Analysis of Auckland Properties

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Executive Summary

The dataset is about the information about property data in Auckland which retrieved from koordinates using Web API and Keys. It contains necessary information about each property. Along with statistical area information acquired from Stats.NZ and Socioeconomic Deprivation Indexes from Otago University, a full dataset has been built accordingly.

The analysis is based on 1050 observations for each of the 15 variables. The name of the variables is mostly self-explanatory. Few needs to explain more are CV, the Capital value of property; it is an APPROXIMATION of house value. SA1, an area unit classification. Age Groups, the number of people whose age is within 0 - 19 years old living in the SA1 unit area based on the 2018 census.

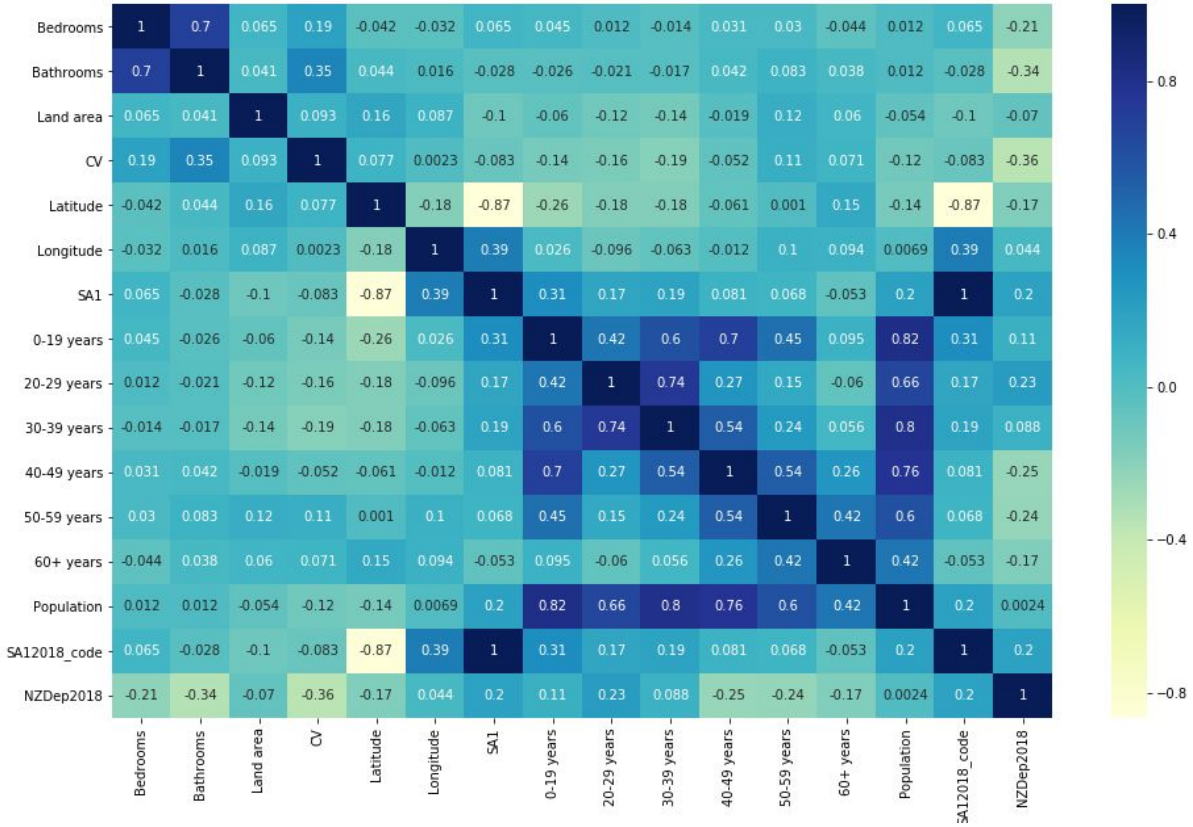
After exploring the data by calculating summary and descriptive statistics, and by creating visualizations of the correlation between each numerical variable, several highly correlated variables are found. After exploring the data, Linear Regression has been tested for this dataset training and the best model has been chosen based on the model accuracy.

Initial Data Exploration

The initial exploration of the data began with some summary and descriptive statistics. Individual Feature Statistics Summary statistics for minimum, maximum, mean, median, standard deviation, and distinct count were calculated for numeric columns. Data from certain column also have been processed to make later analysis convenient. For example, the data type of land area, I turn it from string to numerical data. As the fact that machine learning model can only work on numeric data.

Correlation and Relationships

The correlation between the numeric columns was calculated and observed in the below correlation plot.



The graph shows that the Population & 0~19 years group, Bedrooms & Bathrooms numbers and NZDep2018 & CV have a strong positive correlation with each other.

Analysis

In this analysis, Linear Regression has been trained with 70% of the dataset. Testing the model with remaining 30% data shows:

Algorithm	Accuracy	Relation
Linear Regression	0.9641184263062311	