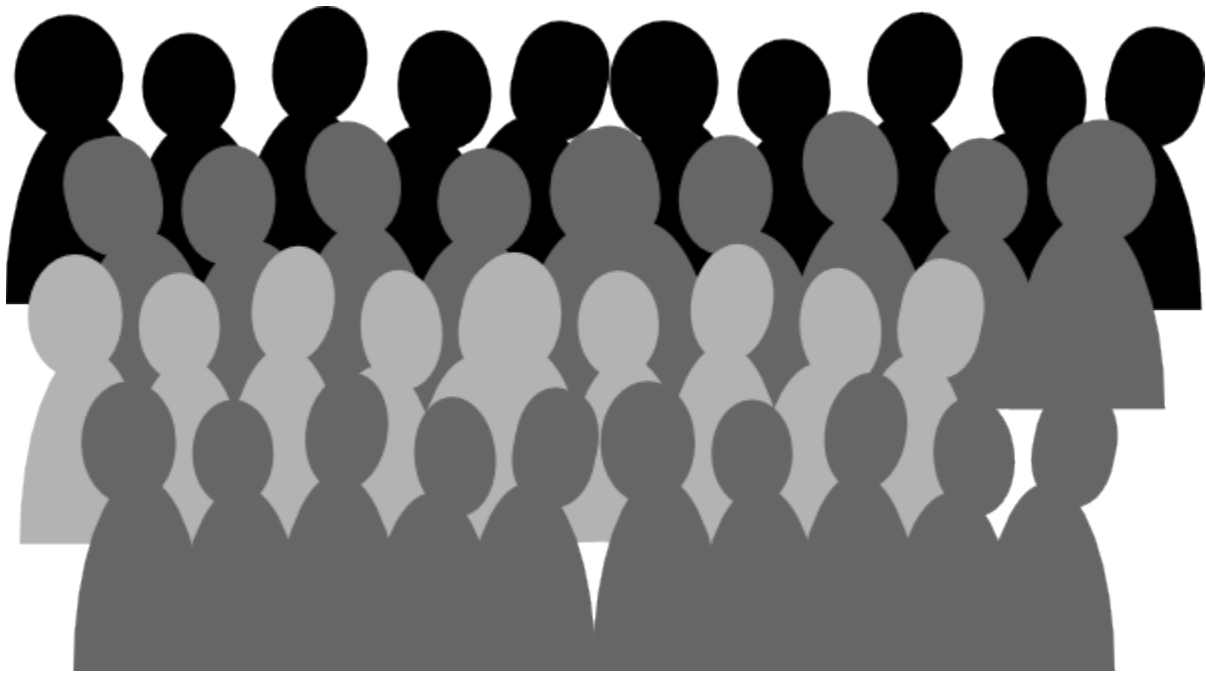




STATE OF HAWAII • DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

Overcrowding in Hawaii housing



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Department of Business, Economic
Development & Tourism

Research and Economic Analysis Division

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Executive summary

The negative effects of housing overcrowding are well documented. This report aims to examine aspects of overcrowding in Hawaii, comparing data at county, state, and national levels.

Using persons-per-room as a measurement of crowding, there are clear disparities in the conditions faced by homeowners and renters in Hawaii. The state ranks seventh nationally in its reliance on rental housing, and its rate of overcrowding in rental housing is notably higher than national levels. The state's high residential vacancy rates contribute to overcrowding as well. Based on 2022 U.S. Census Bureau data, more than 115 thousand people in Hawaii were living in overcrowded housing, with over 47 thousand in severely overcrowded housing.

Crowding is also a function of available living space. The average square footage of Hawaii homes was the lowest among U.S. states in 2020, ahead of only Washington, D.C. This is compounded by Hawaii having the nation's second largest average household size. The result is that Hawaii's average of 497 square feet per household member is the lowest in the nation, 29 per cent below the national level.

Measuring overcrowding

The 17th century English proverb “two is company, three is a crowd” isn't used lightly by researchers studying the economics of crowded housing and its effects. For multiple reasons, overcrowding is a subject treated with great seriousness. As outlined in a seminal 2007 report commissioned and issued by the U.S. Department of Housing and Urban Development (HUD), ([Measuring Overcrowding in Housing \(huduser.gov\)](https://www.huduser.gov/publications/pdf/2007_01.pdf)), measures of overcrowding center on persons-per-room (PPR) and persons-per-bedroom (PPB). The use of these metrics goes beyond economic concerns and includes overcrowding's negative impacts on physical health, mental health, and personal safety.

Persons-per-room is the more widely used standard of the two, in part because of the growth in single-room housing units, a housing category often referred to as studios. This is particularly true in Hawaii, where 5.4 percent of occupied housing units in 2022 consisted of one-room units, an increase of 1.4 percentage points from the 2010 level. The 2022 Hawaii rate was more than double the national rate of 2.3 percent. In addition, 6 percent of Hawaii's occupied housing units in 2022 had no bedrooms, versus 2.6 percent nationally. (U.S. Census Bureau, S2504 Physical Housing Characteristics for Occupied Housing Units).

In the present report, which examines overcrowding in Hawaii housing, PPR data is primarily employed. Levels up to 1.00 aren't considered overcrowded. Levels between 1.01 and 1.50 qualify as overcrowded, with those above 1.50 considered very or seriously overcrowded. Both terms are used in housing literature.

The methodology for calculating overcrowding used by the European Union (EU) lays out how such numbers are calculated. It views an overcrowded household as one which offers at minimum one room for the household, one room per couple in the household, one for each single person aged 18

or over, one room per pair of single people of the same gender between 12 and 17, one room for each single person between 12 and 17 not of the same gender, and one room per pair of children under the age of 12 ([Glossary:Overcrowding rate - Statistics Explained \(europa.eu\)](#)).

Overcrowding standards based on unit square footage-per-person (USFPP) are less clearly defined. While data exist for housing unit size, it is less precise; it also struggles to consider or quantify the influence of environment. One can spend time outside of a confined living space in Hawaii, for example, more comfortably than is the case in Minnesota.

The consequences of overcrowding

The COVID-19 pandemic brought new attention to housing disparities and the risks of crowding. The links between urban density, space availability, and health outcomes attracted more notice. Different nations employ different overcrowding metrics, but the takeaways overlap in depicting the increased risk of disease transmission via inhalation and exposure when living space is inadequate.

The risks of overcrowding were well known before the pandemic. World Health Organization (WHO) guidelines have long described adverse health conditions associated with inadequate housing. In the guidelines it issued in 2018, WHO cited “a direct association between crowding and adverse health outcomes, such as infectious disease and mental health problems.” (WHO Housing and health guidelines. Geneva: World Health Organization; 2018) Its list of infectious diseases and non-infectious health disorders related to household crowding cites numerous medical studies.

Addressing the subject of housing inadequacy and related socio-economic outcomes, the World Bank research has identified health, emotional well-being, social belonging, education, economic attainment, political participation, and job creation ([World Bank Document](#)).

Hawaii overcrowding: owners vs. renters

Numbers used in this analysis are based on 5-year 2018-2022 American Community Survey (ACS) data. It uses larger sample sizes than the annual 1-year surveys and provides more precise estimates, especially for smaller, less populated areas. Because the American Community Survey relies on small sample sizes, fluctuations in reported housing data are inevitable. In its 2022 survey, the Census Bureau selected 17,405 housing unit addresses initially and conducted final interviews with 9,848 ([Sample Size | American Community Survey | U.S. Census Bureau](#)). Note that the Covid-19 pandemic prevented the collection of single-year data for 2020.

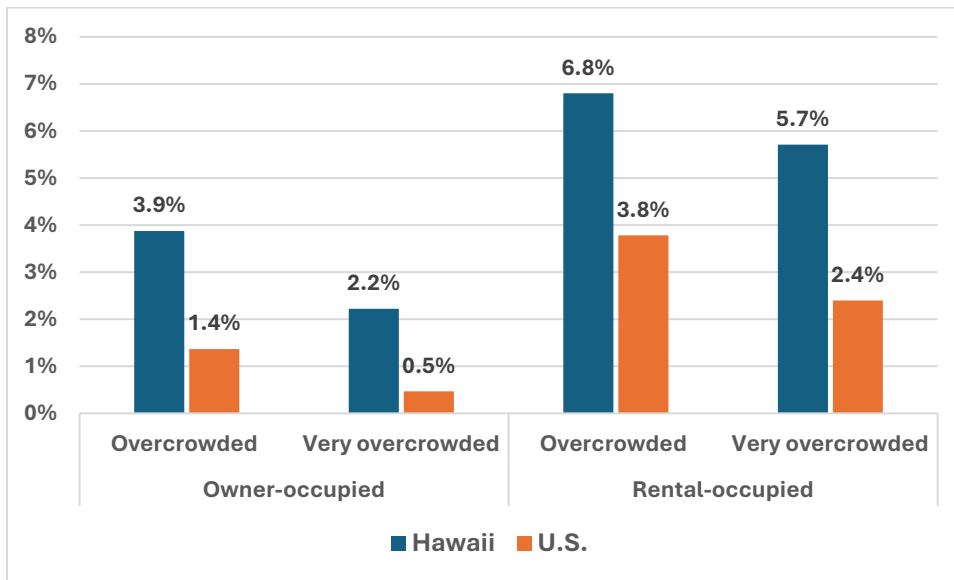
Of the 483,906 occupied housing units in Hawaii based on 2018-2022 ACS 5-year data, 38.2 percent were occupied by renters, the fifth highest level in the nation including the District of Columbia and Puerto Rico (U.S. Census Bureau, Table C25014). The number doesn't include vacant housing units, which stood at 76,967, equivalent to 13.7 percent of the state's total housing supply. Hawaii's vacancy rate ranked the state twelfth in the nation (U.S. Census Bureau, Table

B25002). It is notable that states with the highest share of vacancies tend to be in areas which attract visitors: the top four are Puerto Rico, Maine, Vermont, and Alaska.

The Census Bureau categorizes vacancies into seven broad groups. The largest is those classified as housing units “for seasonal, recreational, or occasional use.” The terms vacation home and second home are commonly used to describe such housing units as well. These account for 40.2 percent of vacant homes in Hawaii. This is equivalent to 5.5 percent of total housing supply, versus 3.5 percent for the entire U.S. Housing units for rent account for 2.8 percent of the state’s total housing units, putting Hawaii at number fourth in the nation. If units for sale are included with those for rent, Hawaii ranks fourth nationally as well (U.S. Census Bureau, Table B25002).

Higher vacancy rates and a greater reliance on rental units are both factors which add to overcrowding. For the state’s 298,616 owner-occupied housing units, 6.1 percent were overcrowded (U.S. Census Bureau, Table B25014). Based on the average household size for owner-occupied housing units (2.92 persons), 53,182 were living in overcrowded housing. For its 185,090 renter-occupied housing units, the rate of overcrowding increased to 12.5 percent. The average household size for renter-occupied units (2.67 persons) translates to 61,829 living in overcrowded housing. In total, 115,011 were living in overcrowded housing, 41 percent of this number in very overcrowded housing.

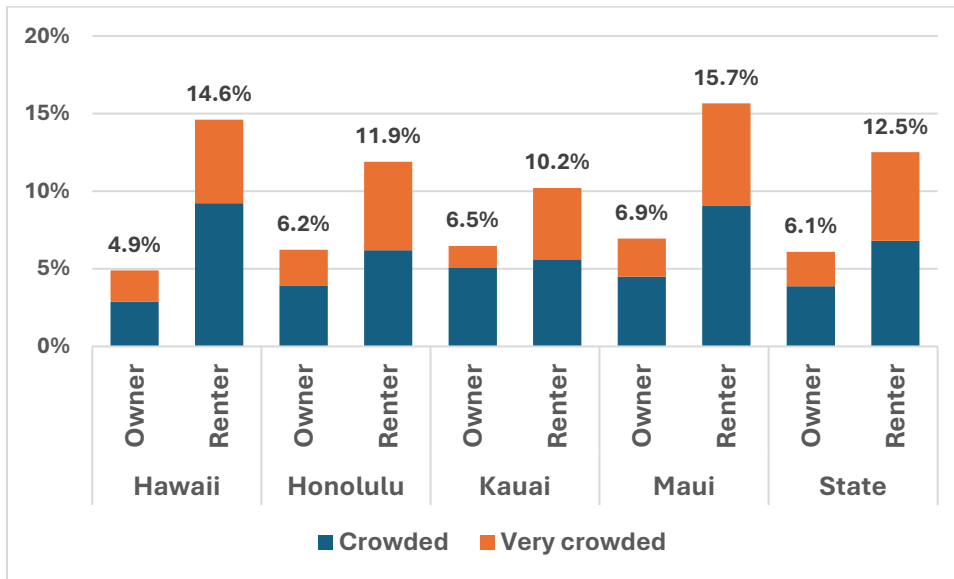
Figure 1. Overcrowding, Hawaii vs. U.S.: 2018-2022 (pct. of occupied housing with more than one person per room)



Source: U.S. Census Bureau 2018-2022 5-year ACS, Table B25014

Levels of crowdedness differ by county as well. While overcrowding is more prevalent in rented units, this is most clearly the case in Hawaii and Maui Counties, as Figure 2 illustrates.

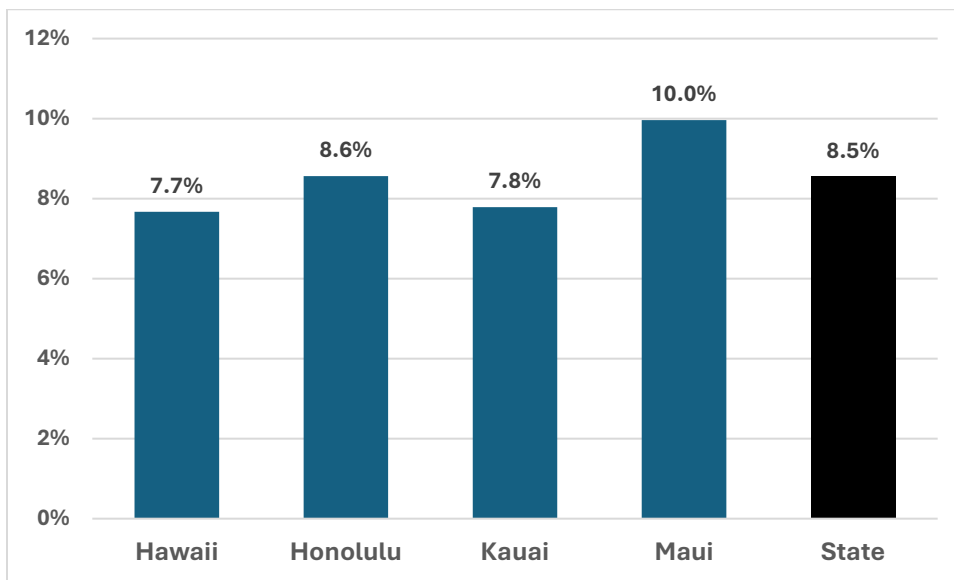
Figure 2. Degree of overcrowding by county, occupancy: 2018-2022 (pct. of occupied housing considered crowded or very crowded)



Source: U.S. Census Bureau 2018-2022 5-year ACS, Table B25014

While rental overcrowding is most prominent in these two counties, rental units there make up a smaller share of occupied housing. Measures of total overcrowding vary by county, as Figure 3 illustrates. Note that these figures are for 2018-2022; the 2023 Maui wildfires have exacerbated overcrowding.

Figure 3. Overcrowding by county: 2022 (pct. of occupied housing with more than one person per room)



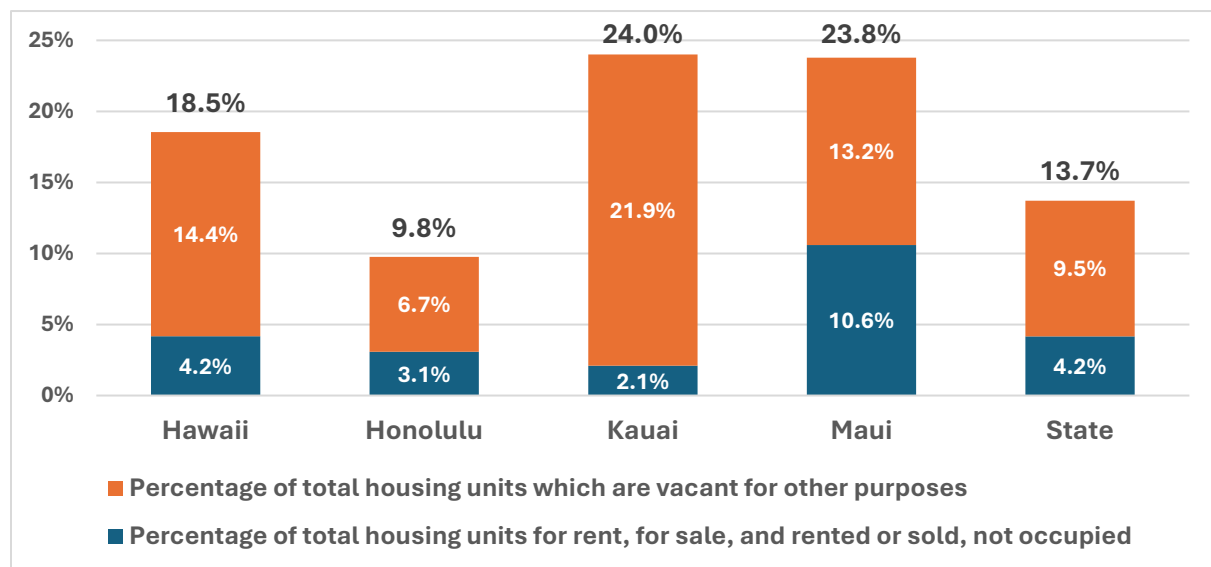
Source: U.S. Census Bureau 2018-2022 5-year ACS, Table B25014

Hawaii’s high housing costs are clear factors contributing to overcrowding. Median gross rents in the state as reported in the 2018-2022 5-year ACS ranged from \$1,352 (Hawaii County) to \$1,976 (Honolulu County). The statewide rate (\$1,868) was at a significant premium to the national level of \$1,268 (U.S. Census Bureau, Table B25064).

As described earlier, vacant units account for 13.7 percent of the state’s housing supply, a level which serves to push housing costs higher. Vacation homes account for nearly half of the units statewide which classified as vacant, with their shares in Kauai and Maui Counties higher still, a fact which is often cited in discussions of Hawaii’s housing affordability issues.

Figure 4 shows that the share of housing units which are capable of housing residents but are for sale or rent and thus vacant varies considerably by county as well.

Figure 4. Vacant housing unit status by county: 2018-2022 (pct. of total housing units classified as vacant)



Sources: U.S. Census Bureau 2018-2022 5-year ACS, Tables B25014, C25004

Housing unit and household size

In addition to housing unit availability, the physical size of those units and the number of people seeking housing are key determinants of crowdedness. The U.S. Energy Information Administration (EIA) reported square footage in U.S. homes by state in 2020 ([State Square Footage.pdf \(eia.gov\)](#)). The data, released in March of 2023, shows Hawaii housing units had the second smallest average square footage in the nation, ahead of only Washington, D.C., and were 20 percent smaller than the national average.

Part of this is related to how houses are built and how people live in Hawaii. The IEA’s Residential Energy Consumption Survey (RECS) defines square footage as consisting of the home’s living area, attic, basement, and garage. Relatively few Hawaii single-family homes contain attics (which need to be heated or cooled to be counted as part of the square footage) or basements. Garages need to

be heated or cooled and attached to the home to be counted, though this heating/cooling requirement affects states beyond Hawaii. Nationally, 73.4 percent of total residential square footage is cooled. The same EIA data show that in Hawaii just 46.8 percent of residential space is cooled, a tribute to how livable the state is.

Table 1. Average square footage per housing unit, by state: 2020

State	sq. ft.	State	sq. ft.	State	sq. ft.	State	sq. ft.
Washington D.C.	1,185	Alaska	1,761	North Carolina	1,901	Colorado	1,999
Hawaii	1,452	Alabama	1,766	Kentucky	1,912	Ohio	2,013
California	1,504	South Carolina	1,770	Illinois	1,924	North Dakota	2,016
Nevada	1,614	Arkansas	1,791	Nebraska	1,930	Connecticut	2,017
New York	1,614	U.S.	1,818	Tennessee	1,947	Indiana	2,020
Florida	1,623	Mississippi	1,850	Kansas	1,955	Michigan	2,030
New Mexico	1,672	Massachusetts	1,853	Georgia	1,974	Missouri	2,043
Washington	1,674	Rhode Island	1,864	Idaho	1,978	South Dakota	2,056
Oregon	1,701	New Jersey	1,872	Virginia	1,986	Wisconsin	2,067
Arizona	1,712	Montana	1,876	Maryland	1,987	Delaware	2,089
Oklahoma	1,729	West Virginia	1,891	Maine	1,989	New Hampshire	2,102
Texas	1,734	Wyoming	1,893	Pennsylvania	1,991	Iowa	2,104
Louisiana	1,743	Vermont	1,897	Minnesota	1,994	Utah	2,158

Source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics

According to U.S. Census Bureau 5-year ACS data for 2018-2022, Hawaii had the second highest household size in the US, at 2.92 persons, trailing only Utah, which was 13 percent larger than the national level of 2.57. (Note that 5-year data is used in Table 2 to create the per person data shown in Table 3.)

Table 2. Average household size, by state: 2020 (persons per household)

State	size	State	size	State	size	State	size
Utah	3.04	Mississippi	2.55	Colorado	2.48	South Dakota	2.44
Hawaii	2.92	New Mexico	2.55	Connecticut	2.48	Rhode Island	2.43
California	2.89	New York	2.55	Kansas	2.48	West Virginia	2.43
Texas	2.73	Virginia	2.55	Kentucky	2.48	Pennsylvania	2.42
Alaska	2.67	Alabama	2.53	North Carolina	2.48	Wyoming	2.41
Idaho	2.67	Florida	2.53	South Carolina	2.47	Iowa	2.40
Georgia	2.65	Oklahoma	2.53	Massachusetts	2.46	Ohio	2.40
Puerto Rico	2.65	Washington	2.53	Minnesota	2.46	Montana	2.39
Nevada	2.64	Arkansas	2.51	Nebraska	2.46	Wisconsin	2.37
New Jersey	2.64	Illinois	2.51	New Hampshire	2.46	North Dakota	2.34
Maryland	2.60	Delaware	2.50	Oregon	2.46	Vermont	2.33
Arizona	2.56	Tennessee	2.50	Michigan	2.45	Maine	2.29
Louisiana	2.56	Indiana	2.49	Missouri	2.44	Washington D.C	2.03

Source: U.S. Census Bureau. "HOUSEHOLDS AND FAMILIES." American Community Survey, 2018-2022 ACS 5-Year Estimates Subject Tables, Table S1101

By way of comparison, the average household size for the 27 nations which make up the European Union was 2.3 in 2020, according to Eurostat, the EU’s statistical office.

Limited housing space and larger household size together contribute to Hawaii’s average square footage per household member being the lowest in the nation, 29 percent below the national average. It is worth noting that two of the biggest destinations for Hawaii residents leaving the state, California and Nevada, both offer average square footage per household member below national levels, a sign that relative proximity to Hawaii may be an important factor for those choosing to leave in addition to the availability and cost of housing.

Table 3. Average square footage per household member, by state: 2020

State	s.f.	State	s.f.	State	s.f.	State	s.f.
Hawaii	497	Oregon	691	Illinois	767	Connecticut	813
California	520	Alabama	698	Rhode Island	767	Vermont	814
Washington DC	584	U.S.	707	Kentucky	771	Pennsylvania	823
Nevada	611	New Jersey	709	West Virginia	778	Michigan	829
New York	633	Utah	710	Tennessee	779	Delaware	836
Texas	635	Arkansas	714	Virginia	779	Missouri	837
Florida	642	South Carolina	717	Nebraska	785	Ohio	839
New Mexico	656	Mississippi	725	Montana	785	South Dakota	843
Alaska	660	Idaho	741	Wyoming	785	New Hampshire	854
Washington	662	Georgia	745	Kansas	788	North Dakota	862
Arizona	669	Massachusetts	753	Colorado	806	Maine	869
Louisiana	681	Maryland	764	Minnesota	811	Wisconsin	872
Oklahoma	683	North Carolina	767	Indiana	811	Iowa	877

Source: DBEDT calculations based on EIA, Census Bureau data

Average household size data using current criteria date back to 2010. Because of their limited populations, margins of error for Hawaii’s counties are greater than is the case for state or national data, which helps explain some of the year-to-year fluctuations seen in the data in Table 4.

Hawaii’s average household size has continued to be larger than is the case nationally. While the trend has been for a small decline both nationally and in Hawaii, Kauai’s 2022 average household size only managed to return to its 2010 level after fluctuating at higher levels.

Table 4. Average household size by county: 2010-2022 (persons per household)

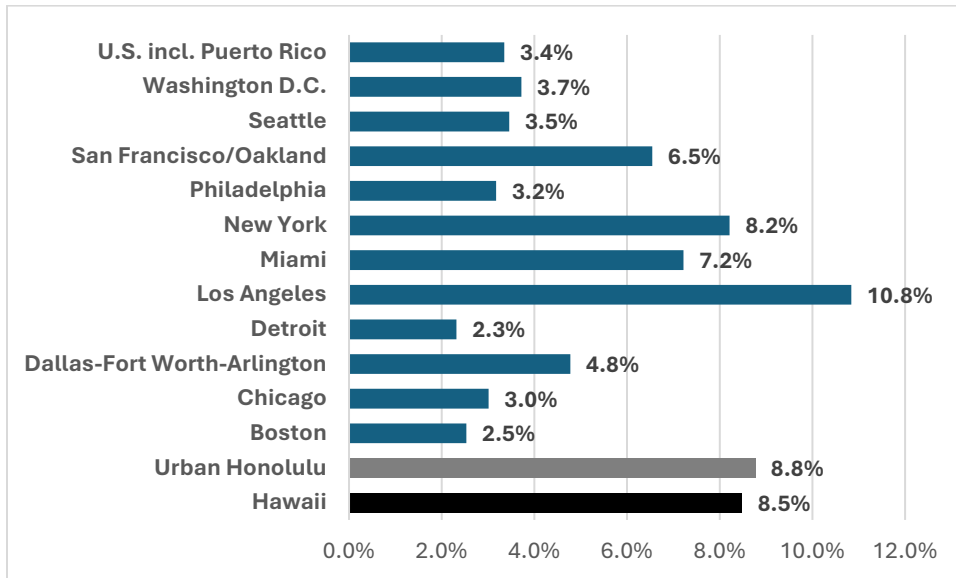
Year	Hawaii	Honolulu	Kauai	Maui	State	U.S.
2010	2.91	2.98	3.01	2.94	2.96	2.63
2011	2.84	3.01	2.92	2.93	2.97	2.64
2012	2.87	3.05	2.99	2.98	3.01	2.64
2013	2.90	3.06	3.07	2.92	3.02	2.65
2014	2.93	3.09	3.14	2.94	3.05	2.65
2015	3.01	3.12	3.24	3.11	3.11	2.65
2016	2.79	3.09	3.07	3.04	3.04	2.65
2017	2.86	3.04	3.11	3.05	3.02	2.65
2018	2.77	3.06	3.14	3.11	3.02	2.63
2019	2.79	2.97	3.12	3.01	2.95	2.61
2020	NA	NA	NA	NA	NA	NA
2021	2.77	2.85	3.10	2.87	2.86	2.54
2022	2.72	2.84	3.01	2.81	2.83	2.50

Source: U.S. Census Bureau. "HOUSEHOLDS AND FAMILIES." American Community Survey, ACS 1-Year Estimates Subject Tables, Table S1101, 2010-2022

Metropolitan Statistical Area comparisons

The Census Bureau employs the designation Metropolitan Statistical Area (MSA) to refer to a large city and its surrounding suburbs. While there are clear differences in the scale, for example, of Los Angeles and Honolulu, both are identified in part by their sprawl and ability to expand beyond the more tightly defined central urban areas.

Figure 5. MSA overcrowding: Urban Honolulu and other major cities: 2022 (pct. of occupied housing with more than one person per room)



Source: U.S. Census Bureau 2022 1-year ACS, Table B25014

Conclusion

While the dangers associated with respiratory disease transmission receive less attention than was the case during the COVID-19 pandemic, overcrowded housing remains an issue with broad implications for Hawaii. The state's reliance on often more densely populated rental housing, a shortage of affordable housing, limited housing space, and large average household size all contribute to levels of crowding with few parallels in the United States.

Data presented in this report are meant to quantify overcrowding. Limited housing space has many potential consequences. Longer term, it can act as a drag on the educational and economic development on which Hawaii so relies.