



San Jose Rent Forecasting



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Agenda

- Introduction
- Problem Statement
- Objectives
- Analytical Approach
- Results
- Conclusion and Recommendations
- Challenges

Introduction

- Rent Increase Trends in San Jose
- Why Is Rent Increasing?
 - Job Market
 - Fast Growing Employment
 - Lack of public Transportation to Downtown San Jose

Problem Statement

- How much will rent prices increase in San Jose in the next 3 years?
 - People are fearful of how much rent will keep increasing in the coming years
- The rent situation is forcing people to have to move

Objective

- Develop a Rent Forecast Model
 - 2022, 2023, 2024
- Develop Appropriate Solutions for Pricing
- Provide Insights for Future San Jose Residents

Methodology

1. Collect Data
 - a. *American Community Survey*
2. Clean Data
3. Forecast & Visualize in R Studio
 - a. Linear Regression
 - i. Holt's Model

Descriptive Statistics

Table 1: Aggregated Data

Date	Rent in San Jose
2005	\$1,568.00
2006	\$1,553.00
2007	\$1,595.00
2008	\$1,700.00
2009	\$1,634.00
2010	\$1,618.00
2011	\$1,605.00
2012	\$1,684.00
2013	\$1,754.00
2014	\$1,884.00
2015	\$2,013.00
2016	\$2,103.00
2017	\$2,227.00
2018	\$2,275.00
2019	\$2,304.00
2020	\$2,390.00
2021	\$2,997.00

Year		Rent	
Min.	:2005	Min.	:1553
1st Qu.	:2009	1st Qu.	:1618
Median	:2013	Median	:1754
Mean	:2013	Mean	:1936
3rd Qu.	:2017	3rd Qu.	:2227
Max.	:2021	Max.	:2997

Figure 1: Descriptive Statistics

Visualization

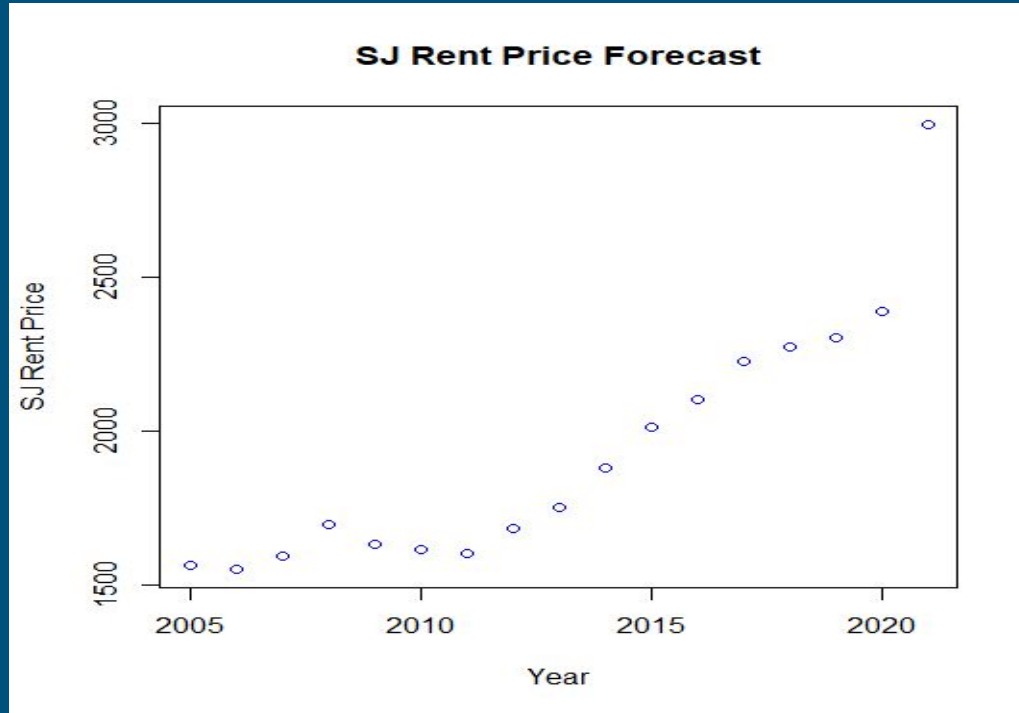
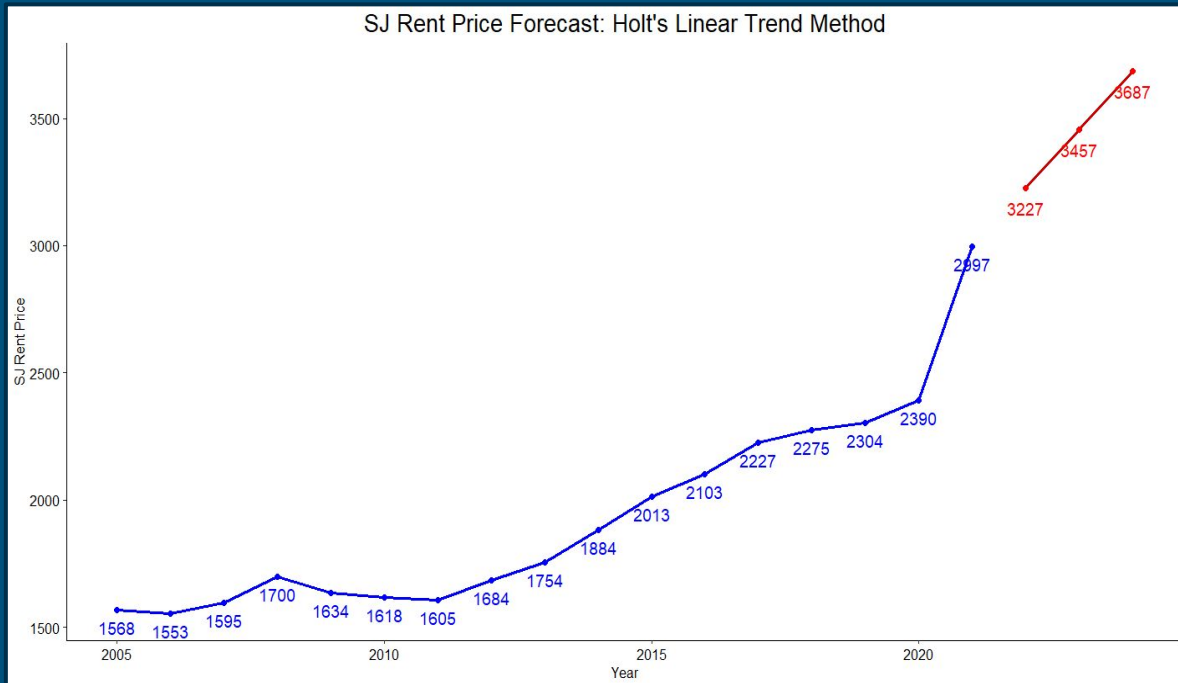


Figure 2: Plot of Aggregated Data

Analytical Approach - Forecasting

- Holt's Linear Trend Forecast
 - $\hat{y}_{t+h} = \ell_t + hb_t$
- Independent Variable: Year
- Dependent Variable: Rent Price in San Jose
- Assumptions:
 - Non-Seasonal Annual Median Rent Price
 - Recent Data is More Valuable

Results



PREDICTED:

2022 Price: \$3227.08

2023 price: \$3457.21

2024 Price: \$3687.35

MAPE Error: 7.68%

ACTUAL:

2022: \$3085.00

Figure 3: Plot of San Jose Rent Price Forecast

Conclusion & Recommendations

Based on Holt's Linear Trend Forecast, we conclude that rent prices will face a rapid increase over the next three years.

Possible Solutions:

1. Lower Construction Costs
2. Invest in Public Transportation
3. Financial Assistance
4. Rent Control Policies

Lessons Learned

- Housing market
 - Housing Bubble
 - Inflation
 - Create Affordable Housing
- Time Series Regression
 - Holt's Linear Trend Forecast
 - Forecast Library (R)
- Creating viable business proposals

Challenges

- Project Identity
 - **Solution:** Ask for help from Professor Etu & Jordan
- Late Request for Help
 - **Solution:** Manage time well and do not put off asking for help
- Finding the correct trend analysis to perform
 - **Solution:** Research and understand which trend analysis can be used with our data

*Thank
You!!!!*