SCHOOL OF ECONOMICS AND MANAGEMENT

Bachelor's Programme in Development Studies

Loving Hawai'i to Death

A Critical Analysis of Tourism's Impact on Housing Affordability.

By

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Abstract

As destinations across the world begin to show signs of overtourism, further evaluation of the tourism industry is necessary. Current research is largely focused on understanding the relationship between tourism and housing prices, but neglect to take a destination's overall housing affordability into consideration. Thus, the study examines the relationship between tourism and housing affordability in Hawai'i. A panel data analysis is designed under the premise that tourist activity varies across time and space: through accommodation, the concentration of visitors, over seasons, and influences the overall vulnerability of a destination to the industry. Through a critical theoretical framework, the findings reveal that tourism accommodation in Hawai'i exacerbates the housing affordability crisis.

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List of Abbreviations

ACS	American Community Survey
DBEDT	Hawai'i State Department of Business, Economic Development & Tourism
RTI	Rent-to-Income Ratio
UHERO	Department of Economic Research at the University of Hawaii
UNWTO	United Nations World Tourism Organization
USD	United States Dollar

1. Introduction

In 2023, tourism's direct GDP brought in an estimated 3.4 trillion USD, making it one of the most profitable industries in the world (UNWTO, 2025). Unsurprisingly then, the academic attention surrounding this topic is immense. Its historical beginnings centered around using tourism as a source of economic growth. In this tourism-led growth hypothesis, tourism encourages development because it serves as a valuable source of foreign exchange and investment. However, the discourse of development literature has shifted from viewing tourism as a universal source of prosperity to one which acknowledges that its benefits come at a heavy toll (Mowforth & Munt, 2016). This realization has led to increased academic interest on the phenomena of overtourism — or when a destination's "physical, psychological, economic, and social capacity has been exceeded at a particular time" (Sharpley, 2020, p. 1940). This concept can be described as when the negative effects of tourism activity outweigh the potential gains from the industry, leaving local residents with the burden of its negative environmental, sociocultural, and economic aspects (Milano et al., 2019).

One of the most pressing issues that residents living in popular destinations face is tourism's ability to impact the affordability of housing. The tourism industry provides employment and can allow residents to create new streams of income. And yet, the amount of financial opportunity and aesthetic interest that comes with being a major tourism destination can also have a negative effect. For example, as a destination gains popularity, the value of land will also rise due to its increased rent opportunity, in turn raising the price of a home for the average resident (Wachsmuth & Weisler, 2018). Although this can be incredibly profitable for investors, the growth-enhancing effects of tourism are depleted when the affordability of housing becomes an economic burden on the average resident (Mikulić et al., 2021). Existing research has documented tourism's impact on housing prices. However, there remains a significant gap in understanding how tourism activity — which varies across space and time — affects overall

housing affordability in popular destinations. This paper portrays the effects of overtourism through an exploration of its complex impact on housing affordability in one of the most renowned tourist destinations in the world — Hawai'i.

1.1 Problematization

At its core, the issue in Hawai'i is simple. Where tourists see paradise, residents are struggling to cope with the reality of living in a major tourism destination. In October 2024, nearly 3,000 workers employed at the largest hotel in Hawai'i, the Hilton Hawaiian Village went on a union-led strike due to poor wages and working conditions in the hospitality sector (Mateer, 2024). This event can be connected with the ever-increasing cost of living concerns for Hawaiians who must pay tourist-inflated prices, despite not actually making enough income to do so. This struggle is best illustrated by the housing crisis in the state. For an average household to afford a single family home, they would need to make 183 percent of the state median income (Tyndall et al., 2024). The high cost of housing in Hawai'i has been attributed to being an internationally recognized tourist destination and place of living, but that is only scraping the surface of uncovering the factors which influence housing prices in the state.

Maintaining the balance between economic growth and citizen well-being is essential — but it's clear that Hawai'i is near its tipping point. In 2022, it is estimated that 23 percent of Hawai'i's GDP derived from the tourism industry (Tian & Kamita, 2023). Hawaiian residents rely on tourism to make a living, but as they struggle to stay economically afloat, some are starting to question the role tourism has played in the housing affordability crisis. This has led to a deeper examination on the impact of short-term rentals on rising housing prices (Bonham et al., 2025). However, existing research into the process of overtourism has identified the complex ways that tourism activity influences local communities. In destinations which are reliant on the tourism industry, factors like overcrowding and seasonality can also contribute to the economic stress (Mikulić et al, 2021; Oklevik et al., 2019). In many cases, the financial burden has left residents with no choice but to relocate elsewhere in the state or leave Hawai'i altogether (Tyndall et al.,

2024). In the process, losing their agency, community, and cultural connection to a home they have spent their entire lives in.

1.2 Aim of the Study

Following the premise that tourism has an upward pressure on housing prices, this research serves as a further exploration of the relationship. Overall, this research is conducted within a critical theory framework which seeks to portray the deeper implications of a housing affordability crisis and explicate the importance of space to Hawaiian culture and society. As such, it serves as a resource for policymakers who must confront the conflicting needs of tourists and residents in a capitalistic world. The central research question guiding the investigation is:

How do the different dimensions of tourism activity affect housing affordability in Hawai'i?

This is done by viewing tourism through a multi-dimensional lens which accounts for different forms of tourist activity: accommodation, concentration, seasonality, and vulnerability. The first dimension, accommodation accounts for the rapid expansion of the short-term rental sector following the rise of online platforms like Airbnb. Concentration portrays the overcrowding which occurs in destinations, consuming residential resources and degrading community spaces. When the fluctuation of visitors throughout the year is extreme, seasonality represents the economic burden residents must carry without secure income. Finally, where there is both high concentration and high seasonality, the increased economic reliance on the industry exacerbates the vulnerability residents face in such tourist destinations. These relationships are analyzed with both spatial and temporal granularity, encompassing the major Hawaiian tourist destinations between the years of 2010-2023.

1.3 Scope and Relevance

As illustrated in Figure 1, the scope of this study is the major Hawaiian islands which make up the counties of Honolulu (O'ahu), Maui, Kaua'i, and Hawai'i over the period of 2010-2023. The island state is located 3000 kilometers from the mainland United States, and the majority of its population is concentrated on the four major islands that are the focus of this analysis. They also receive the majority of all tourist arrivals to the state (DBEDT, 2025).

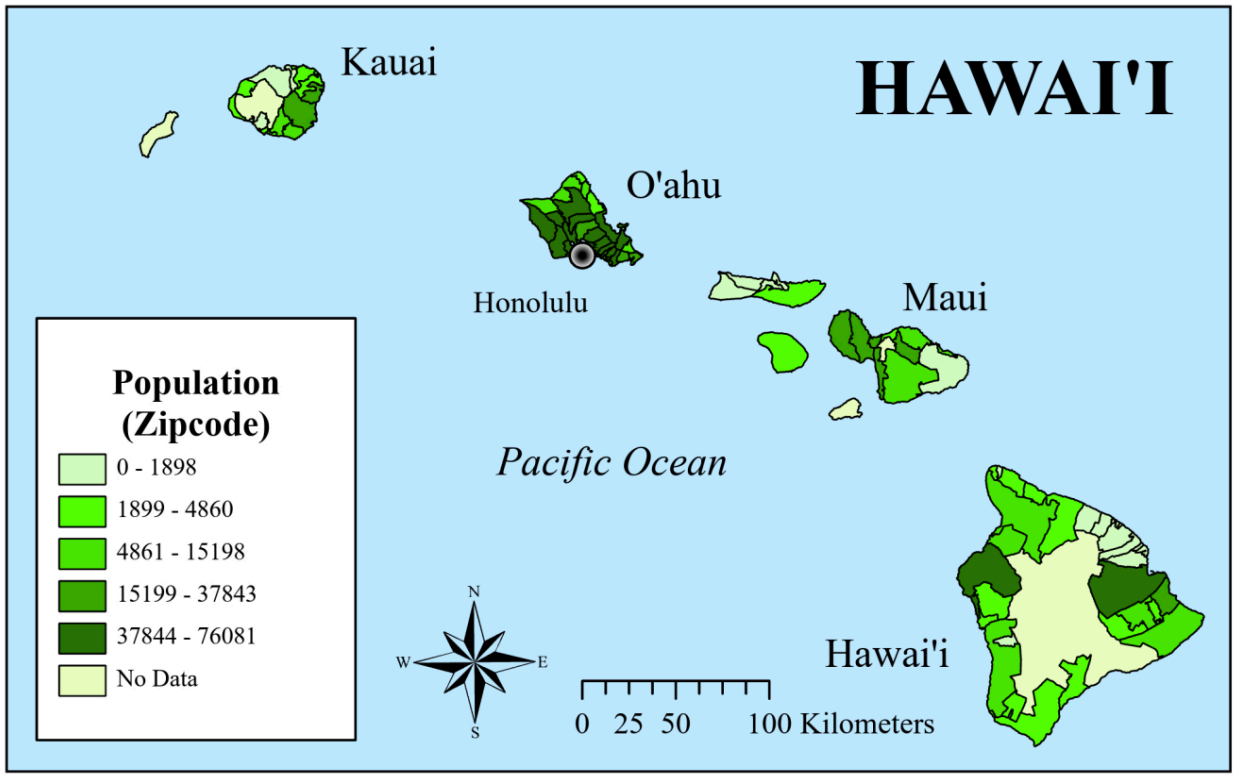

Figure 1: Map of Hawai'i, Population by Zip Code.
Created by: Rachel Allen, 2025. Data Used: Hawai'i Statewide GIS Program, 2021.

Firstly, this study was chosen due to its relevance on a global scale. Over the last 10-15 years, there has been increased public attention on the phenomena of overtourism. This has created an increased interest in identifying and addressing the signs of overtourism in major destinations across the world. In Barcelona, a case study focuses on the impact of short-term rentals as they encroach on residential spaces (Blanco-Romero et al., 2018). While in Norway, overtourism is viewed through visitor arrivals, weighing the cost-benefits of expanding the industry further (Oklevik et al., 2019). In contrast, a study in Korea measures the flow of visitor arrivals through

time, portraying tourism seasonality (Chung & Whang, 2011). Finally, in recent years academic attention has further expanded following the COVID-19 pandemic, which alerted destinations of the consequences of extreme economic reliance on the industry (Gössling et al, 2020). The wide range of academic papers which attempt to capture tourism activity, portrays the complex way it interacts within the world's economic, political, and social structures. However, it is our argument that by narrowing the scope of this paper to only one dimension of tourism activity, leaves a profound gap in our understanding. While this study specifically focuses on the relationship between tourism activity and housing affordability in Hawai'i, its approach conveys the importance for a broader shift in methodology in the field of tourism research.

On a similar note, this study also has particular relevance within the broadening field of literature on the impact of tourism on housing markets. As the field of tourism research originated within a tourism-led growth hypothesis, there is extensive evidence of the relationship between tourism and economic development (Dritsakis, 2004; Gunduz & Hatemi-J, 2005; Seetanah, 2011). Conversely, there is a growing breadth of research which focuses on the negative impacts of tourism on housing prices (Gotham, 2005; Wachsmuth & Weisler, 2018; Lin, 2019). On one side, the premise of the tourism-led growth hypothesis is that it increases residential incomes. On the other hand, studies on the housing market have found that tourism increases prices, making residential spaces unaffordable. By only including one perspective in an analysis of tourism, there is an incomplete portrayal of the way that tourism can have both a positive and negative impact on resident lives. As such, this paper examines the relationship of tourism through housing affordability, which includes both residential incomes and housing prices.

Finally, this study also is relevant on a more localized scale. In regards to the academic understanding of tourism in Hawai'i, many studies analyze the historical and cultural context of the industry and its broader implications (Agrusa et al., 2010; Williams & Gonzalez, 2016). The historical studies are in contrast to examples which specifically examine the relationship between tourism and housing affordability in Hawai'i ((Bondam et al., 2025, Tian & Kamita, 2023). These studies are primarily managerial in nature and lack the connection to a deeper theoretical framework. This study aims to fill this gap and provide a deeper critical analysis, to portray the serious implications of a housing affordability crisis in Hawai'i.

1.4 Delimitation

As most case studies, my research is limited in regards to its external validity. As portrayed in the previous section, the complex geographical, cultural, and political contexts of each tourist destination makes it likely that results from one case study will differ across space. Hence, the importance of all countries and individual destinations conducting their own research. Therefore, the relevance of this study also provides its confines.

Additionally, the findings of this study are limited to the state of Hawai'i at a regional level, but its methodology and theoretical foundations are applicable to other contexts. This study lacks the data capabilities and space to complete further analysis of how tourism affects housing affordability at a more localized level. This study also does not investigate the effectiveness of current policy initiatives to remedy the housing affordability issue across the state. As many policies are due to be implemented in 2025, this also presents an opportunity for further research.

1.5 Outline

This thesis is outlined as follows: I will begin by providing some background on the current state of tourism and housing affordability in Hawai'i. Then, I will continue to review the current literature that will describe the relationship between tourism and housing affordability. After, the theoretical framework will be presented, followed by the methodology and data collection. Next the analysis will be conducted and the results will be discussed within the theoretical framework. Finally, I will end the thesis with some concluding remarks and summarize my findings.

2. Background

Understanding Hawai'i as a tourist destination begins with understanding its historical origins. In 1883, Queen Lili'uokalani was overthrown and Hawai'i was illegally annexed by the United States. Following this event, the main source of economic revenue derived from sugar

plantations. This changed in 1959, when Hawai'i was incorporated as the 50th state and tourism was used as a means of economic development. Its niche was founded on the concept of aloha — or friendly locals, climate, and universal access (Williams & Gonzalez, 2016). This idealized image of Hawai'i has led to a mass tourism industry which has only grown in popularity over time, attracting visitors from across the world.

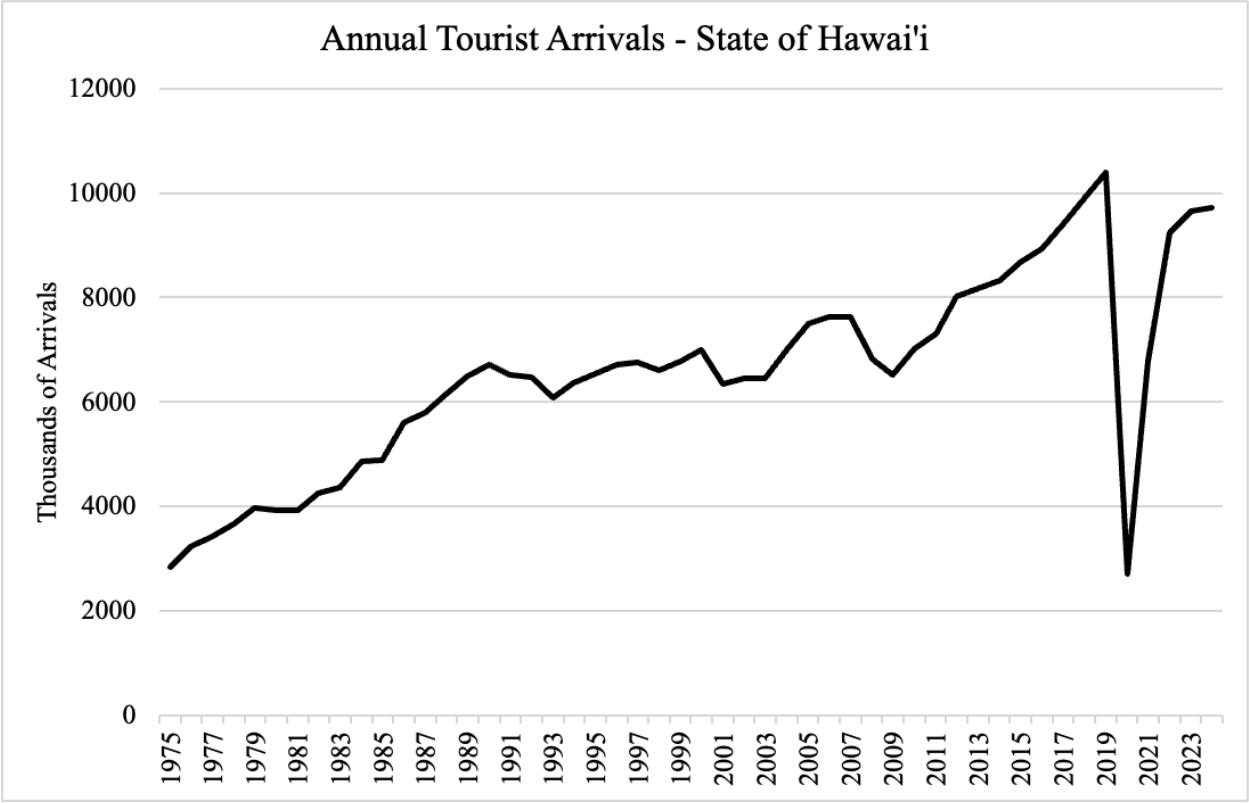

Figure 2: Annual tourist arrivals in Hawai'i (1989-2024). Source: DBEDT, 2025.

The steady growth in visitors has contributed to a society whose livelihoods are dependent on tourism, with 25 percent of the population employed in the industry (DBEDT, 2025). However, as evident in Figure 2, the steady growth of the tourism industry was disrupted in 2020, when arrivals ground to a stand-still due to the COVID-19 pandemic. This shock led to high unemployment rates across the state, reaching up to 17 percent in Maui County (DBEDT, 2025).

The popularity of Hawai'i as a tourist destination has made the state an idealized place to live, retire, and vacation. As a result, this aesthetic interest has led to an extremely competitive housing market. This is evident in Figure 3, which portrays that the median price of a single family home is 1 million dollars.

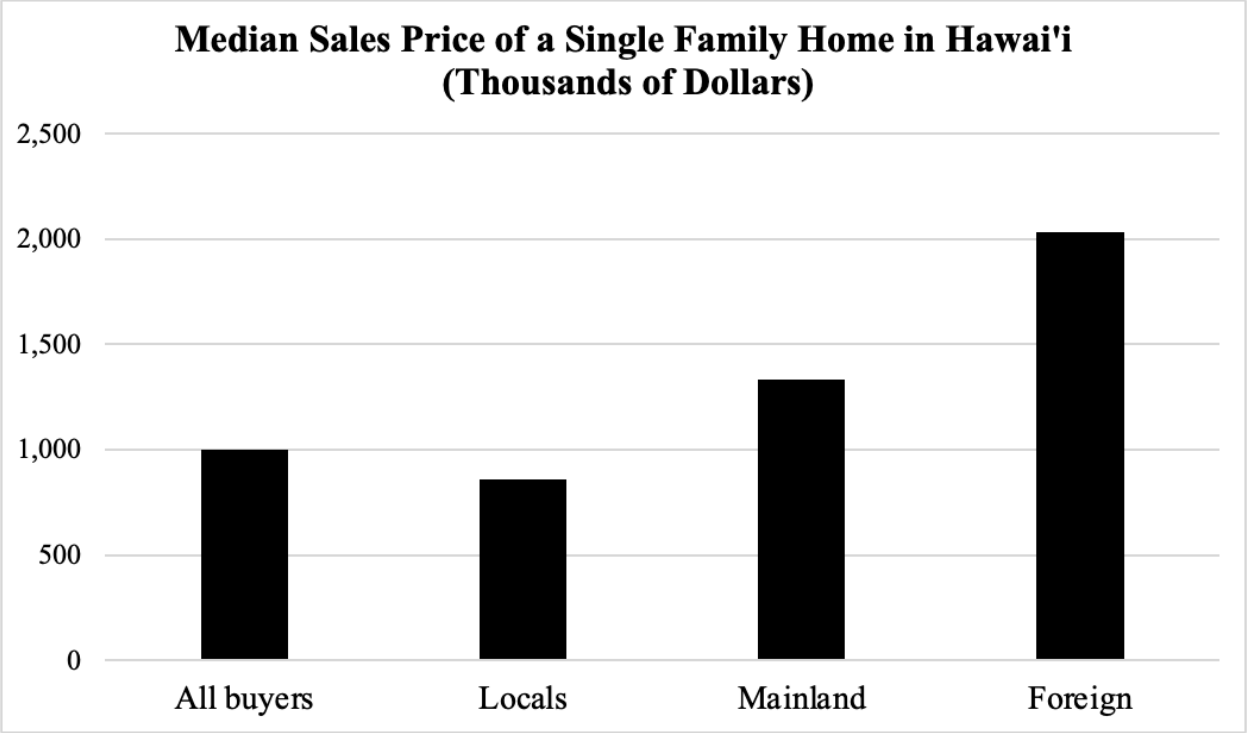

Figure 3: Median sales price of a single family home in Hawai'i. Source: DBEDT, 2025.

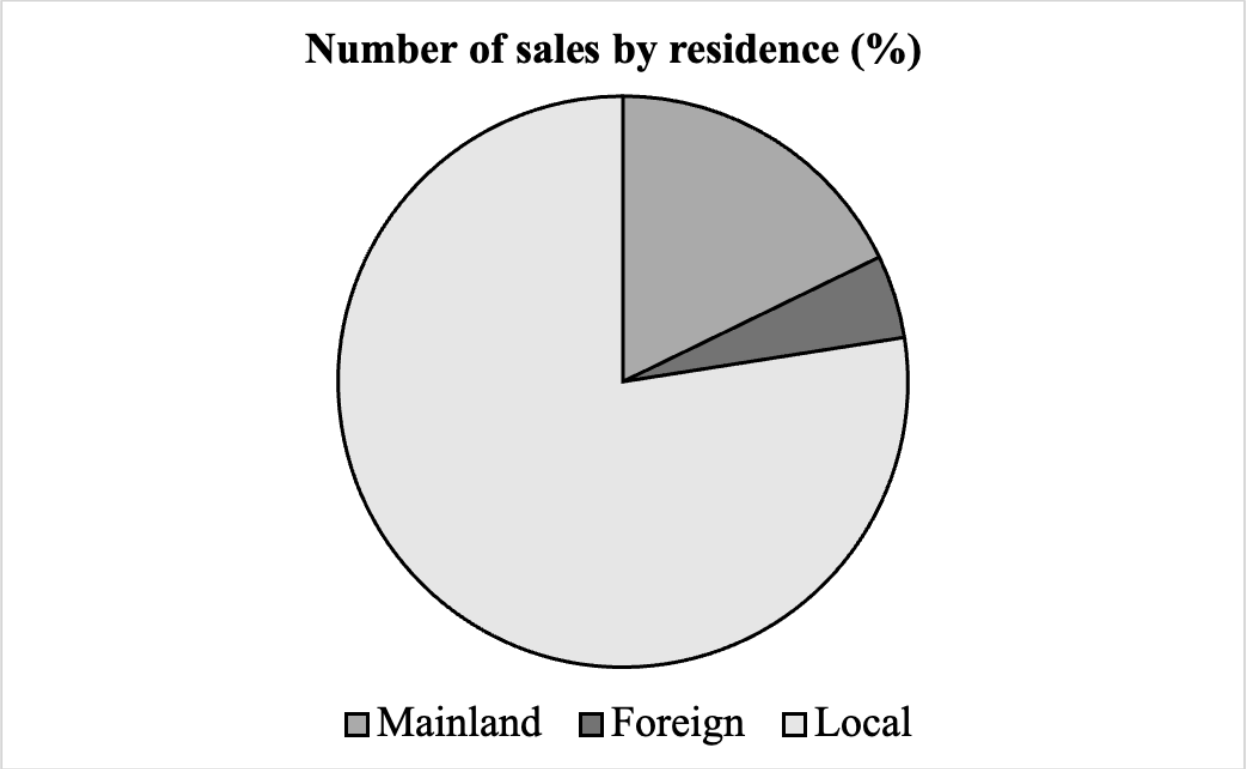

Figure 4: Number of sales by buyer's residence (%) in 2024. Source: DBEDT, 2025.

As illustrated in Figure 3, the median sales price varies significantly by buyer's residency, with foreign home buyers paying more than double that of Hawaiian residents. Consequently, most new home builds are targeted towards this higher paying demographic (Migliorato et al., 2024). This is at odds with Figure 4, which shows that foreign buyers make up only a small percentage of home sales.

As depicted in Figure 5, a 2024 survey of resident sentiment found that over 60 percent of respondents felt that the islands were run for tourists at the expense of local people. This is reflected in Figure 6, which portrays that one of the most significant problems that tourism has contributed to is the high cost of living in the state.

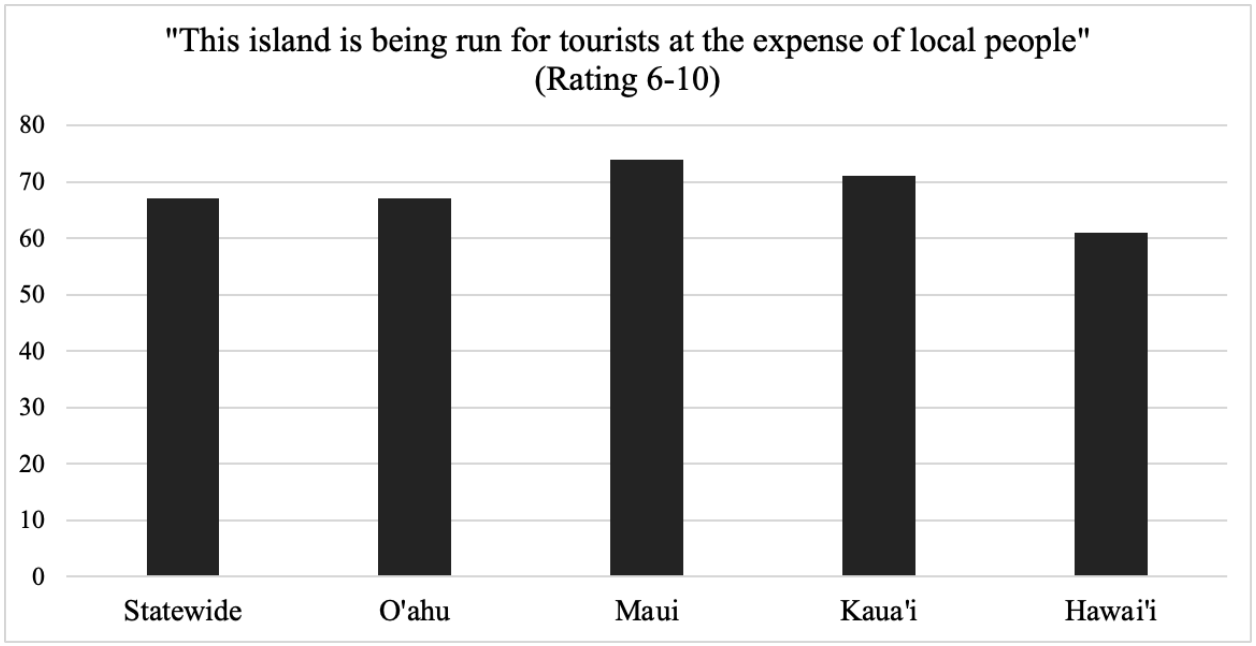

Figure 5: Resident Sentiments towards tourism (2024). Source: DBEDT, 2024.

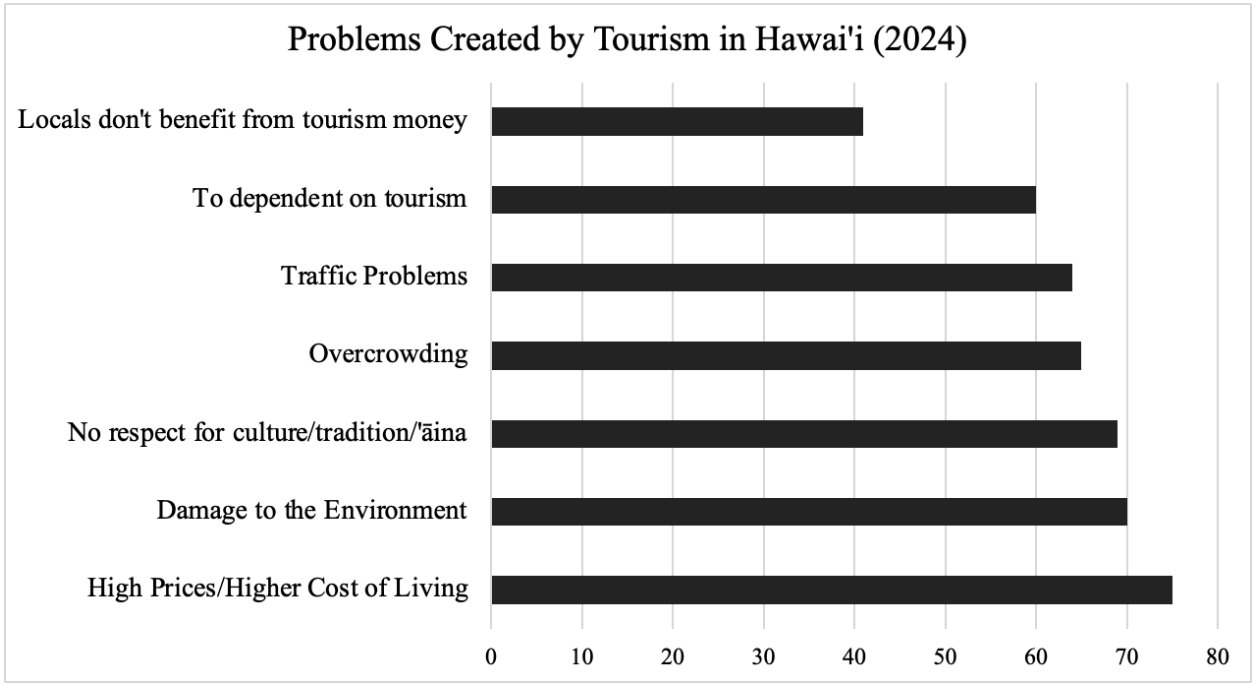

Figure 6: Problems Created by Tourism in Hawai'i (2024). Source: DBEDT, 2024.

This survey reflects a growing discontent within Hawaiian residents about the management and influence that tourism has on day to day life. Accordingly, the Hawaiian government has faced increased pressure to address the cost of living crisis in Hawai'i. This culminated in Hawaiian governor Green declaring an emergency proclamation on the housing crisis in July, 2023:

> "there is a large segment of the population that earns too much to qualify for traditional affordable housing programs, yet too little to afford to buy or rent market rate housing; and this gap is not being addressed by existing housing policy, rendering the need for an increase in *all* housing for our local people all the more visible" (State of Hawai'i, 2023, p. 1).

Ironically, just 3 weeks after this proclamation was issued, a wildfire broke out in Maui destroying 2,200 homes. This led to a subsequent second and third emergency proclamation relating to affordable housing by the state in 2023. Despite promises, even a year after the wildfires, 56 percent of residents are still living in temporary housing (Juarez et al., 2024). This disaster is reflected in the growing homeless rate across the state, which is the highest in the nation. In 2024, there was a 12 percent increase in the total number of people who experienced homelessness, with 62 percent of individuals being unsheltered by the state. This survey also found that 51 percent of homeless individuals identified as Native Hawaiian (Department of Human Services, 2024).

3. Literature Review

In this section, I will provide an overview of the existing literature on tourism, its relationship to housing affordability and related studies focusing on Hawai'i specifically. The literature provides further background about the current academic understanding of this subject and will rationalize the choices used in the methodology.

3.1 Defining Housing Affordability

This paper centers its discussion around 'housing affordability' rather than 'housing prices' and it is important to contextualize that distinction within academic literature. In recent years, growing concern around a global housing affordability crisis has sparked academic interest into the subject (Stone, 2010; Wetzstein, 2017; Migloriato et al., 2024; Tyndall et al., 2024). Stone (2010) defines housing affordability as "the challenge each household faces in balancing the cost of its actual or potential housing, on the one hand, and its non housing expenditures, on the other, within the constraints of income" (pg. 151). Thus by focusing on housing affordability, this study is able to place the competitive housing market within the context of income (of which, many Hawaiians are employed in the tourism sector). Specifically, the 'housing affordability' crisis refers to the trend of housing prices rising faster than the salaries or income of the area (Wetzstein, 2017). Governor Green, specifically acknowledged this crisis in the Emergency Housing Proclamation in 2023, explaining that there has been a 1,200 percent increase in home prices over the past 45 years. During that same period, there has only been a 600 percent growth in incomes (State of Hawai'i, 2023).

Evidently, this would indicate that housing affordability is best represented through a housing to income ratio. However, Migliorato et al. (2024) argue that measuring housing affordability in Hawai'i requires more nuance. Perhaps the most simple indicator, this Price-to-Income ratio is a measure of affordability and considers housing which requires more than 30 percent of income as unaffordable. With those who spend over 40 and 50 percent on housing, considered to be seriously and severely unaffordable, respectively. However, the authors acknowledge that a main limitation of this measure is that it does not include individual bank lending practices and interest rates which are important factors in determining a buyer's ability to afford housing. On the other hand, Stone (2010) argues against such normative measures of housing affordability, advocating for a residual income measure being more appropriate. In this approach, a residual income measure is most accurate because it is not a simple ratio which leaves many factors unconsidered. This method takes the 'residual' after non-housing necessities are met to determine the amount a person can spend on housing. The argument behind this method is that

non-housing necessities across households differ significantly with size, circumstance, etc. This also reflects location-based costs which may be high if transportation is required. This concern was reflected in Vila et al. (2024), which acknowledges that the high price of owning the car in Hawai'i is an issue. As 86 percent of Hawaiians commute to work by vehicle and pay the second highest gas prices in the United States. Moreover, many residents are required to travel significant distances to their place of work, as they cannot afford to live closer. However, Stone's (2010) residual income approach could be more difficult when choosing standard measures of non-housing prices and how taxes can differ significantly across space even within the same state.

Overall, perhaps the most accurate measure of housing affordability is a Rent-to-Income ratio. Unlike residual income, it is easy to measure and compare across space. Furthermore, unlike a Price-to-Income ratio, this indicator uses rent as its housing price measurement. In Hawai'i. Tyndall et al. (2024) describes that there are significant barriers for Hawaiians entering the housing market. For example, they must be qualified and approved for a mortgage. For most low-income families, the barriers to renting an apartment are much lower than to own a home. This makes the Rent-to-Income ratio the best measurement to display the affordability of housing for the average Hawaiian resident.

3.2 Housing Price Factors

Similar to the academic debate about what exactly housing affordability is and should be defined as, there is much contention about the primary factors which determine the price of housing. Glaeser et al. (2005) argue that the primary factors which influence housing prices are found within the law of supply and demand. On the side of demand, they place interest rates and per capita income. For example, lower interest rates will increase demand because buyers can afford more expensive homes with the same mortgage payment. Furthermore, an increase in per capita income simply means that more households can afford higher-priced homes. On the supply side, Glaeser et al. (2005) argues equally important factors such as land availability, the cost of the physical structure, and the process to receive government approval. Specifically, they place

construction costs as the most important factor over the price of land, due to the rising costs of labor and materials. This is consistent with Migliorato et al. (2024) who found the cost of construction and land in Hawai'i is the highest in the nation, indicating that it would make sense that home prices are more expensive. They acknowledge this factor is exacerbated as a significant proportion of new homes are built to cater to the vacation home demographic, rather than residents. However, contrary to previous findings, Tyndall et al. (2024) argue that the main contributing factor of high housing in Hawai'i is due to the lack of permits for new homes, with processing times taking 3 times longer than in the average U.S. jurisdiction. In fact, they found that the regulatory costs to build a new home make up over half of its purchase price, with construction and land making up the rest.

In places where there is significant tourism activity, the price of housing is still significantly affected by these typical variables, but there could also be other contributing factors. For example on the demand side, the average per capita income of home buyers is inflated in areas with high tourism activity. Cho et al. (2003) found that the presence of second homes can impact the average house prices despite not increasing the per capita income of locals. This is when a person may buy a second home, often in places of aesthetic interest like islands, to reside there seasonality. Since they are looking to purchase a second home, these home buyers are often more affluent and able to buy homes at higher prices than residents. Therefore, affecting the 'demand' side of house prices. Moreover, with the rise of sharing economy sites like Airbnb, resident housing has been converted to tourist accommodation. In Barcelona, foreign investment into short-term rentals has introduced new actors with much more capital than the typical residential buyer. As such, they found that one third of current home prices were financed by investment funds and large companies (Blanco-Romero et al., 2018).

In Hawai'i, studies on the existence of vacation rentals have a long history. For example, most counties in Hawai'i have policies which create 'tourism zones'. The premise of such zoning districts is to restrict the operation and expansion of the tourism industry outside of major tourism centers. However, this is not without exception; as a 2005 policy known as the 'Minatoya List' exempts 6,127 vacation units from the current ban on residential area short-term

rentals in Maui. These policies have gained increased attention across the state, with most counties implementing further restrictions within the past 5 years (Bonham et al., 2025)

3.3 Other Factors that Influence Housing Affordability

While the ways in which tourism affects housing prices are complex, there is still another aspect to consider. Mikulić et al. (2021) argues that a main limitation of viewing tourism through housing prices is its inability to represent the multi-dimensional nature of tourism activity. In this perspective, the use of 'housing affordability' allows for the ability to analyze how tourism impacts income as well. Mikulić et al. portrayed these dimensions through seasonality, concentration, and vulnerability to represent the way that tourism impacts residential incomes.

As explained prior, the concept of overtourism is often associated with the concentration of visitors. As tourist arrivals increase, their concentration can portray their consumption of residential resources. Conversely, Olkevik et al. (2019) represents a case study in Norway which uses visitor concentration to depict the relationship between tourists and income. As the number of tourists increase, it is logical that residents are more reliant on the industry for their income. Following the premise of the Tourism-led Growth hypothesis, this is a good thing that contributes to economic growth. However, Olkevik et al. introduces the concept of tourism de-growth which places visitor arrivals within the context of overtourism. In this perspective, every destination has a carrying capacity — in which the environment, cultural heritage, and society – will begin to suffer if it is exceeded. It questions this pro-growth narrative which advocates for limit-less economic growth, despite the resources of our planet being finite. This is evident in cities like Barcelona, where the rental housing available to residents has been diminished due to the increase in short-term rental stock, increasing residential home prices (Blanco-Romero et al., 2018).

Tourism arrivals have also been portrayed through a temporal perspective. This is represented through studies which examine the seasonality of visitors throughout the year. For example, Mikulić et al.'s study of tourism activity in Croatia found that seasonality had the most

significant impact on housing affordability. This is due to uneven flows of tourist arrivals throughout the year creating instability in tourism revenue. In periods where visitor arrivals are down, the lack of income can influence the ability for residents to pay rent. The extent of seasonality in Hawai'i and its impact on incomes has seen little academic attention. However, Chen & Fomby (1999) identified that the seasonality of tourist arrivals to Hawai'i are largely dependent on origin. With tourists from the east (Japan, Australia, China) and from the west (United States, Canada, Europe), having different arrival patterns according to their respective countries. The lack of research on this topic indicates an important gap in research, which has the potential to impact housing affordability in Hawai'i.

Finally, Mikulić et al. (2021) theorized that when the concentration of tourists is high, residents are more vulnerable to seasonal variability. This is because the higher concentration of tourists indicates that the destination is more economically reliant on the tourism industry. While this example is compared to seasonality, economic reliance on the industry has the potential to impact destinations in several ways. In a study on small island tourism economies, Shareek and McAleer (2006) found that they are often highly dependent on tourism incomes but are also more prone to shocks to the tourism industry, like natural disasters. The COVID-19 pandemic is perhaps the best representation of the volatility of the tourism industry. Bond-Smith and Fuleky (2022) found that the COVID-19 pandemic has a significantly more detrimental impact in Hawai'i than any of the U.S. states. They relate this to the Hawaiian economy's greater dependence on tourism, air travel, and international trading partners. Gössling et al. (2020) attested that the pandemic is a clear sign that the tourism industry must reconsider its practices and build more resilient destinations.

Overall, the amount of literature relating to the topic of tourism and housing affordability globally and within Hawai'i is immense. However, a gap in the research is evident when viewing housing prices through the use of housing affordability. This gap widens further when viewing tourism through academic perspectives which are theorized to affect housing affordability in different ways. Within Hawai'i specifically, this literature review has described separate examples which measure tourism's relationship with housing prices, as well as resident incomes. And yet, there is a lack of studies which combine these aspects through housing affordability.

4. Theoretical Framework

This research is placed within a critical theory framework. The origins of critical theory can be traced back to the Frankfurt school and examines how power structures shape our reality. Critical theory is commonly used in methodological frameworks as it allows for academics to recognize that social phenomena do not exist in isolation, but rather are shaped by history, culture, and economic factors (Bronner, 2017). This is helpful, as tourism literature in itself does not lend a theory which can be used for deeper analysis. Mowforth and Munt (2018) argue that there are two identifiable groups of tourism research. On one side, is research which is managerial in nature — auditing, categorizing, and listing the outputs of tourism. The other side, using tourism as a metaphorical lens which brings aspects of development to clarity. Britton (1991) asserts that tourism research as a whole lacks a foundation of theory, instead being a descriptive accounting of its dynamics. It is through the application of critical theory, that the nature of the industry can be seen with greater clarity. In this ideology, he argues that the tourism industry serves simultaneously,

> "as a mechanism for the accumulation of capital, the private appropriation of wealth, the extraction of surplus value from labor, and the capturing of (often unearned) rents from cultural and physical phenomena (especially public goods) which are deemed to have both a social and scarcity value." (p. 455).

Following this premise, this section serves as a further explanation of such theory to bridge the different dimensions of tourism activity in connection to housing affordability. By providing a deep theoretical framework, my paper shifts from a descriptive accounting of the effect of tourism on housing affordability and allows it to delve into a deeper, more realized discussion.

4.1 The Commodification of Space

The first concept which forms the basis of understanding behind the relationship of tourism and housing affordability is the commodification of space. Britton (1991) theorized that when the perception of a place becomes so deeply associated with tourism on a global scale, some destinations in-themselves are commodified. Perhaps the most simple way to portray the commodification of space is its impact on the housing market. This is when the purpose of buying a house shifts from being associated with the basic right of shelter to being viewed as an investment. Accordingly, gentrification is the process in which working-class or marginalized areas are converted to middle-class residential use through a process of private-market investment (Zukin, 1987). Smith (1987) explains that in a classic understanding of gentrification, the property values of a neighborhood reflect its current desirability. If its property owners and the government minimize spending by neglecting maintenance and public services, its desirability will drop, along with its property values. In some cases, there may be a 'rent gap' between what the current value of property may be — and what it could potentially be if redeveloped. In such cases, wealthy individuals may notice an opportunity that investment could yield significant profit. Therefore, gentrification occurs as more capital flows at an increasing pace until the rent gap is closed. This often comes with changing demographics with who can afford to live in such a neighborhood.

This theoretical understanding of gentrification shifts under the concept of tourism gentrification. Gotham (2005) argues that in tourism gentrification the conversion of neighborhoods (not necessarily low-income) to tourism-oriented spaces resulting in the displacement of the original residents and businesses. This is facilitated by state and corporate actors which employ strategies to gentrify historical neighborhoods through zoning regulations, tax incentives, and cultural commodification. This neighborhood transformation is even more pronounced with the existence of online vacation rental websites like Airbnb. In this context, the rent gap takes a new dimension. That is, the rent gap in question is between residential and tourist accommodation. These sites shift the use of ordinary residential units to tourist accommodation and make significantly higher rent per foot than residential housing. Property owners are incentivized to convert residential homes to tourist accommodation. In fact, Wachsmuth and Weisler (2018) argue that platforms like Airbnb accelerate gentrification because they offer an easy opportunity to extract rent gaps. Compared to classic tourism gentrification, which requires significant

investment, it is relatively attainable for the average person to open an Airbnb. In turn, this reduces housing supply while increasing the demand for units – leading to the displacement of residents due to price inflation. This process contributes to the overall transformation and touristification of ordinary residential neighborhoods.

4.2 The Commodification of Labor

As explained in the literature review, this study uses different dimensions of tourism to explore the relationship of income and housing prices. As for income, a central theme surrounding this concept in the context of tourism is power. Mowforth and Munt (2016) explain that tourism takes on new implications when you view it as an imperialist force. This can be illustrated through dependency theory between a first world core and third world. In this ideology, they argue that the metropolitan core generates the demand for tourism and tourists themselves; and holds a significant power over tourism development abroad. The imperialism tendencies of western nations are evident through their spread of major corporations which occupy tourist space — such as major hotel chains, global airlines, and cruise companies. These corporations accumulate significant wealth, with the majority of it extracted out of local economies. Britton (1991) theorizes that in this context, the local labor force is not only the facilitator of these services, but also part of the consumed product. A major hotel likely operates every day of the week, 24 hours a day, even on major holidays. In capitalism, there is an urge to lower prices to maintain a competitive advantage. The labor intensive nature of the hospitality sector means that to maintain margins and lower prices, management will suppress wage rates while increasing working conditions. This portrayal of exploitation is at odds with the typical facade, "helpful, smiling and servile", that most leisure employees must don when speaking to visitors (Mowforth & Munt, 2016, p. 67).

5.3 The Commodification of Culture

Finally, found within tourism literature is perhaps the reason why most people travel in the first place — to consume culture. In some ways, indigenous tourism can encourage cultural

preservation, be a source of capacity building, allow self-determination, and encourage political representation. However, it can also lead to cultural commodification, reinforcement of stereotypes, and a loss of autonomy (Carr et al., 2016). It may seem contradictory, that tourism can both allow self-determinism and cause a loss of autonomy. Shepherd (2002) explains that the role of tourism in cultural sustainability relies on local actors understanding and preserving what is sacred. As Britton (1991) describes,

> "The central qualities of the 'cultural industry' is that it offers escape, entertainment, expansion of personal understanding, and perhaps something 'metaphysically meaningful', but without challenging the existing social and material order" (p. 454)

While some tourists may support local craftsmen and artists, others only desire to possess a mark, instead supporting mass merchandise which signifies the objectification and commodification of culture and ethnicity. The tourism industry will not protect these values, so it is important for destinations to regulate tourism and represent the interests of their community.

In the context of a housing affordability crisis, the sustainability of culture becomes a significant issue. The result of too high housing costs and too low income is the displacement of original residents that once inhabited tourist spaces. As residents are forced to move, the very identities of neighborhoods are commodified as authentic and cultural representations of the destination (Wachmuch & Weisler, 2018). Zukin (1987) explains that "a gentrified area is not so much a literal place as a cultural oscillation between the prosaic reality of the contemporary inner city and an imaginative reconstruction of the area's past" (p. 135). Meaning that where there were once local businesses and residents who found community and connection in these spaces, are now home to a transient population of visitors and tourist-catered businesses.

5. Methodology

The methodology of this paper is partially guided by Mikulić et al. (2021) due to its approach to measuring tourism activity through a multi-dimensional lens. Moreover, this method explores the

relationship between tourism activity and the housing market through housing affordability.. However, independent controls have been altered to ensure contextual accuracy.

5.1 Methods

This study employs a panel data analysis approached through a time-fixed effects model. Firstly, panel data is simply the study of entities through both cross-sectional and time series data. Panel data is considered to be more reliable due to its increased observations, which improves estimates and can better identify causality. It is often used in the social sciences as it can study dynamic relationships and be an important step in legitimizing the need for policy action (Baltagi, 2008).

Among panel data methods, fixed effects are used to control for the heterogeneity between unobserved time-invariant variables. This can take shape in entity-fixed effects, time-fixed effects and two-way fixed effects. For example, if panel data is the study of entities over both temporal and spatial dimensions, then this implies that by their very nature, the individual Hawaiian islands being studied and their corresponding data points are unique. It also implies that each island may have time-invariant differences that are unique to its own individual geography, historical and economic characteristics.

Entity-fixed effects would control for these time-invariant characteristics which differ across islands. On the other hand, time-fixed effects would control for factors that vary over time, but are constant across entities. This may take shape in the Hawaiian islands like changes in economic cycles, interest rates, or housing policies which affect all Hawaiian islands. From this explanation, if there are characteristics which vary across both time and space, then it would be logical that two-way fixed effects are the best choice for the research. However, it is possible that limited data availability could make two-way fixed effects less accurate because it requires more statistical power (Hsiao, 2008). In this case, it is hypothesized that time-fixed effects would be

most appropriate as the changes in tourism and housing affordability over time are more pronounced than the cross-sectional variation between islands.

5.2 Data Collection

The data utilized in this research is guided by the methodology presented in Mikulić et al. (2021), as well as the expectations outlined in the theoretical framework and literature. Primarily this study is based after Mikulić et al. due to its approach to measuring tourism activity through a multi-dimensional lens. Moreover, this method explores the relationship between tourism activity and the housing market through housing affordability. This reflects the need to prioritize the needs of Hawaiian residents above those of the tourism industry. Independent controls have also been altered to ensure contextual accuracy. In this case, a variety of indicators have been compiled across the four major islands in Hawai'i (O'ahu (Honolulu), Maui, Kaua'i and Hawai'i). The data has been compiled on a time-series from 2010 to 2023 and represents a balanced panel analysis.

The data used in this study is gathered at the county level (representing the individual islands) and primarily sourced from official state and federal-level databases. This study is somewhat limited by the availability of tourism data on both spatial and temporal granularities. It is impossible to complete the analysis on a more detailed level such as on census tract level. Nevertheless, the tourism data used in this study is obtained from the Hawaiian Department of Business, Economic Development and Tourism (DBEDT). Specifically, it is gathered from the Research & Economic Analysis Division which provides 'data, analyses, and economic forecasts to contribute to the State's economic development and long-term planning' (DBEDT, 2025). This resource provides open-access data about Hawai'i's economic and tourism characteristics on a county-level or state-level throughout time.

The U.S. Census Bureau provides open-access data through the American Community Survey (ACS). The ACS is compiled with both 1-year and 5-year estimates that survey the housing and population statistics across the United States. In comparison to the decennial census, which is

used to provide counts of people for congressional appointment, the ACS is used to measure the changing demographics of the U.S. population. It collects detailed data about income, housing, and racial characteristics at a detailed level. In this study, the 5-year ACS estimates are used because the 1-year estimates are only measured with populations of 65,000 or more. In comparison, the ACS 5-year estimates are a moving average of the 1-year estimates. In small population-wise locations, the U.S. Census Bureau (n.d.) recommends using the 5-year estimates to make more precise and reliable estimates.

5.2.1 Housing Affordability

The dependent variable in this study is labeled as 'housing affordability' and is measured through a Rent-to-Income Ratio (RTI). The RTI measure is most common in determining housing affordability by comparing cost and income, through dividing the median annual gross rent by median annual household income (Migliorato et al., 2024). This indicator is collected from the ACS and is measured as the ratio of income spent on housing (0-1). Where housing affordability is above .30, indicates that the median household is considered to be housing cost-burdened (as they spend 30 percent of their income on housing). Where housing affordability is above .50, the median household is considered to be severely cost-burdened (Migliorato et al., 2024). Therefore, higher measures of the dependent variable housing affordability portray worse housing affordability.

In this analysis, housing affordability rather than the price of housing is used due to its ability to represent the cost burden that it places on Hawaiian residents. The price of real estate alone does not adequately portray the financial vulnerability that is placed on residents who struggle to make the income needed to afford to live in Hawai'i. Moreover, the choice of measuring the affordability of renter-occupied housing is considered purposeful considering the barriers of entry of rental housing are much lower than home ownership in low-income households (Miglorato et al., 2024).

5.2.2 Dimensions of Tourism Activity

As argued by Mikulić et al. (2021), and described throughout the theoretical framework and literature review, tourism is a multi-dimensional concept that influences many aspects of society. This study is conducted on the hypothesis that tourism does have an impact on housing affordability. Therefore the dimensions of tourism activity serve as a deeper exploration of this relationship in Hawai'i. They are also the independent variables in this study.

The first dimension of tourism activity that will be measured is tourism accommodation. This independent variable is measured through the percentage of vacant homes (used for seasonal, recreational, or occasional use) divided by the total housing stock of each individual island. This indicator is calculated by the author with data gathered from the ACS. In recent years (2019-), the percentage of short-term rentals in the housing stock has been calculated by the DBEDT and is supplemented with data collected by scraping online short-term rental websites like Airbnb. However, before 2019 the use of vacant homes listed for seasonal use were used in vacation rental impact reports by the DBEDT (DBEDT, 2016). Therefore, the use of vacant home data for this variable is only a proxy, but represents the percentage of housing that is used for vacation rentals. It is expected that as the percentage of tourist accommodation increases, the housing affordability ratio will increase as well (indicating lower housing affordability). This is because tourist accommodation offers higher rent opportunities compared to residential housing, reducing housing supply while simultaneously increasing demand (Wachsmuth & Weisler, 2018).

The second dimension of tourism activity is tourism concentration. This independent variable is a location quotient of tourist stays, measured as the share of overnight tourist stays per capita on the county level divided by the per capita level on the statewide level. This variable is adapted from Mikulić et al. (2021) and Batista e Silva et al. (2018) and is calculated by the author from data collected from the ACS and DBEDT. If tourism concentration is above 1, this represents that tourism intensity is higher in that island compared to the overall statewide level. A higher value of tourism concentration is expected to have a positive effect on housing affordability (meaning housing is less affordable). Mikulić et al. (2021) uses it to represent how overpopulation due to tourism can affect housing affordability because of increased demand for

housing and real estate. Additionally, Batista e Silva et al. (2018) usee it to effectively portray tourism intensity as it represents that a county is more reliant on tourism industry compared to the entire state. As opposed to an indicator like employment in the tourism sector, this variable can depict how revenue from tourism does not only affect those directly employed in the sector, but flows beyond to the rest of the population.

The third dimension of tourism activity is tourism seasonality. This variable is defined as the coefficient variation of each county's monthly arrivals by air. The data for this was gathered from the DBEDT and calculated by the author by dividing the standard deviation of the monthly average tourist arrivals divided by the mean of the average daily tourist stays per year (Mikulić et al., 2021). A value of 0 can be interpreted as no seasonality of tourism, with higher values portraying more intense seasonality. Tourism seasonality is expected to have a positive relation with housing affordability because it can portray the impact of unemployment fluctuations and revenue instability on the ability to afford rent.

The final dimension of tourism activity is tourism vulnerability. This variable is a composite index of the two previous tourism variables: Tourism concentration and tourism seasonality. This is calculated by multiplying tourism concentration and seasonality (Mikluć et al., 2021). This index portrays the heightened vulnerability residents face when they experience fluctuations in the amount of income received from tourism throughout the year due to seasonality, while simultaneously living in a space which is economically reliant on tourist spending. This index uses seasonality as its measure to illustrate the volatility of tourism, but the industry has show its vulnerability to other shocks like natural disasters, political instability, or global pandemics (Gössling et al., 2020; Seetanah, 2011). Higher values of this index reflect a destination's higher vulnerability to fluctuations of income due to seasonality or external tourism shocks. Therefore, tourism vulnerability is expected to have a positive relationship with the dependent variable.

5.2.3 Other Controls

In addition to the tourism variables, the model includes several control variables which have been recognized in the literature (Bond-Smith & Fulkey, 2022; Migliorato et al., 2024; Tyndall et al., 2024).

The first control is migration. This variable is collected from the University of Hawai'i's Economic Research Division (UHERO) and represents the change in total population other than from natural causes (UHERO, 2025). The UHERO is an independent research organization which conducts relevant economic research to Hawai'i and is used to inform public- and private-sector decision-making in Hawai'i. This includes the compilation of and calculation of a variety of indicators collected from official datasets (like the ACS and DBEDT). In this case, the net migration is calculated through the change in total population subjectrated by the natural increase in population (Births-Deaths) (UHERO, 2025). This variable is measured in thousands and represents the flow of people between the islands, which affects the total demand for housing. When the net migration is positive, it is expected to have a positive effect on housing affordability (making it less affordable).

The next control variable is unemployment or the percentage of unemployed persons in the county. This variable is collected from the ACS and represents the overall labor market conditions in the area. As a decrease in income affects the ability to pay rent, this variable is expected to increase housing affordability (less affordable) (Bond-Smith & Fulkey, 2022).

The next variable is labeled as property ownership and represents the demographics of the housing market. It is collected from the DBEDT and is defined as the percentage of non-residential home-buyers of mainland and foreign origin – rather than of Hawaiian residence. The effects of non-residential homebuyers were acknowledged in Tyndall et al. (2024) who concluded they increase demand and on-average buy homes at higher prices than Hawaiian residents. Accordingly, an increase in the variable property ownership is expected to have a positive effect on housing affordability.

The final variable is labeled as New Housing and is collected from the DBEDT. It represents the annual authorized permits of new residential units for single families. This value portrays the

expansion of the total housing stock and is expected to have a negative effect on housing affordability (meaning more affordable) (Migliorato et al., 2024).

5.3 Limitations

The primary limitations of the methodology are confined by the lack of tourism data available at more detailed spatial and temporal granularities. Firstly, it is limited by its natural geography which leaves only 4 islands (counties) for analysis. It is logical that the study would be more comprehensive at a more localized level such as by census tract or by zip code (as seen in Figure 1 with the population). This would allow greater insights into the uneven regional disparities within islands. However, the availability of data at this level rapidly diminishes. Where travel arrival data (by month) is available since 1990 by county, it has never been kept at a more detailed level. In the case that it is, such as with tourism accommodation, it is not accessible. Vacation rental sites like Airbnb are notorious for not releasing data about the locations and profit being made from their vacation rentals (Wachsmuth & Weisler, 2018). This has led to the rise of companies and organizations who scrape data from the online sites — and take drastically different stances on the matter. On one side, there are sites like AirDnA who restrict data because they wish to profit off investors who will pay for the insight into the short-term rental market (AirDNA, 2025). . On the other hand, there are activist organizations like Inside Airbnb who do not release historical data because they don't want it to be taken advantage of by the same investors (Inside Airbnb, 2025). The scope of this paper has been widened as much as possible within the confines of data, but it is likely that lack of observations affects the overall statistical power. In an attempt to further validate the accuracy of the model, results are compared to the resident satisfaction survey conducted in 2024 (shown in Figure 5 and 6) and the academic findings of existing literature.

6. Analysis and Results

This section describes the process and presents the results of the analysis that was described in the methodology. First, I will discuss the descriptive statistics and their implications on a broader level. Next, I will portray the process of determining the most appropriate model to represent the

research question. Then, the main analysis. Finally, I will test for the accuracy of this model and discuss the final results.

6.1 Descriptive Statistics

In this section, I will analyze the descriptive statistics of my data presented in Table 1:

Table 1: *Descriptive Statistics.*

Variables	Obs.	Mean	Median	Std. dev.	Min	Max
Housing affordability	56	0.31	0.32	0.02	0.28	0.35
Tourism accommodation	56	0.13	0.13	0.08	0.03	0.26
Tourism concentration	56	1.61	1.65	0.76	0.60	2.75
Tourism seasonality	56	0.22	0.10	0.34	0.07	1.50
Tourism vulnerability	56	0.35	0.20	0.61	0.05	3.15
Migration	56	0.18	0.55	3.73	-11.00	9.10
Unemployment (%)	56	5.28	4.25	3.32	2.10	17.70
Property ownership	56	32.34	34.45	11.96	9.20	54.60
New housing	56	532.50	504.00	301.43	127.00	1131.00

Firstly, the median value of housing affordability is 0.31. This indicates that on average, across the scope of our analysis, the average person spends 30 percent of the income on housing — and are considered housing-cost burdened. This is representative of the overwhelming evidence found in similar studies across Hawai'i (Migliorato et al., 2024; Tyndall et al., 2024). Moreover, the low standard deviation is indicative that housing affordability experienced very little variation across both its temporal and cross-sectional dimensions. This indicates that Hawai'i's housing affordability experiences little regional variability. In other words, no island is significantly more affordable than another.

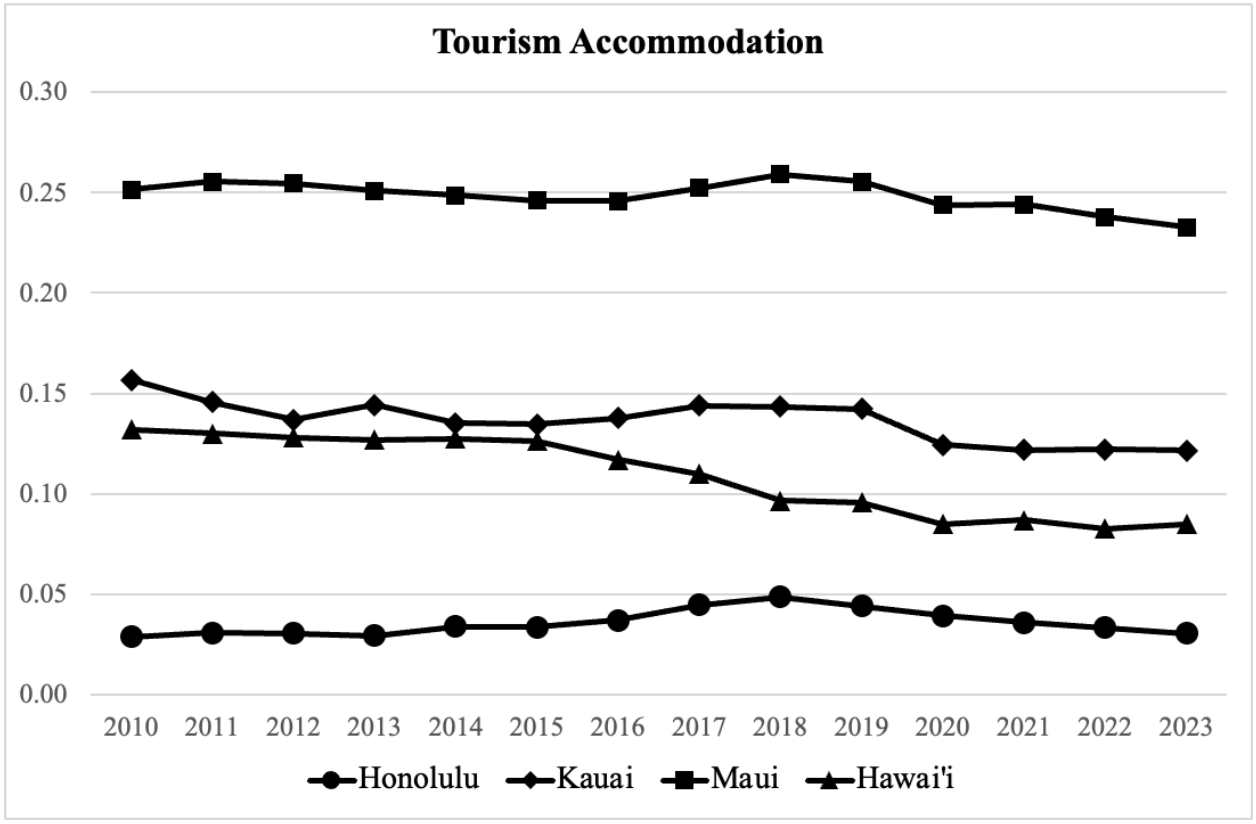

Figure 6: Tourism Accommodation (Share of Vacation rentals in total housing stock).

On the other hand, tourist accommodation experiences more variation across islands. Its median value is 0.13 (or 13 percent of the housing stock is vacation rentals) but the minimum value is 0.03 compared to the maximum of 0.26. However, through Figure 6, it is discovered that the variation is not due to significant temporal variation, but rather each individual island has different levels of tourism accommodation. Both Maui and Honolulu fall at either ends of the range, while Kaua'i and Hawai'i are closer together.

Another interesting thing to note about the descriptive statistics is that the other tourist variables have significant outlying maximum values and a low standard deviation. This indicates that most values lay closer to the mean which are considerably smaller than the maximum.

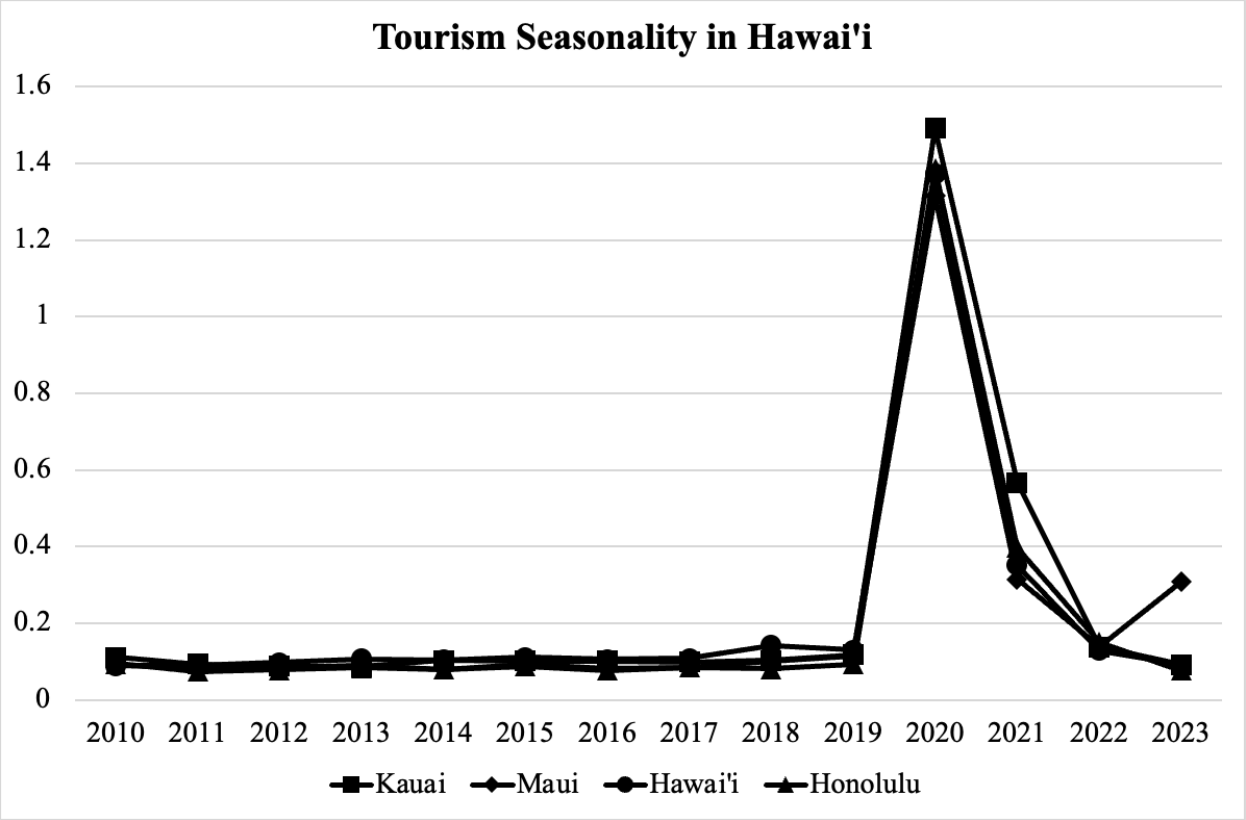

Figure 7: Tourism Seasonality across Hawai'i.

As Figure 7 portrays, this spike is likely due to the seasonality of tourism spiking in 2020 during the start of the COVID-19 pandemic. Since tourism seasonality is the variation of each county's arrivals by air, it is likely the steep drop off in the beginning of 2020 and subsequent pick up of visitors of 2021 has affected these values. Tourism concentration is also measured by the amount of visitors compared to the local population, which explains why it experiences a sharp increase. As tourism vulnerability is a composite index of these two values, that explains the overall spike values across the state of Hawai'i which has led to the outliers.

6.2 Analysis

As Panke (2018) argues, the starting point to determining the quantitative model used should involve further analysis into the structure of the data at hand. With panel analysis, it is important

to understand if there is omitted independent heterogeneity across the different cross-sections (Hawaiian islands). To test if the data can be pooled — and a simpler model can be used – a test which assumes that the coefficients are equal is used. The results of this test indicated a p-value of 0.02632 which is considered to be statistically significant. The P-value explains if a model is statistically significant, or how probable the data is, given the null hypothesis. It is common to consider $p<0.05$ to be statistically significant. However, $p<0.01$ portrays strong significance (Field, 2024). Since the results were below 0.05, the null hypothesis is rejected and an alternate hypothesis (instability in the coefficients) is accepted. As such, it is appropriate to use panel data methods, which is expected considering that the different Hawaiian islands are all unique in their own regard.

Next, I am testing for multicollinearity. This is conducted through a Variance Inflation Factor (VIF) test, which portrays the correlation between variables.

Table 2: *VIF test for multicollinearity.*

Accommodation	Seasonality	Concentration	Vulnerability
5.722926	8.587488	17.238299	8.639968
Migration	**Unemployment**	**Property**	**Permit**
1.615189	5.186157	2.547522	7.746994

Panke (2018) says that multicollinearity can lead to invalid results and recommends removing variables with a VIF score of 5 or higher. As evident in Table 2, there is multicollinearity present within the tourism variables in particular, but also across most of the variables used, indicating they should be removed. However, O'Brien (2007) argues that this decision should not be based upon pure VIF results but also grounded in theory. It is not surprising that the tourism variables are correlated, considering their complex and inter-related nature that was described in the literature review and theoretical framework. Therefore, considering that the variables with the most significant VIF values are the separate dimensions, the multicollinearity present in the model will be controlled for by testing each tourism variable separately.

While controlling for time and individual effects makes the most methodological sense given the context of the data, its availability makes the simpler time-effects model more accurate for this study. This was found through testing each fixed effects model (individual-, time- and two-way fixed effects). The adjusted R^2 portrays how well a model accounts for both cross-sectional and temporal variation, therefore allowing to compare the model fit. This test found that the adjusted R^2 was 0.22 (Individual-Fixed Effects), 0.53 (Time-Fixed Effects) and 0.06 (Two-Way Fixed Effects). Of these values, Time-Fixed effects is by far the most accurate, allowing for the main equation to be calculated.

For county *i* in period *t*, our model can be expressed as:

$$affordability_{it} = \beta_0 + \beta_1 X_{it} + \delta_2 B2_t + \cdots + \delta_T BT_t + \delta_t BT_t + u_{it},$$

Where $affordability_{it}$ is the dependent variable that represents housing affordability. X_{it} represents the explanatory independent variables of tourism activity and other controls. Finally, $\delta_2 B2_t + \cdots + \delta_T BT_t$ represents the time-fixed effects that control for time-specific shocks. As the joint hypothesis test reveals the F-statistic is 16.2396 and the corresponding p-value is 0.0004, we can reject the null hypothesis that both coefficients are zero.

After main analysis was conducted, the results tested positive for serial correlation and heteroskedasticity. Serial correlation is when the error terms in a regression model are correlated across observations (Field, 2024). This was expected due to the persistence in housing affordability across time. Heteroskedasticity, on the other hand, is when the error variance is not consistent across all observations (Field, 2024). To account for these errors which can affect the accuracy of the overall model, robust standard errors have been applied (Croissant & Milo, 2024).

6.3 Results

Table 3: *Results.*

Model/Variables	Model 1	Model 2	Model 3	Model 4
Accommodation	0.08 (0.08) ***	-	-	-
Concentration	-	0.001 (0.001)	-	-
Seasonality	-	-	0.01 (0.02)	-
Vulnerability	-	-	-	0.01 (0.02)
Migration	0.002 (0.006) ***	0.001 (-0.002)**	0.001 (-0.002) ***	0.02 (-0.002) ***
Unemployment	0.001 (0.007)**	0.001 (0.002)	0.001 (0.001) ***	0.01 (0.003)
Non-Resident Property	0.0008 (0.001)***	0.005 (0.004) ***	0.005 (0.008) ***	0.004 (0.005) **
New Housing	-0.003 (-0.002) ***	-0.002 (-0.003)	-0.003 (-0.003) **	-0.003 (-0.006) ***

Note: All models are panel data, time-fixed effects. Cluster standard errors are given in parenthesis.
*** 1% significance level.
** 5% significance level.
* 10% significance level.

Starting with the tourism variables, the only one which is found to be statistically significant is tourism accommodation. The positive relationship confirms the hypothesis that larger shares of tourism accommodation lessens housing affordability (Wachsmuth & Weisler, 2018). Furthermore, out of all the variables, tourism accommodation has by far the biggest impact on housing affordability, with 1 percent increase of tourism accommodation associated with an 8 percent increase in housing affordability (making it less affordable).

The other tourism variables were all found to be positive, but not significant. Of these variables tourism vulnerability is the only one nearing significance at the 10 percent level. As this is a composite of the two other variables, it could indicate that when placed in the same context, there is an increased housing affordability burden. This is in contrast to the non-tourism variables which were all found to be significant in at least one model. Migration was the only variable to

be strongly significant at the 1% level across all of the models. This variable was found to be positive, meaning that an increase in migration makes housing less affordable. In the context of this variable, positive migration means that when there are more people moving to an island, housing is less affordable. This is consistent with the economic theory presented in the literature review, where increased demand results in increased housing prices (Glaeser et al., 2005). Non-resident property is also significant at the 5% or 1% level across all of the models. Its positive relationship portrays when more housing sales are made by non-resident buyers, housing becomes less affordable. This variable represents the migration of more affluent individuals, who have been found to purchase housing at higher costs than non-residents (DBEDT, 2025). Of the variables, new housing is perhaps the most interesting. While the expected results are that more single-family housing permits would increase the affordability of housing, it has the opposite effect. Instead, they are found to increase the housing-cost burden. This is in opposition to literature which argues that an increase in the housing stock supply will be better able to meet demand, making it less competitive and more affordable (Glaeser et al., 2005). Finally, unemployment was found to have the least statistical significance across the models. Its positive relationship is consistent with the hypothesis that greater unemployment will increase the housing cost burden. However, as it is the least significant, it is likely that it does not have as much impact as the other variables.

7. Discussion

In this section, the findings of the analysis will be compared to the existing information presented in the background and literature review. They will then be placed within the theoretical framework to provide context for deeper analysis.

7.1 Commodification of Space

In the analysis, tourist accommodation was found to be the only dimension of tourism activity to have a significant impact on housing affordability. According to Wachsmuth and Weisler (2018) vacation rentals portray a new form of tourism activity (since the rise of Airbnb) which impacts the overall housing stock available to long-term residents. The extent of vacation rentals in the state of Hawai'i is exceedingly high, making up to 13 percent of the total housing stock in 2023.

This can be compared to other tourist destinations, which short term rentals only accounted for 2 percent (New York City), 6.8 percent (Barcelona), and 3 percent of the total housing stock (Los Angeles) (Wachsmuth & Weisler, 2018; Garcia-López et al., 2020; Lee, 2016). These destinations also similarly found that short-term rentals increased rents up to 7 percent in Barcelona. Based on these studies, with tourist accommodation double that of other popular destinations, the impact of vacation rentals on housing affordability in Hawai'i is not surprising.

Compared to the other tourism variables, accommodation is unique in its ability to portray the commodification of space by the tourism industry in Hawai'i. Firstly, they represent how capitalism continuously seeks new opportunities for profit extraction. As housing prices no longer reflect the demand of residents' needs for shelter, but rather are commodified for profit through the tourism industry. Based on rent gap theory, short-term rentals impact housing prices because they hold a higher potential ground rent than typical residential housing. In Barcelona, it was found that the average price of an Airbnb per day was 71 Euros compared to the price of the average long-term rent per day of 11 Euros. By this theory, a short-term rental would only need to be occupied 10 days to exceed the monthly income of the average long-term rental (Garcia-López et al., 2020). Therefore, long-term rents will increase as landlords begin to recognize the potential rent they could be making if they convert their units to short-term rentals.

It is possible that the extent of the impact that tourism has on housing prices reaches beyond tourist accommodation. Tourism concentration's lack of statistical significance is surprising, as it portrays the percent of visitors in relation to the residential population. This represents the spread of the tourism industry into residential spaces, consuming resources and straining the infrastructure. The lack of significance is contradictory to the resident satisfaction survey (Figure 6) which found that 65 percent of residents felt that a major problem that tourism causes is overcrowding. It is possible that concentration's lack of significance can be connected with the most significant control variable, non-resident property ownership.

As explained by Britton (1991), some tourist destinations, in themselves become commodified, attracting long-term retirees, seasonal residents, and investors who are attracted to its aesthetic image. The control variable which was most significant was non-resident property ownership,

having a positive relationship with housing affordability (worse affordability). There is an extremely high percentage of non-resident home buyers in Hawai'i, averaging 25 percent in 2024. It could be argued that while not directly correlated with the tourist activity measured in this paper, these non-resident buyers are likely influenced by the popularity and prestige of Hawai'i as a global tourist destination. On the premise that higher concentration of visitors worsens affordability, many non-residents would not be considered 'tourists' officially, but could still be a significant stressor on the ability for locals to maintain their way of life.

The relationship between housing affordability and non-resident buyers, can also be associated with the unexpected influence of new housing permits. Under the theory of supply and demand, it would be assumed that an increase in housing supply would equate to lower housing prices (glaeser et al., 2005). However, in Hawai'i, an increase in new housing permits made housing less affordable. There are several theories as to why this may be. Firstly, as emphasized by Tyndall et al. (2024), new housing — which would be reflected in the control variable — is often catered toward more affluent non-residents who will pay significantly more. This concept was illustrated in Figure 3, which shows the median sales price for foreign buyers is twice what local residents pay. As Tyndall et al. identifies, the majority of affordable housing in Hawai'i are actually old units, which have grown more affordable over time. Furthermore, they highlight that the state has only expanded its housing stock by 1.8 percent between 2018-2022. They identify that this growth has been concentrated on O'ahu, with Maui and Kaua'i actually experiencing a net loss of housing units. This slow growth in housing supply is further exacerbated as the rate of new construction has not been greater than the growth of the vacation rental market.

As the tourism industry encroaches on residential spaces and resources, many destinations have seen increased tension as locals feel the need for tourism 'degrowth'. The negative aspects of tourism accommodation have also gained increasing attention in Hawai'i. This ideology is represented in the recent tourism survey (Figure 5), which found that 67 percent of respondents felt that "This island is being run for tourists at the expense of the local people". The growing discontent of residents has been addressed in recent policy regulations, which have created tourist zones across the Hawaiian islands. These zones regulate tourist activity and confine the operation of short-term rentals. In Maui, regulations are set to be implemented across the island

in 2025. This attempt to decommodify residential spaces is an important first step in the process of addressing the housing affordability crisis. Such policies are not without criticism, as Bonham et al. (2025) question the choice to uphold a 2005 policy known as the ‘Minatoya List’ which exempts 6,127 vacation units from the current ban on residential area short-term rentals in Maui. In the study, the authors found that banning the Minatoya List vacation rentals would increase Maui’s housing stock by 13 percent — or a decade's worth of development.

7.2 Commodification of Labor

The true relationship between tourism, income, and its overall impact on housing affordability is difficult to discern from the results of this study. The lack of significance of the concentration variable would indicate that the average resident does not interact with the tourism industry on a daily basis. However, this is in direct conflict with the state’s overall economic dependence on the industry, with 25 percent of labor employed in the industry in 2023 (DBEDT, 2025). Moreover, the residential survey (Figure 6) found that over 40 percent of respondents felt that locals do not benefit from tourist revenue. This is most evident in the recent organized strikes in the hospitality sector across Hawai’i, in which over 3000 workers participated. The protests were centered at the Hilton Hawaiian Resort in Honolulu, the largest hotel in the state (Mateer, 2024). The hospitality sector's demands for better wages, working conditions, and benefits represent the commodification of labor under the sector. This would indicate that the profit being generated from the industry is not reaching locals, but is rather being extracted and accumulated by corporate actors.

On one hand, the recent strikes represent the locals who work in the traditional hospitality sector. But on the other hand, the sharing economy has been argued as the opposite of this, that platforms like Airbnb are liberating residents. Owning short-term rentals offer the ability for anyone to directly generate wealth from profitable industries like the accommodation sector. The profit from short-term rentals goes directly into the hands of local residents, rather than the pennies offered by major hotels hiring minimum wage workers. This image is not as idyllic as it may seem. In Hawai’i, many vacation rental owners contest that this would harm the local

economies. This concern is justly reflected in academic reports which found that eliminating short-term rentals in Maui would result in the loss of 1,900 jobs and visitor spending to decline by $900 million annually. However, 85 percent of short-term rentals that would be affected would also be owned by out-of-state investors (Bonham et al., 2025). This reveals that behind the facade of short-term rentals being a source of income for locals, their profit is still concentrated outside of Hawaiian residents.

In the traditional hospitality sector, hotel workers are one of the most visible forms of labor that tourists interact with. The recent hospitality strikes in Hawai'i represent the ability for workers to protest their exploitation and ensure better benefits. Wachsmuth and Weisler (2018) contest that even if all short-term rentals were owned by local residents (which they are not), the leisure employees typically associated with the hotel industry are still present. Work is often outsourced and there are people who clean and manage these rentals, only they are much less visible. This begs the question, what are the conditions of labor in the short-term rental sector, where there are no hospitality unions to protest exploitation and ensure benefits? The scope of this paper and its tourism activity indicators lack the ability to effectively explore the true nature of the tourism employment industry. Rather, this portrayal allows for a greater understanding of the lack of agency many residents have to change their financial circumstances.

As discovered in the analysis, the other tourism activity dimensions of concentration, seasonality and vulnerability were not statistically significant. On one hand, the insignificant result of seasonality is not particularly surprising, considering the lack of literature on it in Hawai'i — compared to the other variables. As described by Chen and Fomby (1999), the seasonality of tourism in Hawai'i is more tied to the context of incoming visitors rather than of a regular pattern. This indicates that there is not a significant variation of income throughout the year for Hawaiian residents, which would affect their ability to afford housing. However, the findings of this study should not be applied to other tourist destinations around the world. For example, Mikulić et al. (2021) found that tourism accommodation was the least significant – compared to seasonality which had by far the greatest impact on housing affordability in Croatia. The contrasting findings between these two studies, and the lack of existing research on the other

tourism dimensions (other than accommodation) presents an important area of further research in other destinations.

While tourism vulnerability was not significant, it was near the 10 percent level, which allows for some insight into its implications on housing affordability. The logic behind this indicator is that in a society where residents are highly reliant on the tourism industry, incomes will be more volatile due to shocks to the tourism industry. This is represented by the seasonality of tourism, but it can also be impacted by a number of different factors. For example, during the COVID-19 pandemic, the unemployment rate in Maui spiked to 17 percent of the labor force (as shown in Table 1). While many industries suffered from the pandemic, Bond-Smith and Fuleky (2022) attributed Hawaii's dependence on the tourism industry to have exacerbated the overall economic impact of the pandemic. The impact of the pandemic has increased the academic awareness of the volatility of the tourism industry, but it can take shape in other ways. This is evident during the 2023 Maui wildfires which not only devastated the housing market in Hawai'i, but the damage was concentrated in the most popular tourist area on the island — Lahaina. This contributed to over 50 percent of workers losing their jobs following the devastation (Juarez et al., 2024). The fire also contributed to a growing homeless rate in Hawai'i, of which, 51 percent are Native Hawaiian (Department of Human Services, 2024). While the scope of this paper does not encompass the effects of the Maui wildfire, it conveys the future vulnerability many destinations will face from climate change.

7.3 Commodification of Culture

Williams and Gonzalez (2017) explain that the commodification of culture through tourism in Hawai'i has been used to rationalize and disguise its colonization by the United States. To portray this, they use the juxtaposition of two Hawaiian values. On one side, the ethical belief of aloha (friendly locals, climate and universal access) which has been heavily commodified by the hospitality sector. This concept, the author argues, has been used to illustrate the accommodating nature of Native Hawaiians, as a means to fuel the implausibility of the overthrow of the

Hawaiian monarchy. This is associated with the common misbelief in American society that Hawai'i was willingly colonized by the American government. On the other side, is the concept of aloha 'āina, or lover for the land. This concept departs from one of willing dispossession, to one which portrays the inextricable link between Hawaiian culture and the ancestral importance of their lands. Which has been violated by the commodification of space through the touristification of cultural sites and natural spaces.

The commodification of culture takes a new dimension, when viewed through this housing affordability crisis. These creation of 'tourism zones' are a direct representation of the gentrification process, portraying the extent of the uneven development that is present in Hawai'i. As the tourism industry is centered within these zones, this indicates that the majority of investment and revitalization is being made into the neighborhoods where Hawaiian residents no longer live. Zukin (1987) wrote that "a gentrified area is not so much a literal place as a cultural oscillation between the prosaic reality of the contemporary inner city and an imaginative reconstruction of the area's past" (p. 187). This means that the historic neighborhoods and tourist attractions which were once the embodiment of Hawaiian culture, are mere imaginative reconstructions of what they once were. As residents can no longer afford to, or find their neighborhood community has been replaced by tourists, many are forced to leave their homes and find new places to live within the state — or even the mainland. Therefore, the implications of tourism having a profound impact on the housing affordability crisis in Hawai'i shifts the moral stakes from overtourism and gentrification, to one which facilitates cultural eradication.

8. Conclusion

This study examines the effect of tourism activity on housing affordability in Hawai'i. This has taken shape through an exploration of different dimensions of tourism activity: accommodation, concentration, seasonality, and vulnerability. This study contributes to the current academic discussion on the effect of overtourism and its impact on the housing market. In particular, it aims to fill a gap in the literature by viewing this relationship through housing affordability

rather than house prices alone. Moreover, it aims to depart from the typical descriptive accounting of the tourism industry by placing it within a critical analysis.

By far, the results of the analysis found that the most significant factor exacerbating the housing affordability crisis in Hawai'i is tourist accommodation. This study argues that the extent of short-term rentals portray how Hawai'i has been commodified as a destination, as residential spaces are converted to profit off the industry. The findings of this paper are consistent with the academic understanding in Hawai'i, which also places short-term rentals as a major contributing factor in the current housing affordability crisis. This is represented by recent policies which restrict the operation of short-term rentals to tourist zones. Although this indicates that the government is attempting to address this issue, many continue to question the complicity of the state in Hawai'i in perpetuating the issues associated with the industry (Bonham et al., 2025; Williams & Gonzalez, 2015). The scope of this paper can not determine the effectiveness of current or future policies, indicating the importance of future research on the subject.

Overall, this study is representative of the need to balance the interests of residents with the future growth of the tourism industry. The housing crisis in Hawai'i is not a simple story of the effect of tourism on real-estate prices. Rather it is one that has the potential to eradicate the rich cultural heritage and history that made Hawai'i such a popular tourist destination in the first place. Simply put, the fear of many Hawaiians is that the visitors to their beautiful home — *are loving Hawai'i to death*.

9. References

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