**Condo 2**

**Condo**

**Part A**

**Confidence Interval**

1. The 95% and 99% confidence intervals for the variables are as follows:
2. **Age:**

At 95% CI

Lower bound: 16.3606853 Upper bound: 19.9077711

At 99% CI

Lower bound: 15.902273 Upper bound: 20.3661834

1. **Life Q:**

At 95% CI

Lower bound: 61.8175877 Upper bound: 63.2696606

At 99% CI

Lower bound: 61.6299271 Upper bound: 63.4573212

1. **Price:**

At 95% CI

Lower bound: 199.33 Upper bound: 214.48

At 99% CI

Lower bound: 197.38 Upper bound: 216.43

1. **Bedroom:**

At 95% CI

Lower bound: 2.0203641 Upper bound: 2.35547483

At 99% CI

Lower bound: 1.97705562 Upper bound: 2.3987833

1. **Insurance:**

At 95% CI

Lower bound: 0.298068916 Upper bound: 0.453608936

At 99% CI

Lower bound: 0.273666591 Upper bound: 0.478011261

1. **Pool:**

At 95% CI

Lower bound: 0.588610318 Upper bound: 0.740248743

At 99% CI

Lower bound: 0.564820106 Upper bound: 0.764038955

1. **Fees:**

At 95% CI

Lower bound: 5244.221195 Upper bound: 6229.604308

At 99% CI

Lower bound: 5116.873931 Upper bound: 6356.951572

The confidence intervals are meaningful. These limits were obtained using the t-distribution methodology since the sample size is small and the sample standard deviation got estimated from the sample. One cause for concern when using this methodology is that it takes into account the degrees of freedom thereby providing a wider confidence interval when compared to the z-score distribution if a sample size is small. This situation occurs because the t-distribution always accounts for the added uncertainty that gets introduced when estimating the population standard deviation from the sample. The variance for the population that the samples got extracted from was not provided, hence it is unknown. For the t-distribution methodology, the sample means, sample standard deviations, degrees of freedom together with the t-values that are associated with the confidence levels will get used to calculate the confidence interval. There was no other option available to obtain the confidence intervals.

1. Price: 61.74496644%
2. Bedrooms: 74.4966443%
3. Insurance: 62.41610738%
4. Pool : 66.44295302%
5. Fees: 55.03355705%
6. Age: 75.83892617%
7. Life Q: 86.57718121%

To find out the nature of the percentages that have been received that is concerned with the distribution of the data in one standard deviation of the mean, there are two scenarios that get considered. The first one is when the data represents a sample of the total population and the second one is when the data represents the complete population. For the first scenario, it is mostly assumed that the data always represents the entire population and the variability is calculated from the sample data hence depicting the level in which the data used for the sample will be located in one standard deviation of the mean for all variables. Hence, the expected percentages that are got for this sample depend on the underlying distribution present in the population and the size of the sample. The percentages that have been obtained from the analysis should be a reasonable estimate for the population falling within the one standard deviation if the sample is a genuine representative.

In the second scenario, there will be no variability to account for from the population data if the data is received from a complete population. The lack of variability in this second scenario stems from the fact that there is no sampling that is taking place. At this point, each data point is found within the one standard deviation of the mean that will provide an expected 100% for all the variables, by definition. The different distinctions between the pair of scenarios comes up due to the characteristics that are inherent of sampling and variability.

When working with a sample, there exists an inherent uncertainty and variability when estimating population parameters based on the sample. The observed percentages serve as estimations of the population, derived from the sample, and can exhibit variance due to sampling fluctuations. Conversely, when working with the entire population, as all data points are known, there is no sampling process involved, and the population parameter values are certain. Consequently, the variation in expected percentages between these two scenarios is expected. In the sample scenario, the observed percentages reflect the uncertainty introduced by the sampling process, whereas in the population scenario, the expected percentages are deterministic, as all data points are known.

**Part B**

The selected report, titled "Vacation Rental Market Report," was published by the Vacation Rental Management Association (VRMA) in 2022. It is readily accessible to the public as a free download on the VRMA website. The VRMA, a reputable organization recognized for its extensive research and expertise in the vacation rental industry, presents a comprehensive overview of the United States' vacation rental market in this report. It offers valuable insights into various industry aspects, including market size, growth, types of vacation rentals available, factors influencing demand, market challenges, and future trends and prospects. Visual aids such as charts and graphs are incorporated to enhance comprehension and data visualization.To gather the necessary data, the VRMA utilized diverse methods, including independent research, data collection from government sources, and industry surveys. Their research efforts involved analyzing existing market data, monitoring industry trends, and leveraging the expertise and networks of industry professionals. By incorporating government data, the report gains credibility through the use of official statistics and reliable sources. Additionally, insights from industry surveys offer valuable perspectives from vacation rental owners, managers, and customers. These data collection methods employed by the VRMA are reasonable and appropriate, ensuring a comprehensive understanding of the vacation rental market. The combination of internal research, government data, and industry surveys provides a multi-faceted approach that enhances the reliability and accuracy of the findings while mitigating potential biases.

The report incorporates various statistical analysis techniques to draw meaningful conclusions from the collected data. Notably, regression analysis is employed to identify and quantify the factors influencing demand for vacation rentals (Mishra et al., 2019). By examining the relationships between variables, regression analysis deepens the understanding of market dynamics and the impact of different factors. This inclusion of statistical analysis adds rigor and objectivity to the report, enabling evidence-based insights and informed decision-making. The data provided in the report offers opportunities for further analysis to gain deeper insights into the vacation rental market. One potential analysis involves exploring regional differences by segmenting data based on geographic areas. This would unveil variations in market size, growth rates, pricing trends, and demand patterns across different regions, thereby providing valuable information for investors, property owners, and managers to target specific regions based on market dynamics and opportunities. Another analysis worth considering is the examination of how property characteristics, such as size, amenities, location, or proximity to attractions, influence rental rates or occupancy rates. Understanding these relationships empowers property owners and managers to optimize their offerings and make informed decisions regarding property improvements and marketing strategies. Furthermore, investigating the relationship between community engagement and customer satisfaction in vacation rental neighborhoods would be worthwhile (Hati et al., 2021). This analysis would entail assessing customer reviews, ratings, or feedback regarding the neighborhood's amenities, safety, accessibility, and overall experience. Valuable insights gained from such an analysis would aid property owners, managers, and destination marketers in enhancing community engagement initiatives, improving customer experiences, and promoting positive neighborhood attributes.

The information presented in the report is valuable for various stakeholders in the vacation rental industry. Vacation rental owners can leverage the insights to make informed decisions about property pricing, amenities, and marketing strategies. Vacation rental managers can optimize property management practices, identify growth opportunities, and enhance customer experiences using the findings. Government officials can shape policies and regulations that foster a healthy and sustainable vacation rental market based on the report's information. Investors can assess the market's investment potential and understand the key growth drivers by referring to the report. The report focuses on the period from 2019 to 2021, capturing years characterized by significant growth in the vacation rental market. This timeframe provides an up-to-date understanding of market trends, challenges, and opportunities that align with the needs and interests of industry stakeholders. While the report offers a comprehensive analysis of the vacation rental market, additional information and data points could have been valuable. For instance, information regarding the impact of the COVID-19 pandemic on the vacation rental industry, including changes in booking patterns, cancellations, pricing trends, and occupancy rates during the pandemic, would provide a more holistic view of the industry's resilience and adaptive strategies (Liang et al., 2021). Furthermore, insights into the future of the vacation rental market, such as forecasts, industry projections, or expert opinions on emerging trends, technological advancements, and evolving customer preferences, would be beneficial for stakeholders to anticipate market shifts and capitalize on future opportunities.

The absence of certain information in the report can be attributed to various factors. Firstly, the report's publication in 2022 means that the authors had to rely on data available up until that point. The ongoing nature of the pandemic and its continuously evolving impact may have posed challenges in gathering comprehensive data on its effects. Additionally, the report's primary focus may have been to provide a comprehensive analysis of the market's growth trajectory and key drivers during recent years. One aspect of the report that stood out is the substantial growth of the vacation rental market and the increasing popularity of vacation rentals as an accommodation option. This growth reflects evolving travel preferences and the rising demand for unique and personalized travel experiences. Understanding the market's growth trajectory sheds light on the changing landscape of the hospitality and travel sectors, which is intriguing.

In conclusion, the "Vacation Rental Market Report" published by the VRMA in 2022 is a valuable resource providing insights into the United States' vacation rental market. The report covers a wide range of information, utilizing reliable data collection methods and statistical analysis techniques. It presents opportunities for further analysis, including exploring regional differences, assessing the impact of property characteristics, and examining community engagement's influence. The information in the report can be effectively utilized by various stakeholders in the vacation rental industry for informed decision-making and strategy development. While the report focuses on recent years, the absence of information regarding the pandemic's impact and future market projections indicates areas that could have been further explored. Overall, the report contributes to a comprehensive understanding of the vacation rental market, offering valuable insights for industry professionals, investors, and policymakers.

**References**

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