WSU GLOBAL Student

Housing Analysis:

A Data-Informed Living Solutions Initiative

By Udeme Ekanem, Justin Kalikawe

Introduction

Purpose of the Analysis

The primary objective of this report is to conduct a detailed analysis of housing satisfaction among international students at Wichita State University (WSU). By examining various factors such as monthly rent, type of residence, perceived safety, and duration of stay in Wichita, we aim to gather insights that will guide the development of a website dedicated to helping international students find the best available housing options. This website will serve as a crucial resource for students, providing them with tailored information to make informed decisions about their accommodation, thereby enhancing their overall experience at WSU.

Dataset Description and Relevance

The dataset for this analysis is derived from a comprehensive questionnaire filled out by international students at WSU, with a focus on their current housing situations. The data encompasses a wide range of variables, including but not limited to, the monthly rent of the housing unit, the students' overall satisfaction with their living conditions, the type of residence they are occupying (apartment or house), their perceptions of safety in their living area, and the duration of their stay in Wichita. This dataset is particularly valuable as it offers a real-life snapshot of the housing experiences of international students, making it an ideal foundation for developing a user-centric and effective housing information platform.

Data Cleaning and Preprocessing

Data Cleaning Process

The initial phase of this project involved a meticulous data cleaning process, crucial for ensuring the accuracy and reliability of the analysis. This process included:

- Selecting the most relevant columns for the analysis, focusing on variables directly related to housing satisfaction and choices.

- Rigorously handling missing or incomplete data, particularly in pivotal columns such as monthly rent and overall living satisfaction, to maintain the integrity of the analysis.

- Converting data into appropriate formats, particularly numerical conversions for rent and satisfaction levels, to facilitate quantitative analysis.

Description of Columns Used

The analysis focused on key columns that are most relevant to the housing decisions of international students:

- **Monthly Rent**: Provides insight into the affordability and range of housing options available.

- **Overall Satisfaction with Current Living Conditions**: A direct measure of students' contentment with their housing, reflecting various underlying factors.

- **Type of Residence**: Differentiates between apartments and houses, offering a perspective on students' housing preferences.

- **Perceptions of Safety in Vicinity of Residence**: Indicates the importance of safety in housing satisfaction and choice.

- **Duration of Stay in Wichita**: Helps to understand if the length of stay in the city impacts housing satisfaction.

Exploratory Data Analysis (EDA)

Summary Statistics

An initial exploratory analysis provided key insights into the distribution and characteristics of the main variables. This phase was crucial in understanding the general trends and patterns in the dataset, laying the groundwork for more detailed analysis.

Visualizations

The EDA phase included the creation of several visualizations:

1. **Histogram of Monthly Rent**: This visualization offered a clear view of the range and distribution of rent costs among the students, after adjusting for outliers.

2. **Histogram of Living Satisfaction**: Showcased the distribution of satisfaction levels, indicating the general contentment of students with their housing situations.

Simple Linear Regression Analysis

Regression Model Description

To explore the relationship between monthly rent and living satisfaction, a simple linear regression model was employed. This model aimed to quantify the extent to which rent costs impact students' satisfaction with their housing.

Summary of Findings

The regression analysis yielded the following key findings:

- **Coefficient**: The analysis revealed a minimal positive coefficient for monthly rent, suggesting a very slight increase in satisfaction with higher rent, though the effect was negligible.

- **R-squared**: The low R-squared value underscored the fact that monthly rent is not a dominant factor in predicting housing satisfaction among international students.

Visualization

The analysis included a scatter plot with a regression line, visually representing the weak relationship between rent and satisfaction.

Analysis of Additional Factors

Safety Perceptions vs. Living Satisfaction

An in-depth analysis of the relationship between students' perceptions of safety and their satisfaction with housing revealed that safety is a crucial factor in housing decisions. Different levels of perceived safety corresponded to varying satisfaction levels, highlighting the importance of this factor in the overall housing experience.
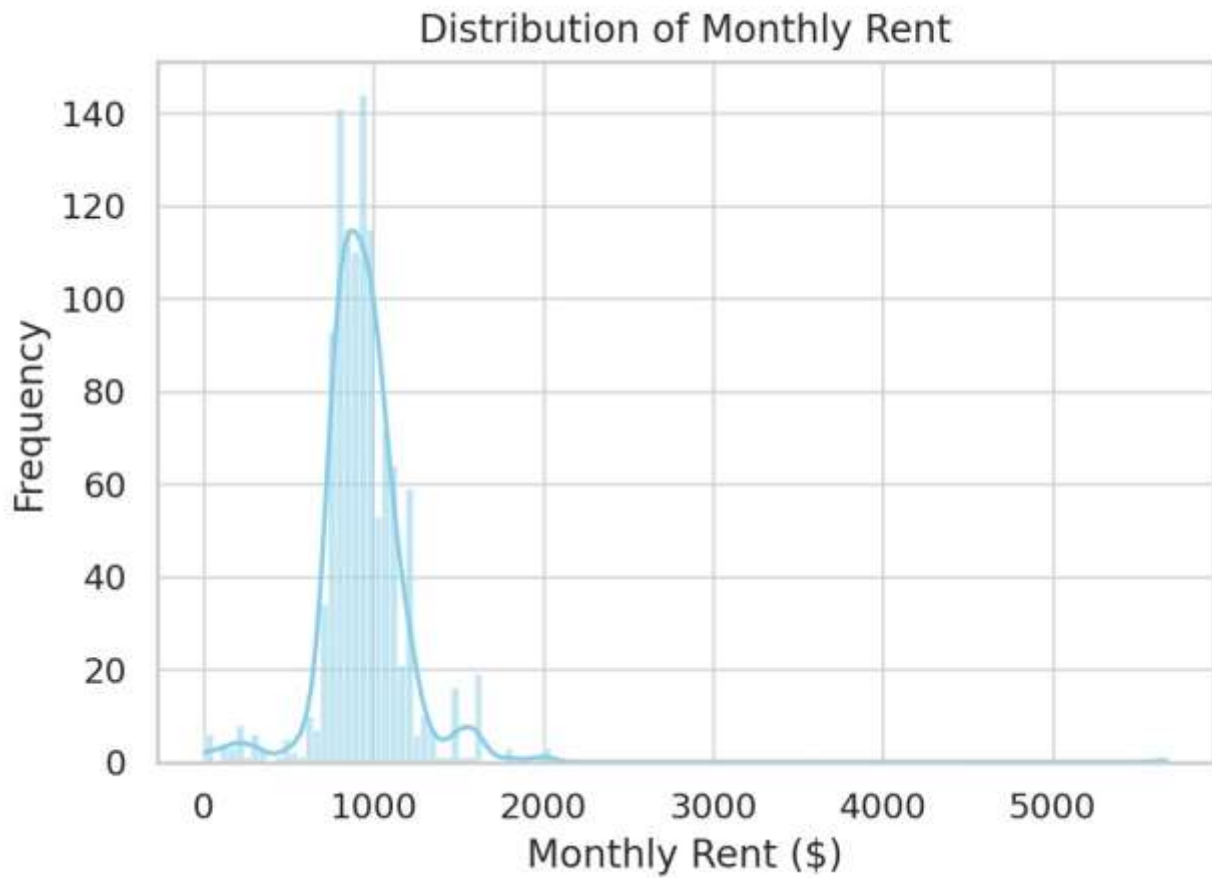
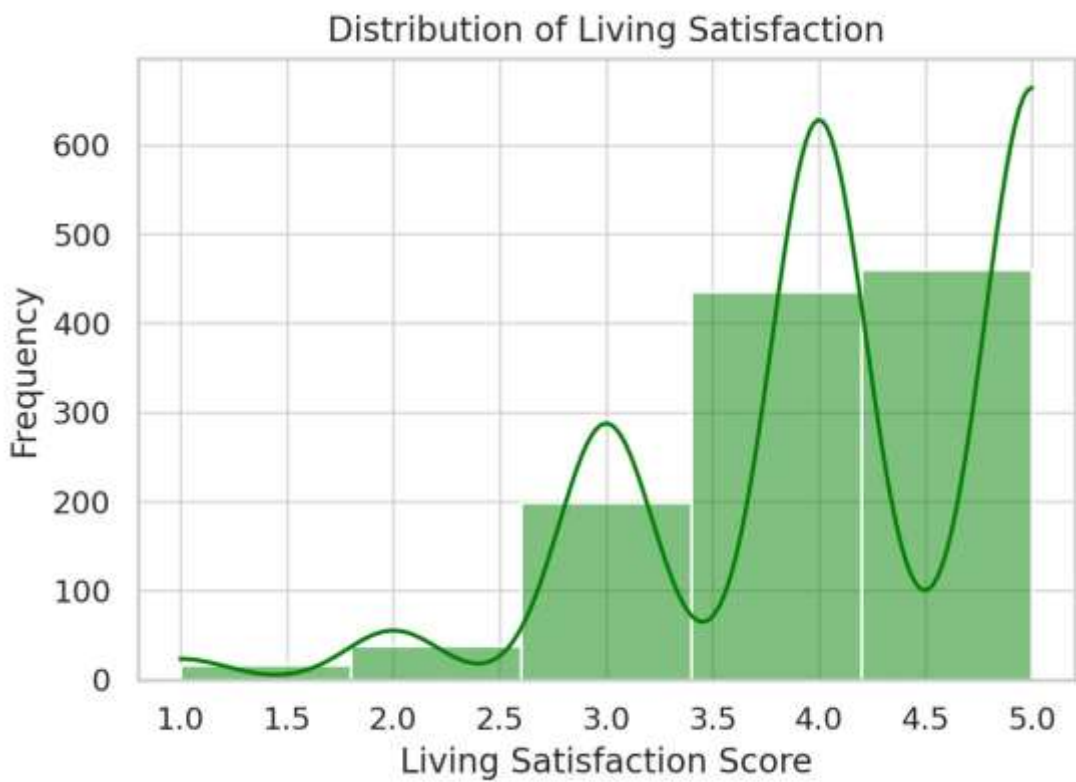**Type of Residence vs. Living Satisfaction**

A comparative analysis between the types of residences (apartments vs. houses) and living satisfaction showed notable differences in satisfaction levels. This finding is essential in understanding the preference patterns among international students regarding their choice of housing.
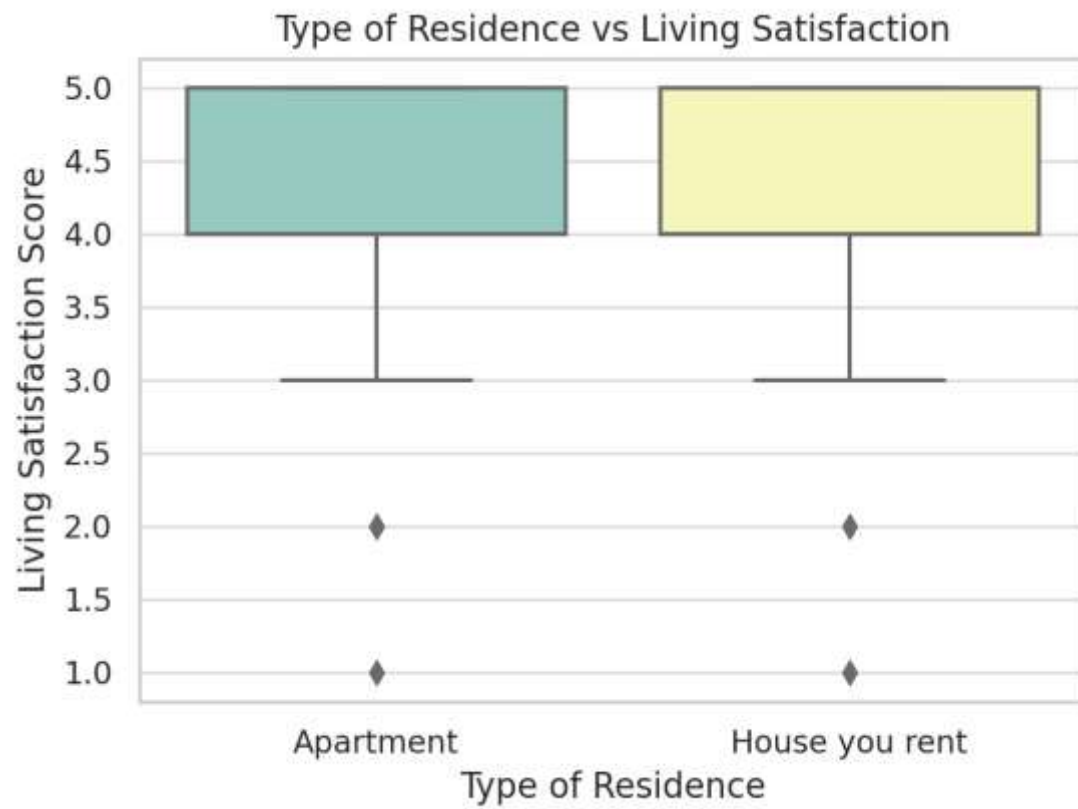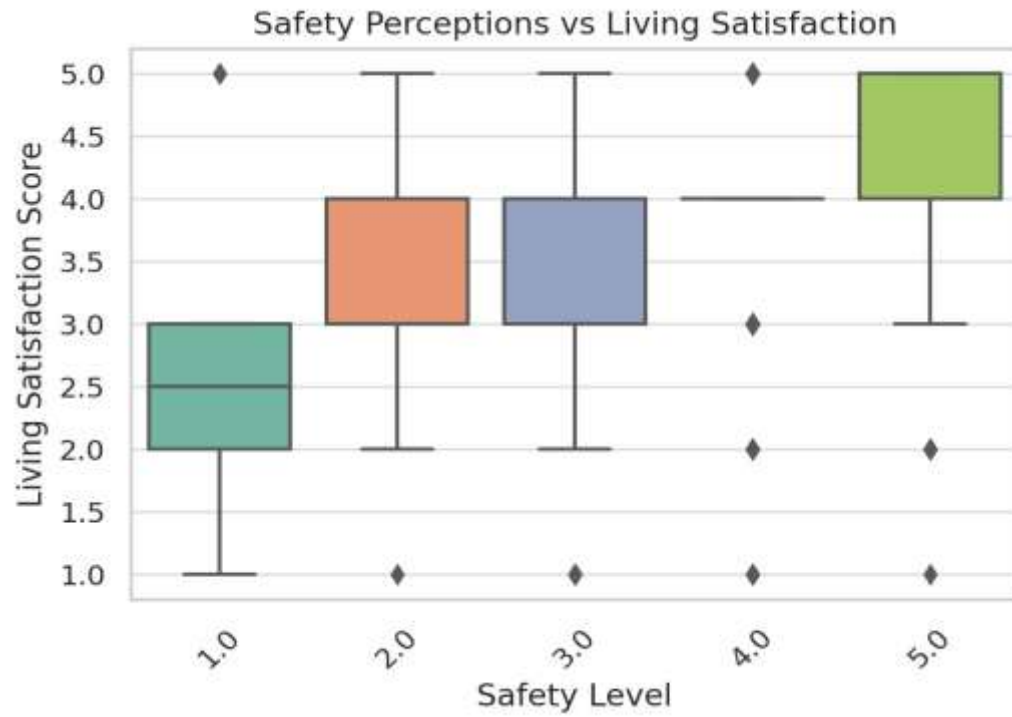
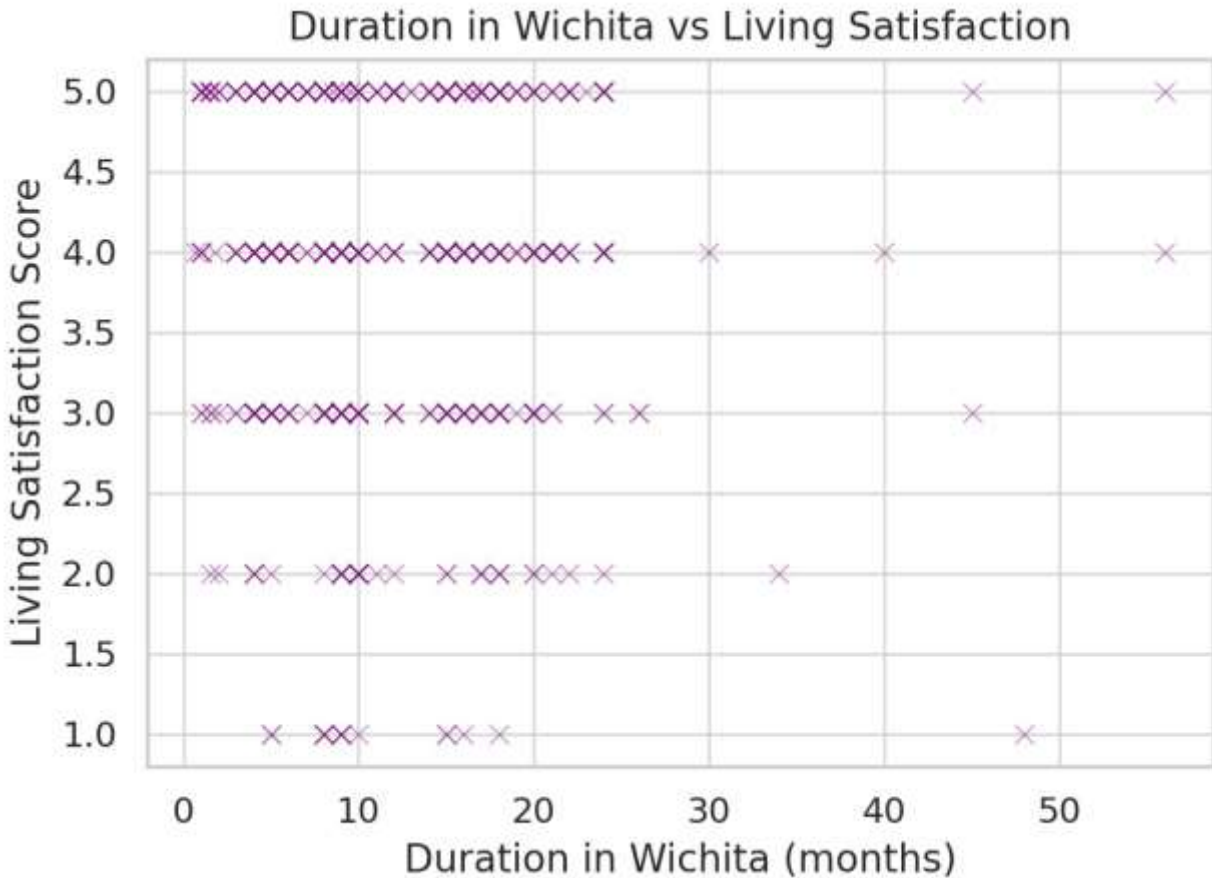**Duration in Wichita vs. Living Satisfaction**

The relationship between the duration of students' stay in Wichita and their housing satisfaction was also examined. The analysis did not find a significant correlation, suggesting that the length of stay in Wichita does not majorly influence students' satisfaction with their housing.

Visualizations

Distribution of Monthly Rent

Distribution of Living Satisfaction

Rent vs Living Satisfaction

Safety Perceptions vs Living Satisfaction

Type of Residence vs Living Satisfaction

Duration in Wichita vs Living Satisfaction

Each aspect of this analysis was accompanied by a tailored visualization, providing a clear and concise graphical representation of the relationships between these factors and living satisfaction.

Conclusion

Key Findings

The data analysis project on WSU's international student housing satisfaction revealed:

1. **Monthly Rent and Living Satisfaction**: A statistically significant but minimal relationship between rent and satisfaction. Higher rent doesn't necessarily equate to higher satisfaction, suggesting students value other aspects more.

2. **Influence of Safety Perceptions and Residence Type**: Safety perceptions and the type of residence (apartment vs. house) greatly influence housing satisfaction. These factors are crucial in students' housing decisions, overshadowing the importance of rent costs.

3. **Duration of Stay in Wichita**: The length of stay in Wichita shows no significant impact on housing satisfaction, indicating that students' satisfaction levels are consistent regardless of how long they have been in the city.

Recommendations for Website Development

Based on these findings, the following are recommended for the WSU housing information website:

1. **Detailed and User-Friendly Interface**: The website should offer comprehensive information on housing options, focusing on safety, residence type, and amenities, presented in an easy-to-navigate format.

2. **Customizable Search Filters**: Implement filters for rent range, type of residence, and safety ratings to help students find housing that meets their specific needs.

3. **Interactive Elements**: Include features like interactive maps, virtual tours, and student reviews to give a complete perspective of housing options, helping students make informed decisions.

Recommendations for Apartment Complexes based on Research Findings.

Based on the research findings, some of the apartment complexes the website can recommend to students are:

- Parc At 21st
- Seventeenth
- Brickstone
- Tall Oaks

Final Summary

In conclusion, this analysis has provided valuable insights into the factors influencing housing satisfaction among international students at WSU. While the cost of rent plays a role, it is the perceptions of safety and the type of residence that more significantly impact satisfaction. These findings offer a clear direction for the development of a housing information website that is not only informative and user-friendly but

also tailored to the unique needs and preferences of international students, ultimately enhancing their living experience in Wichita.

Appendices

- *Exploratory Data Analysis | US EPA*, [www.epa.gov/caddis-vol4/exploratory-data-analysis. Accessed 11 Dec. 2023](www.epa.gov/caddis-vol4/exploratory-data-analysis.).

- "What Is Exploratory Data Analysis?" IBM, www.ibm.com/topics/exploratory-data-analysis. Accessed 10 Dec. 2023.

Authors

Udeme Ekanem WSU ID: E578C949

Justin Kalikawe WSU ID: G959P526