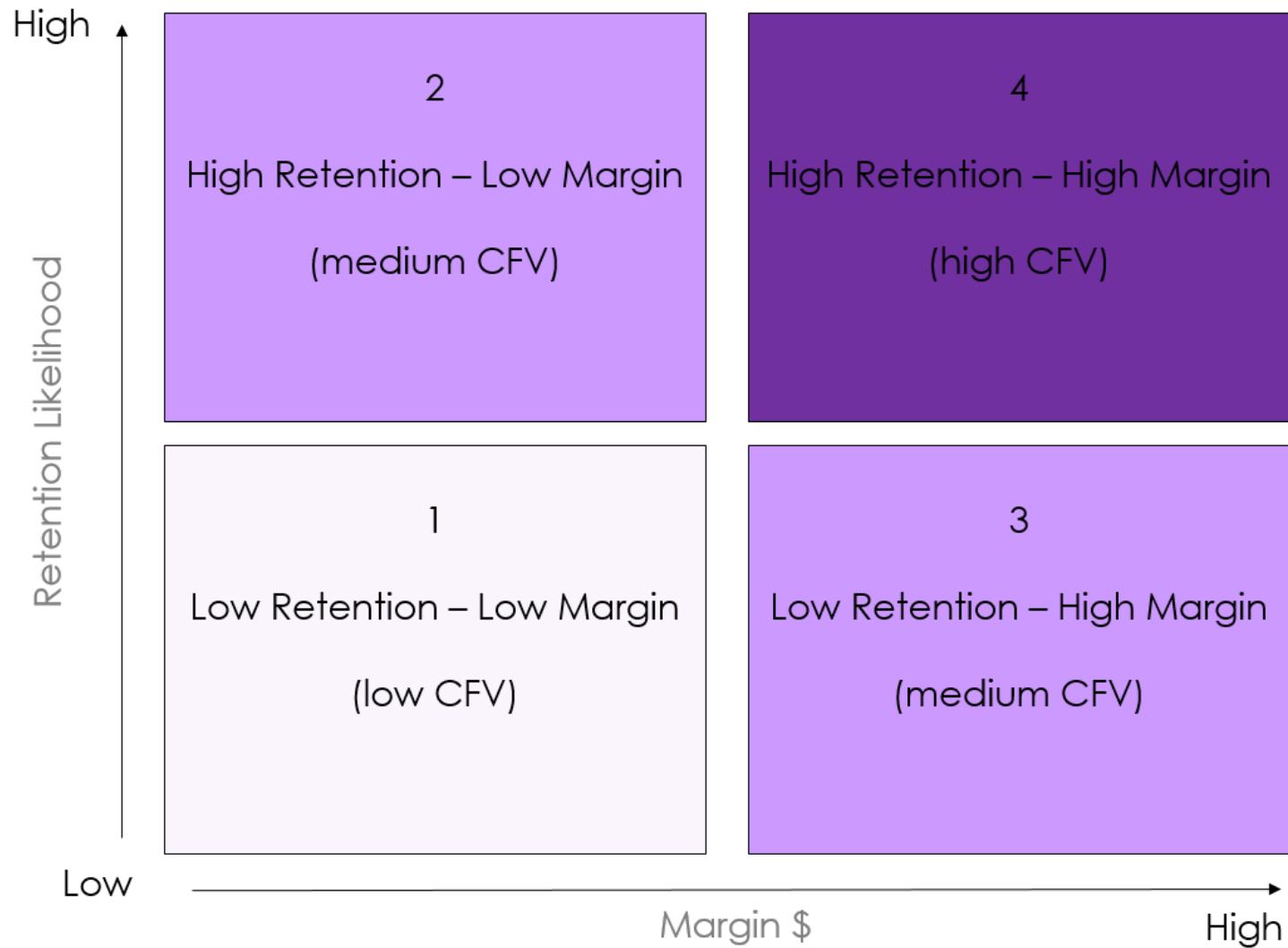
# Customer Future Value (CFV)

Summary Statistic	
Average	\$810
Sum	\$194M
Standard Deviation	\$3,899
Median	\$400
10th Percentile	\$23
90th Percentile	\$1,725
Standard Error	7.969

Customer future value was calculated for each customer. We'd like to highlight the following insights.

- The average CFV across all customers is \$810
- The sum of CFV across all customers is \$194M
  - This means that the total future value of this group of customers to HomeTech is \$194M.
- The median is \$400 and is much lower than the average
  - This means that several large CFV customers are bringing the average up and away from the median

# Quadrants



Approach

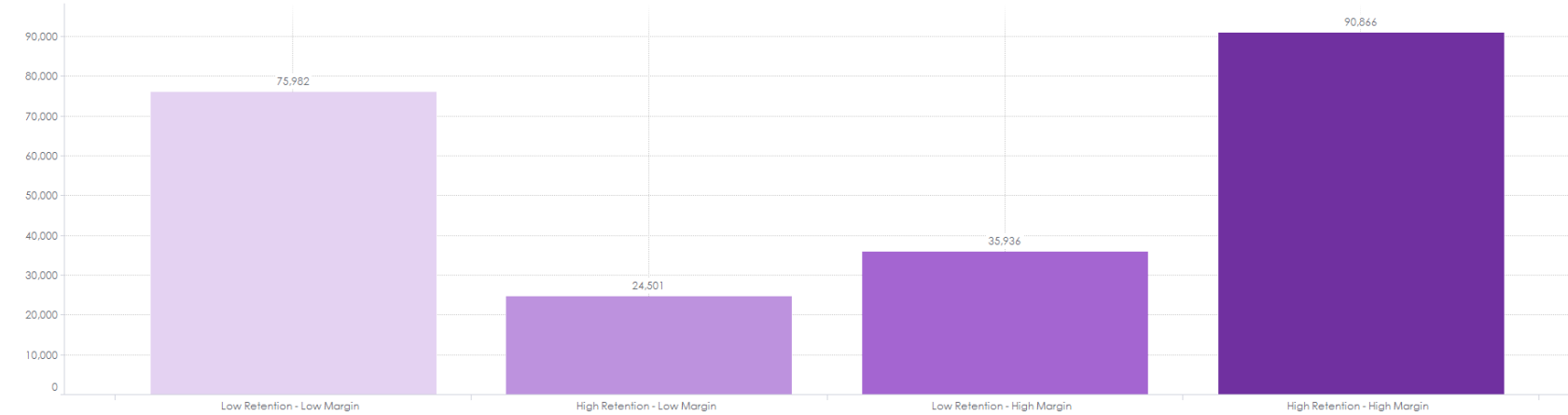
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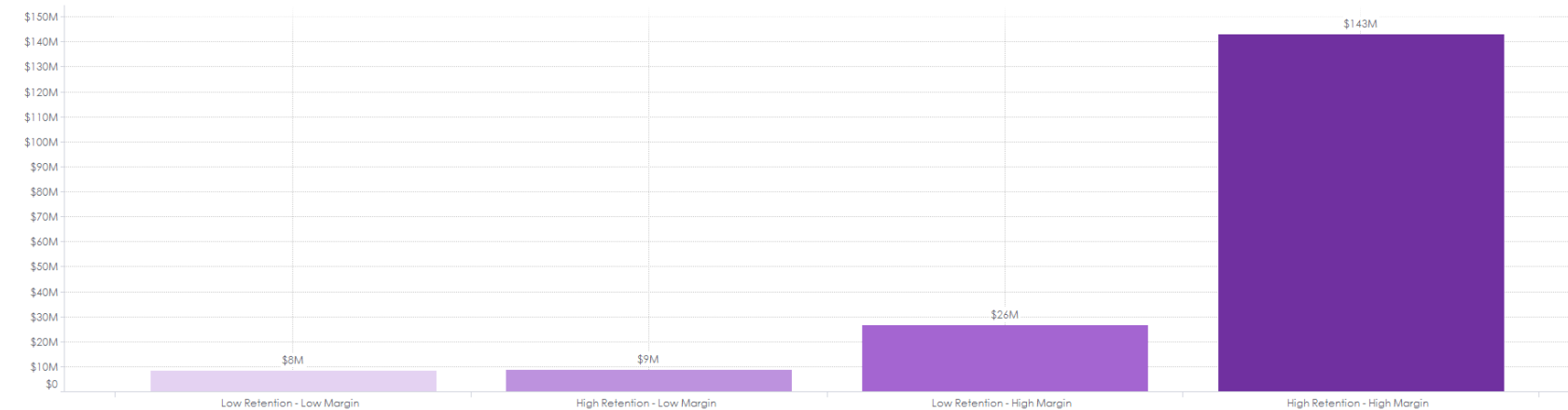
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# Customer Count vs Average CFV by Quadrant

Customer Count by Quadrant



Average CFV by Quadrant



The depicted data is broken down by quadrant and a few of the key points are:

- 40% of the customers fall into the high-retention, high-margin quadrant
- 73.7% of the expected future margin also comes from the high-retention, high-margin quadrant
- The goal of our analysis will be to move customers towards this ideal quadrant and out of the low-retention, low-margin quadrant

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Output

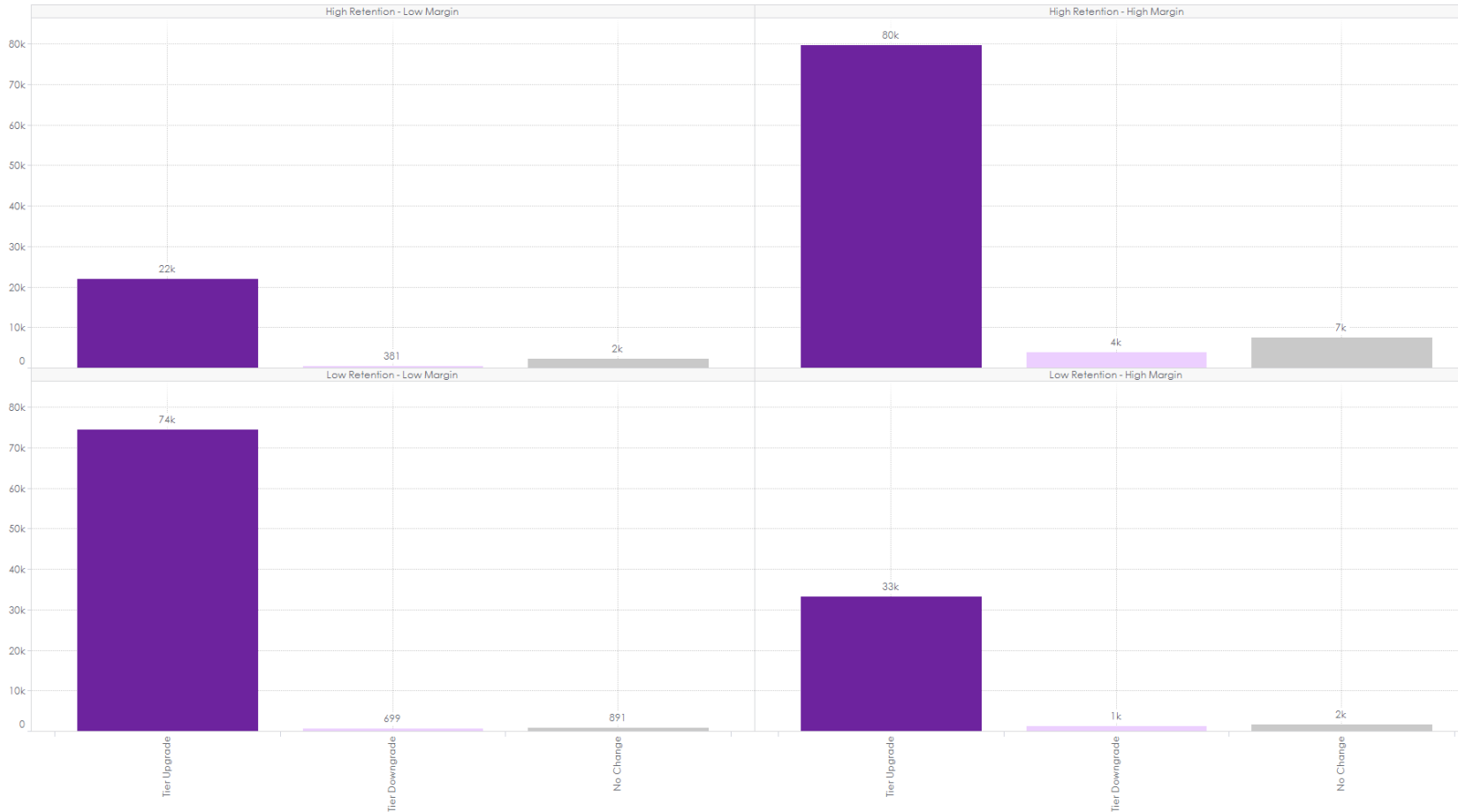
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# Insights

# Customer Counts by Tier Migration



- Large number of customers exhibit loyal behavior by migrating upwards in tier.
- This shows that the previous marketing efforts towards upgrading tiers has been highly successful

# Customer Profiles by Quadrant

A few key points are:

- High potential customer counts in Low Retention-Low Margin quadrant.
- ~61% of customers purchasing at a higher interval found in Low Margin quadrants.
- Direct mail is an expensive way to communicate, but we clearly see ~70% of customers delivering high margin returns with high average mail counts.

### High Retention - Low Margin

Quadrant Measurement	
Average Customer Future Value	\$347
Customer Count	25,756 (11%)
Average Customer Tenure (months)	123
Average Age	57
Average Income	\$45k
% Homeowner	63%
Average Purchase Interval	7
Average Mail Count	13



### High Retention - High Margin

Quadrant Measurement	
Average Customer Future Value	\$2k
Customer Count	93,922 (39%)
Average Customer Tenure (months)	163
Average Age	61
Average Income	\$51k
% Homeowner	75%
Average Purchase Interval	1
Average Mail Count	31



### Low Retention - Low Margin

Quadrant Measurement	
Average Customer Future Value	\$108
Customer Count	81,584 (34%)
Average Customer Tenure (months)	117
Average Age	54
Average Income	\$43k
% Homeowner	52%
Average Purchase Interval	9
Average Mail Count	8



### Low Retention - High Margin

Quadrant Measurement	
Average Customer Future Value	\$744
Customer Count	38,094 (16%)
Average Customer Tenure (months)	137
Average Age	57
Average Income	\$52k
% Homeowner	64%
Average Purchase Interval	4
Average Mail Count	17



Approach

Output

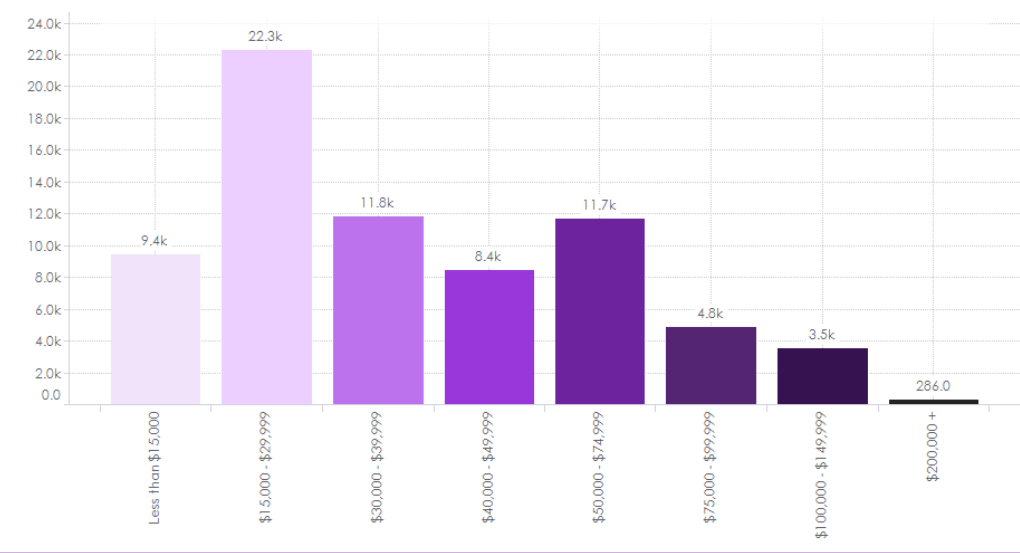
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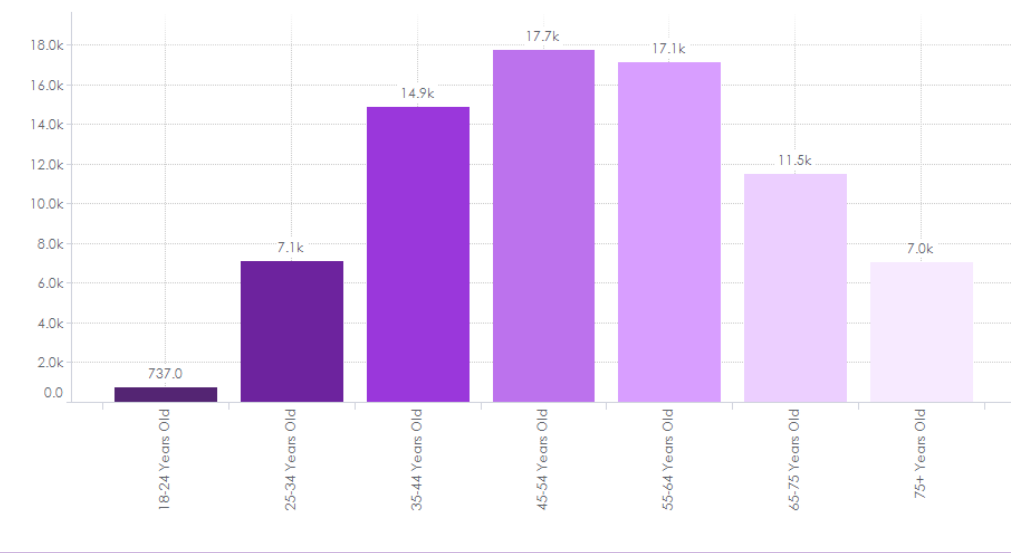


# Low Retention – Low Margin Demographics

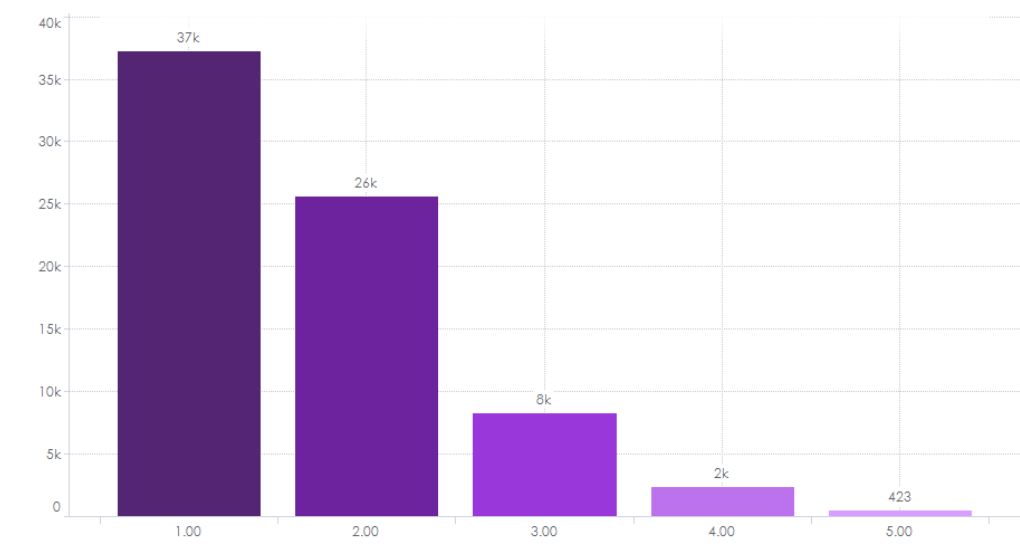
Income Range



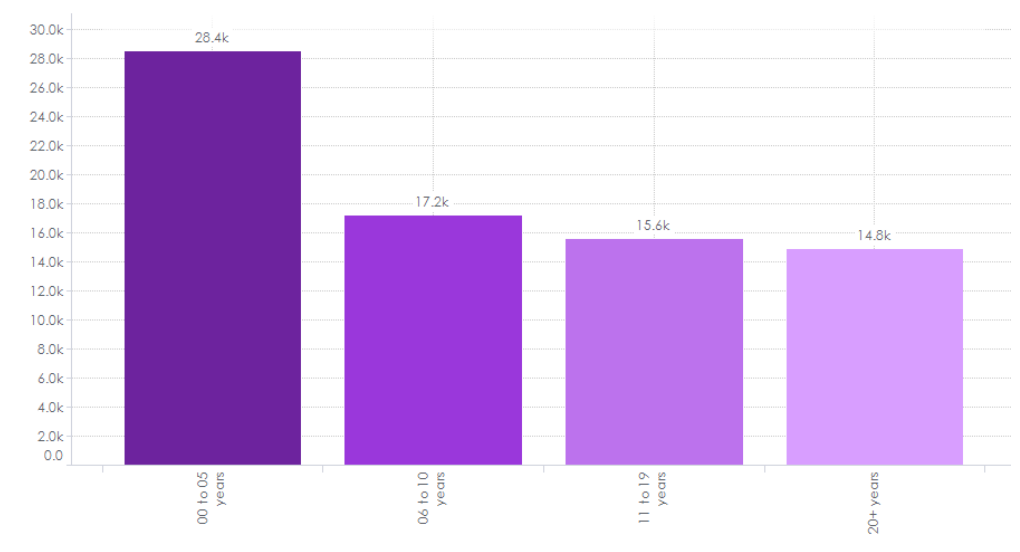
Age Segment



Adults In Household



Length of Residence



Approach

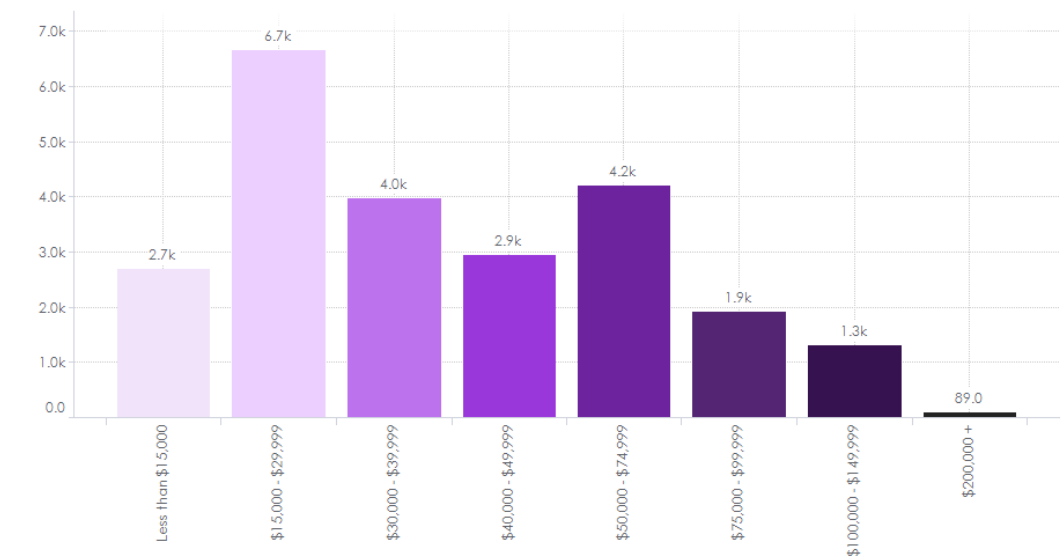
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Insights

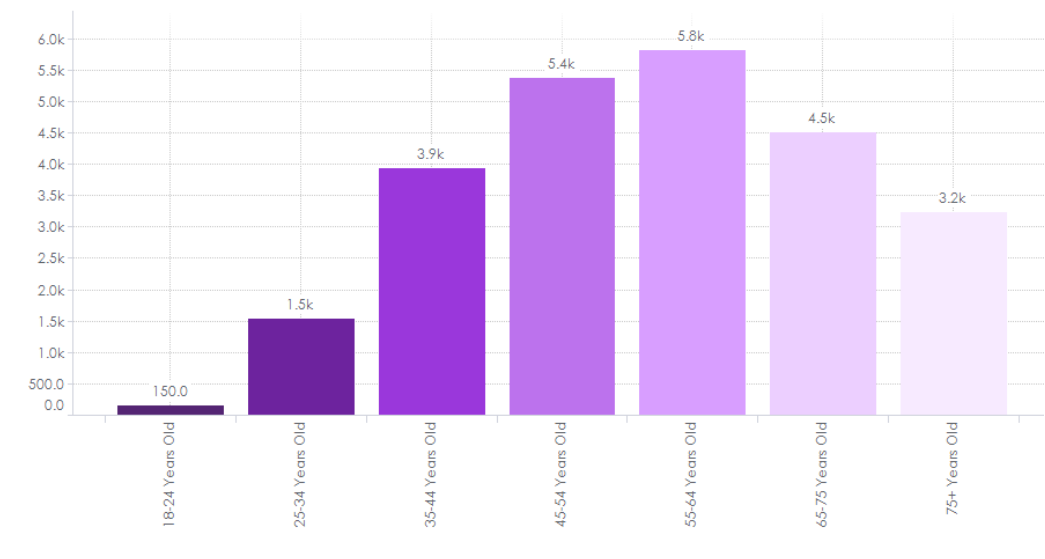
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# High Retention – Low Margin Demographics

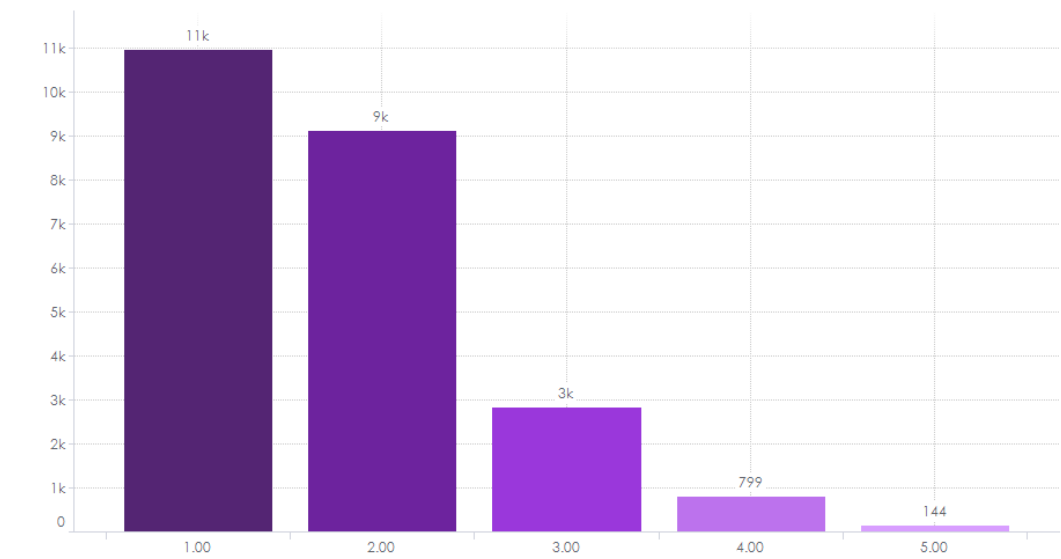
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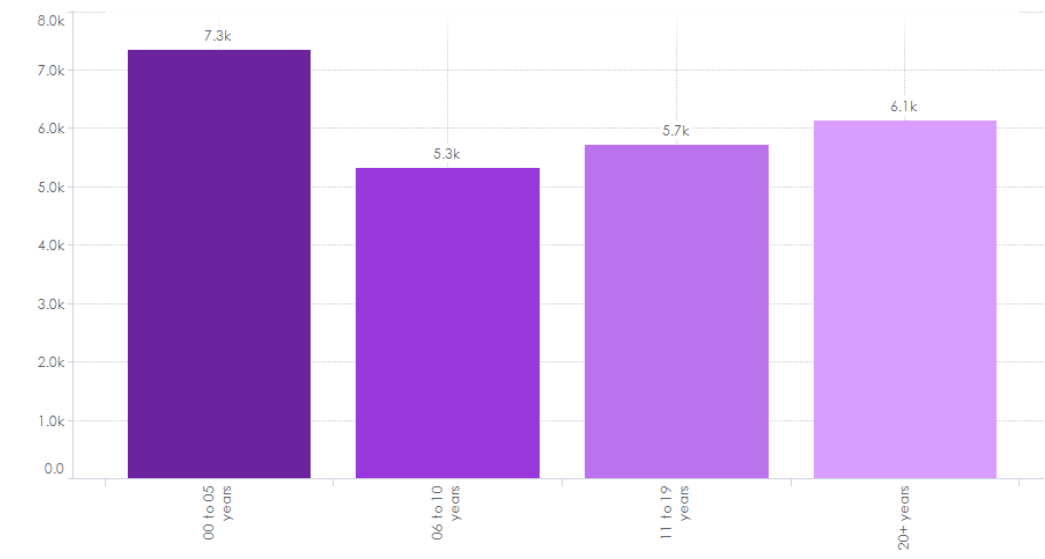
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Length of Residence



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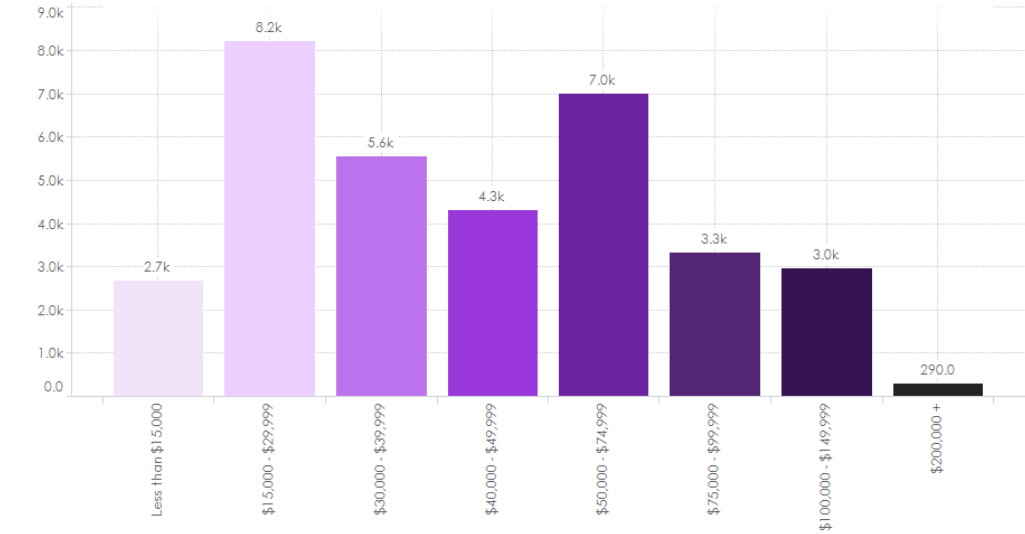
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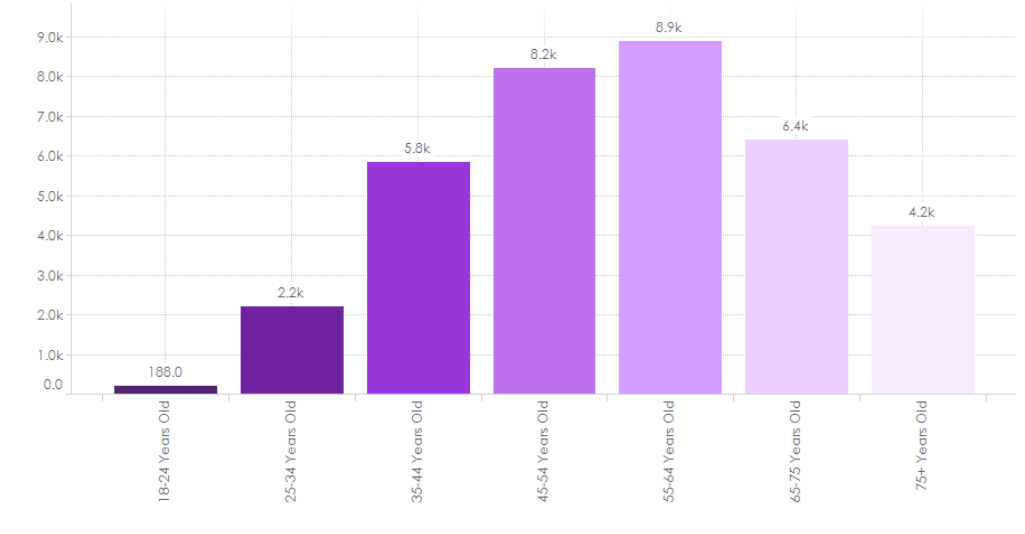
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# Low Retention – High Margin Demographics

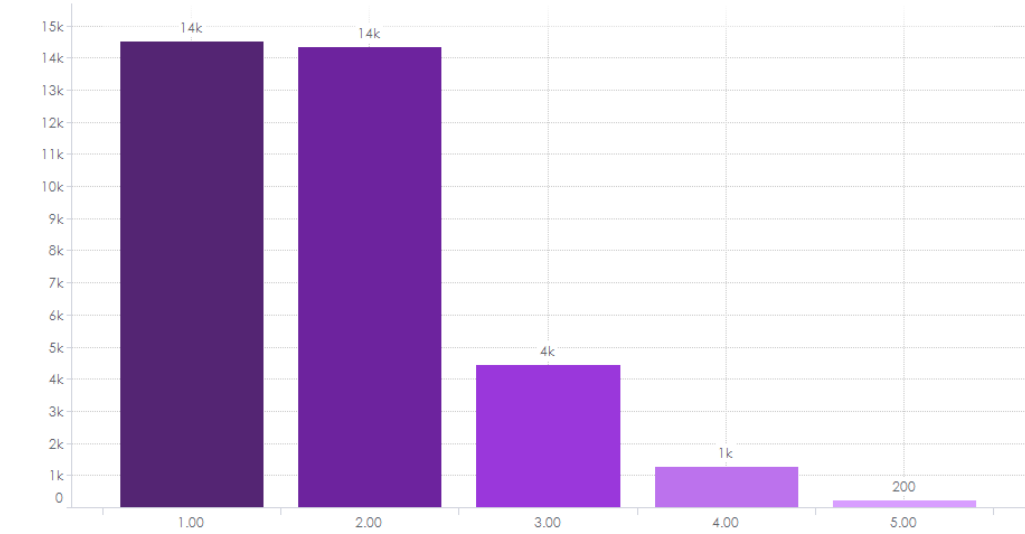
Income Range



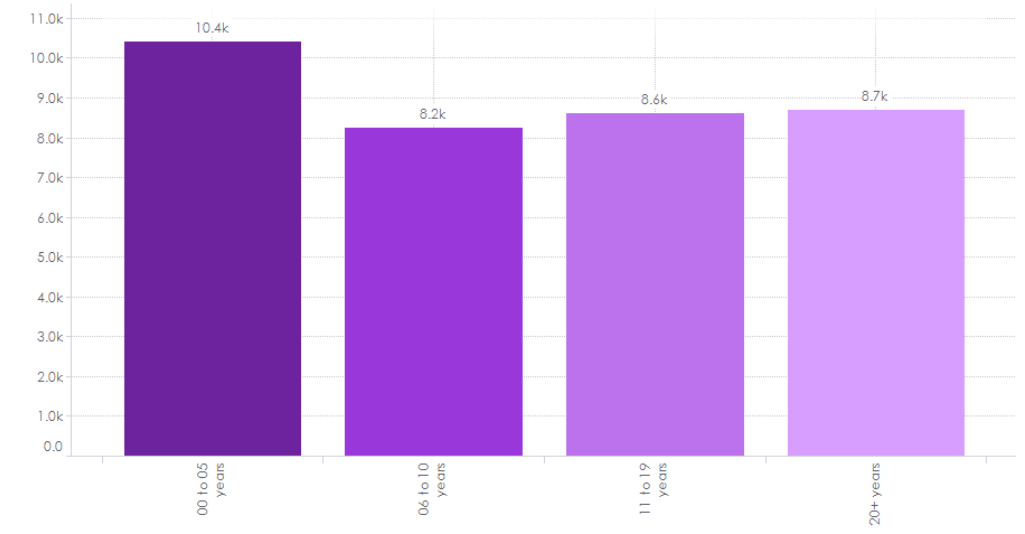
Age Segment



Adults In Household



Length of Residence



Approach

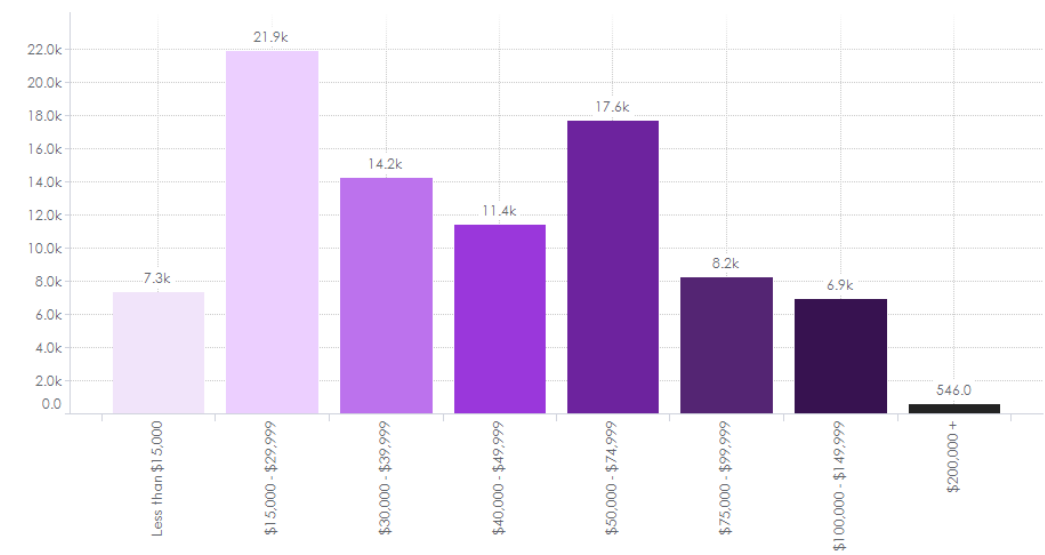
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Insights

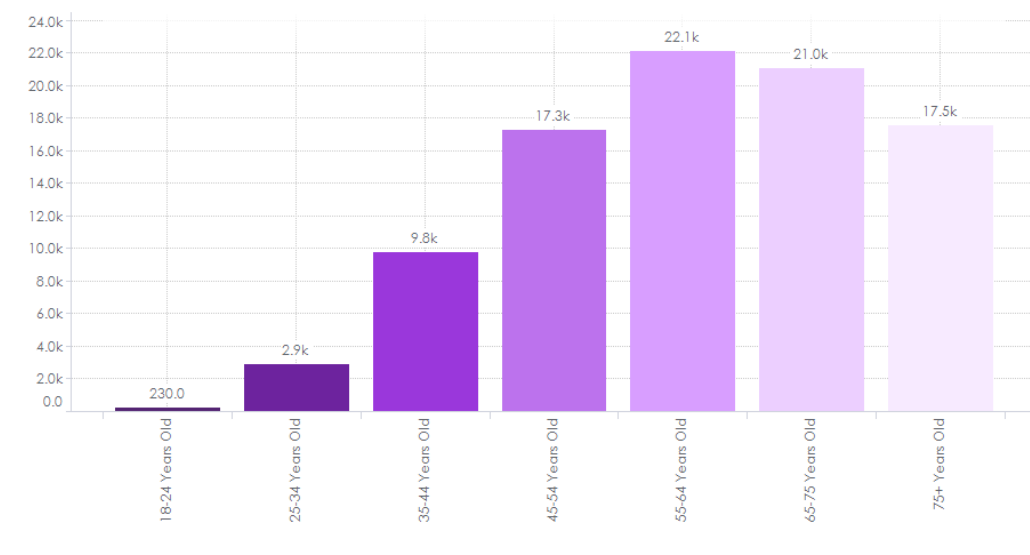
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# High Retention – High Margin Demographics

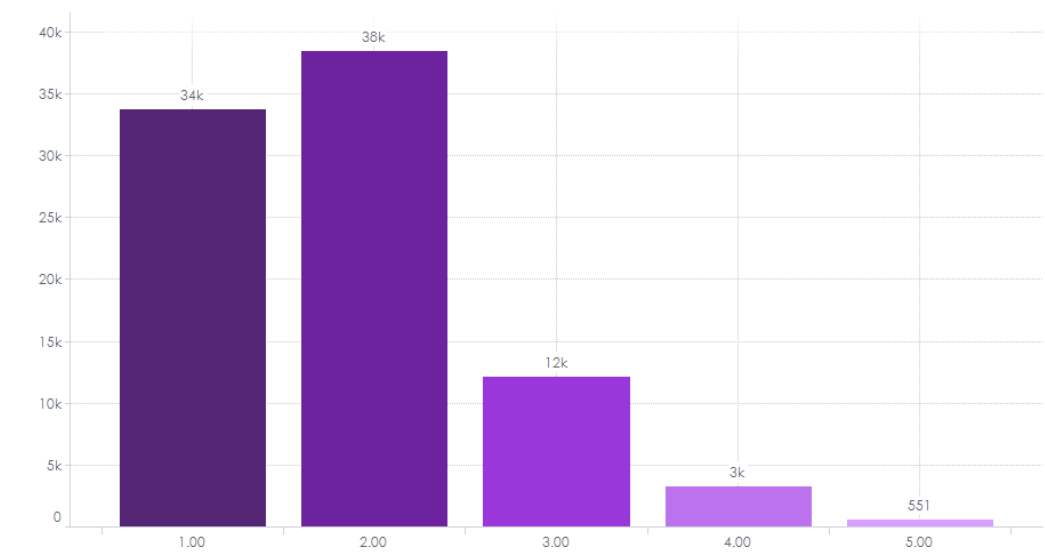
Income Range



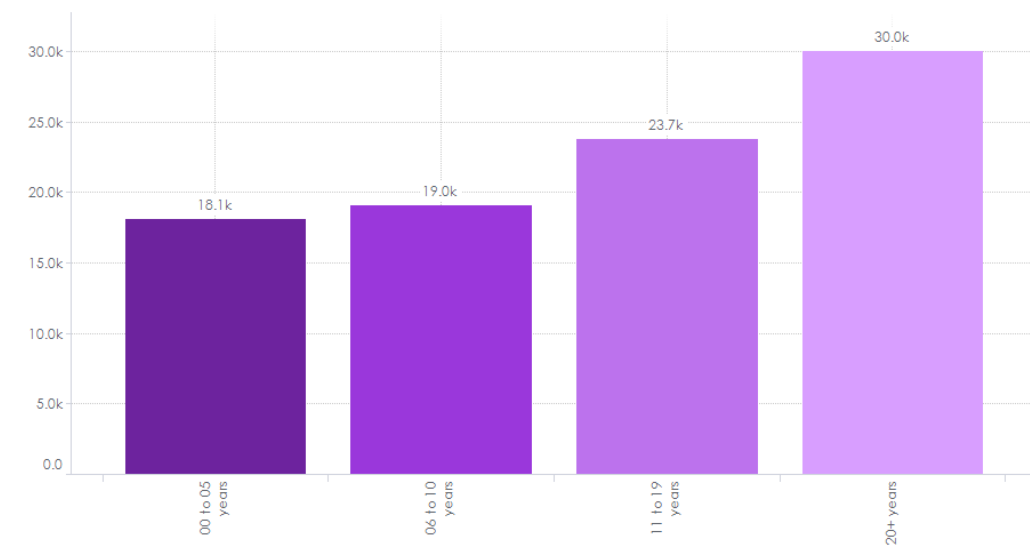
Age Segment



Adults In Household



Length of Residence



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# Next Steps

# Quadrant: Low Retention, Low Margin

Primary goals: Retain and Up Sell

- Retention Strategies
  - During contract:
    - Excellent customer service
    - Promote customer feedback loop
    - Educate on social responsibility program
    - Offers to extend mid-contract
  - Last 6 months of contract:
    - Offers to start new contract with reduced pricing and/or discounts on hardware for current product line
- Up Sell Strategies
  - During contract:
    - Offer every 3-6 months to upgrade technology in current product line
  - Last 6 months of contract:
    - Offer every month to upgrade technology in current product line

# Quadrant: High Retention, Low Margin

Primary goal: Up Sell

- Up Sell Strategy
  - Ongoing:
    - Offer every 3-6 months to upgrade technology in current product line
      - Because customers have a high likelihood of retention, our proposed strategy follows an ongoing rather than contract timed basis
      - Because this group are likely to schedule purchase, we know when customer will buy stuff again. We can utilize this by encouraging them to buy frequently by doing market basket analysis on current purchase, recommend the others stuff (cross-selling) associated with current needs or offer bundle packages for their current purchase to increase margin

# Quadrant: Low Retention, High Margin

Primary goals: Retain and Cross Sell

- Retention Strategies
  - During contract:
    - Excellent customer service
    - Promote customer feedback loop
    - Educate on social responsibility program
    - Offers to extend mid-contract
  - Last 6 months of contract:
    - Offers to start new contract with reduced pricing and/or discounts on hardware for current and new product lines
- Cross Sell Strategies:
  - During contract:
    - Offer and highlight a new product line every 3 – 6 months.
  - Last 6 months of contract:
    - Offer and highlight a new product line each month.

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# Quadrant: High Retention, High Margin

Primary goal: Cross Sell

- Cross Sell Strategy
  - Ongoing:
    - Offer and highlight a new product line every 3 – 6 months.
    - Because customers have a high likelihood of retention, our proposed strategy follows an ongoing rather than contract timed basis

Thank You!