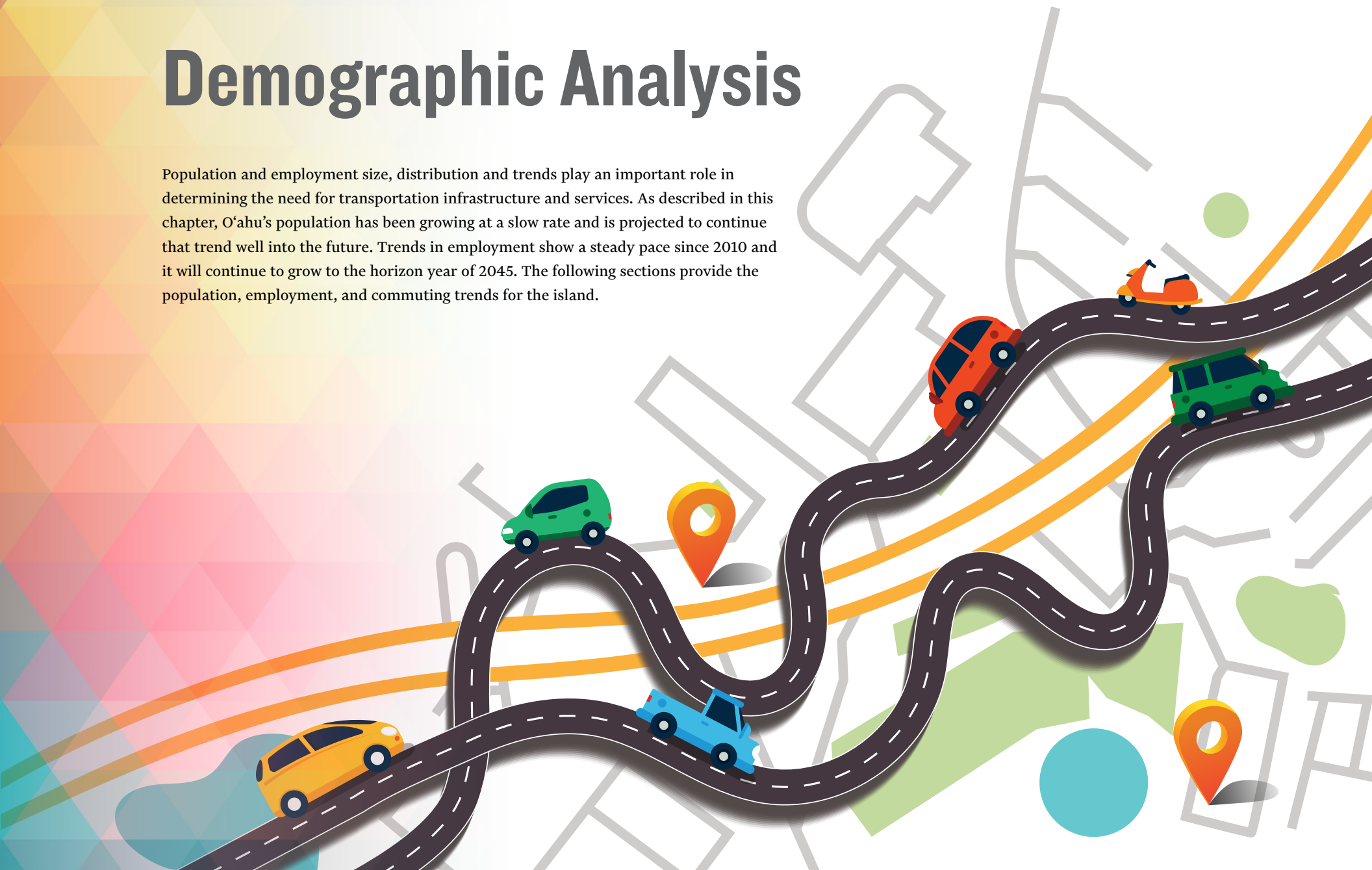


## CHAPTER THREE

# Demographic Analysis

Population and employment size, distribution and trends play an important role in determining the need for transportation infrastructure and services. As described in this chapter, O'ahu's population has been growing at a slow rate and is projected to continue that trend well into the future. Trends in employment show a steady pace since 2010 and it will continue to grow to the horizon year of 2045. The following sections provide the population, employment, and commuting trends for the island.





## Demographic Trends and Projections

### Population Trends

Over the last 70 years, the region has experienced significant resident population growth, rising from 500,409 in 1960 to 1,010,123 in 2020 (2010 U.S. Census). By 2045, that population is expected to increase by 6.3% (1,073,796). Figure 3.1 shows the resident population trends in the region. Most of the increase in population is accounted for by the size and rate of increase in population in the Primary Urban Center (PUC). The population share of the PUC is estimated to be 46% of the island's population, as of 2020.

Figure 3.2 depicts that although the region has experienced some growth during the past 40 years, population density in and around downtown Honolulu and other small areas in East Honolulu, 'Ewa, Pearl City, and Kāne'ohe is still relatively low (less than 2,000 persons per square mile). This illustrates that residential development has been primarily suburban in nature and has taken place at the urban fringe.

Figure 3.1: O'ahu Regional Population Trend (1960-2020)

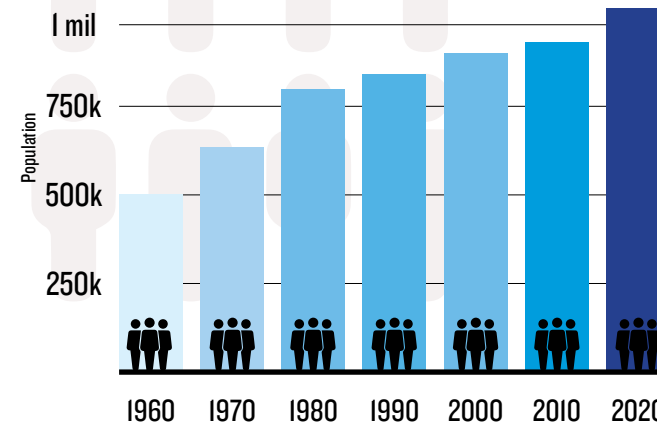
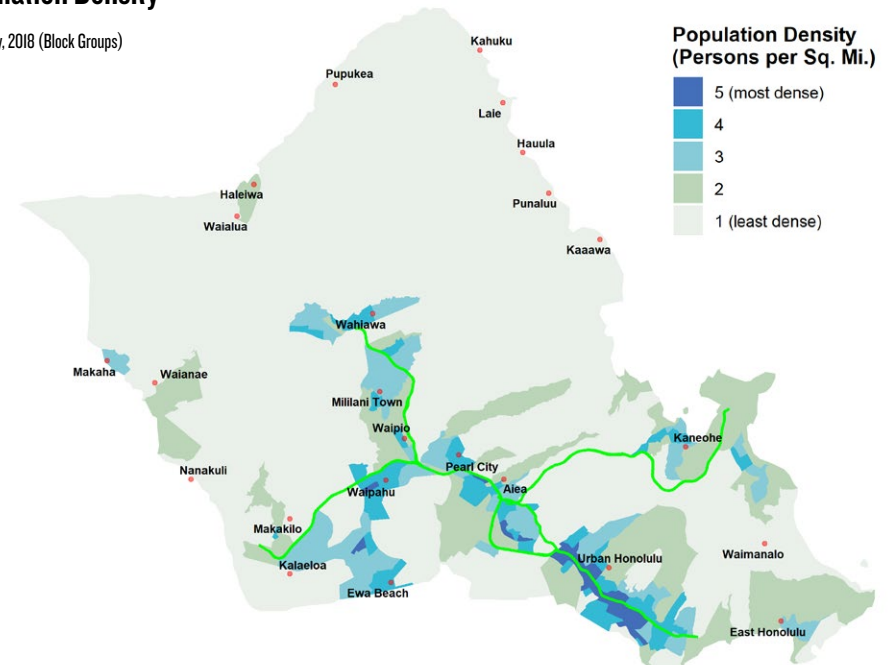


Figure 3.2: 2018 Population Density

Source: 5-year American Community Survey, 2018 (Block Groups)



## Population Projections

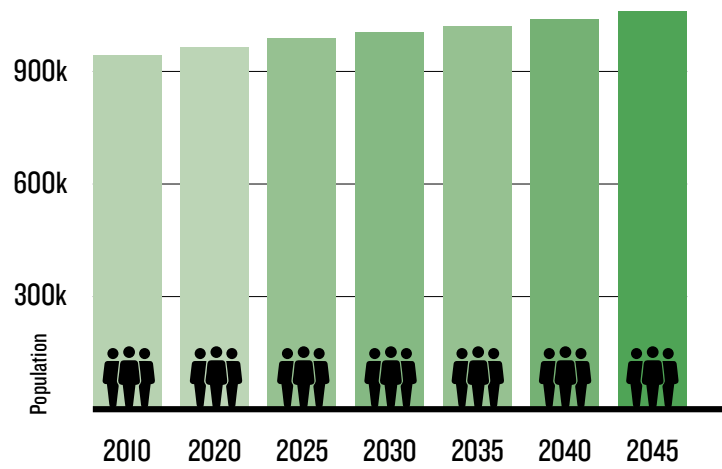
The population and employment estimates for the region were developed for the Travel Demand Forecasting Model to forecast transportation infrastructure needs to the horizon year of 2045. These projections were developed for 2030, 2035, 2040, and 2045 using regional control totals from the Department of Business, Economic Development, and Tourism (DBEDT). The regional population forecast from DBEDT shows a steady but slow population growth rate of between 0.1 and 0.4%. Figure 3.3

shows the regional population forecast. Generally, the spatial distribution of forecasted growth follows the trajectory of the past. The relative population rank of each DPA appears to be preserved and the future population of each DPA continues to ascend, except for 2045 where DBEDT forecasts a slight decline in population.

Figure 3.4 shows the 2045 population density controlled by DBEDT's regional forecast; it looks

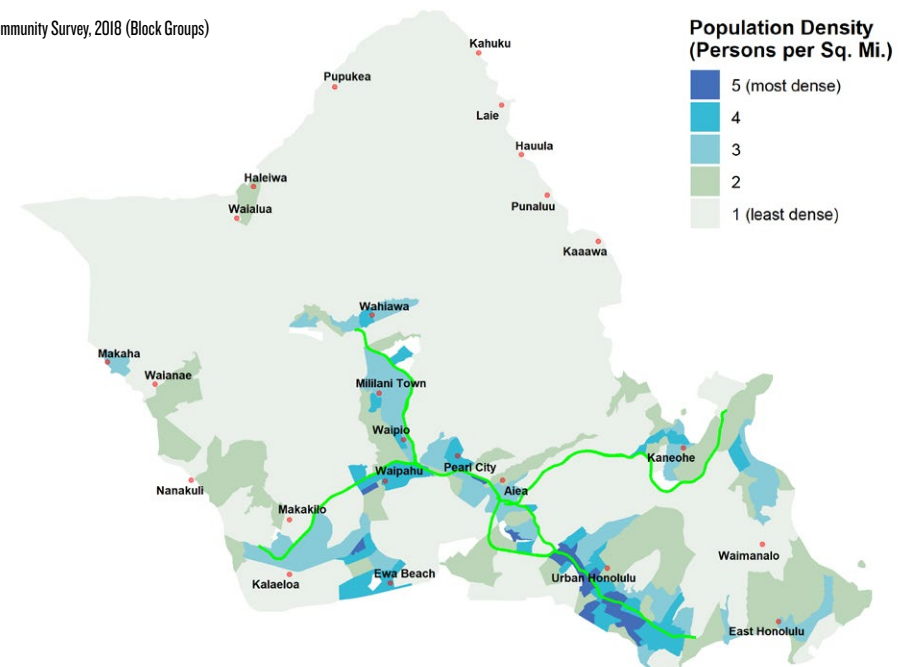
very similar to that of 2018 population density despite adding about 60,000 people to the region. This dispersed population pattern in Honolulu and other small areas in East Honolulu, 'Ewa, Pearl City, and Kāne'ohe will continue to stress public infrastructure and make public transportation infrastructure expansion economically unfeasible.

**Figure 3.3: Regional Population Forecast**



**Figure 3.4: 2045 Population Density**

Source: 5-year American Community Survey, 2018 (Block Groups)

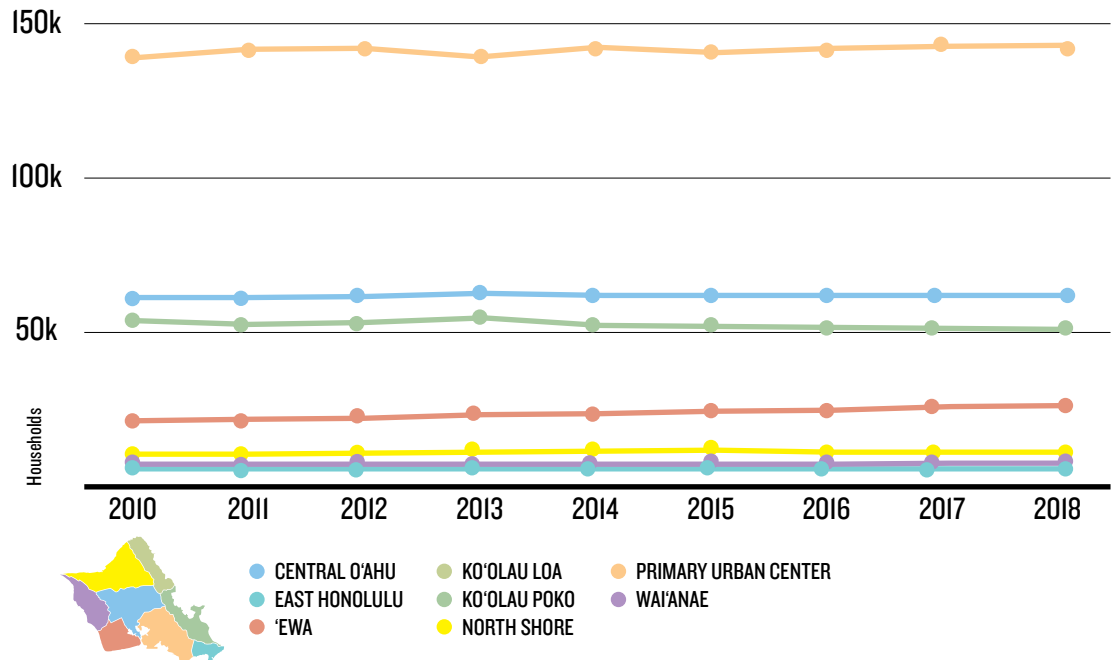


## Household Trends

The Census Bureau defines a household as all the persons who occupy a housing unit as their usual place of residence. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from outside the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements.

In 2018, there were 311,525 households in the region; this represents 6,698 additional households added in the region (a 2.2% increase) since 2010. Central O'ahu and the PUC are the dominant population centers with over 50,000 households in each DPA. Figure 3.5 shows the household trends in the region from 2010 to 2018.

Figure 3.5: Household Trends in Region from 2010 to 2018



## Employment Trends and Projections

### Employment Trends

As with population, the region's employment base has also grown since 2010. It is estimated that in 2020, there would be approximately 604,221 jobs available, up from the 557,256 jobs available in the region in 2010.

Figure 3.6 shows unemployment trends in the region, Hawaii and the United States. While the unemployment rate in the region follows the state and national trends, for the most part, the unemployment rate in the region has been lower than that of the state and the country. The lower unemployment rates in the region is partly the result of high number of U.S. military and government workers that reside in the region. in each DPA. Figure 3.6 below shows the household trends in the region from 2010 to 2018.

As shown on Figure 3.7, the 2020 employment density (number of jobs per square mile) in the Region, much like the population densities shown in Figure 3.2 (2018), is relatively low. The largest concentrations of employment occur in and around Honolulu, Ewa Beach, Pearl City, Kaneohe, Waipahu, Mililani, Wahiawā, Kalaeloa, and Waiʻanae, among others.



Figure 3.6 : Unemployment Rates (1980 - 2015)

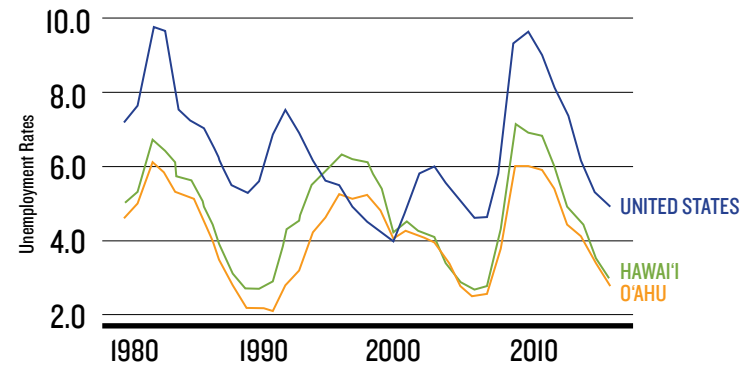
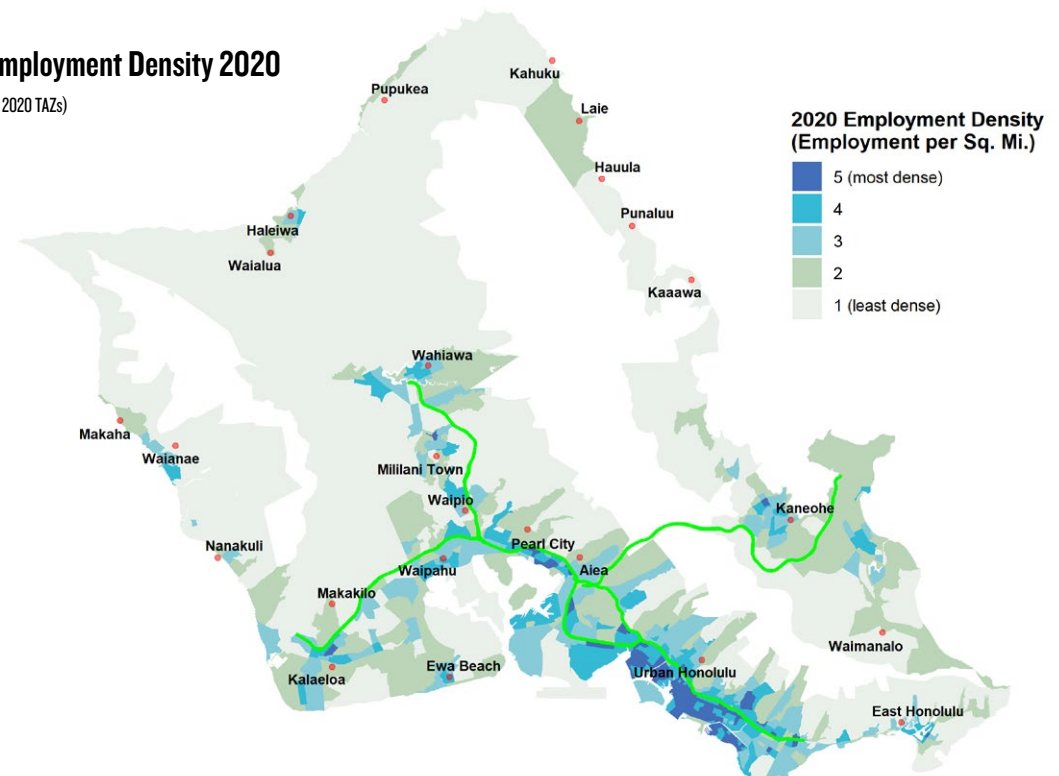


Figure 3.7: Employment Density 2020

Source: TDFM (Version 7, 2020 TAZs)





### Employment Projections

It is projected that by 2045 the region’s employment will grow to 753,473 jobs. At an increase of 28%, PUC is projected to experience the most job growth (by percentage) from 2010 to 2045. Please refer to Figure 3.8 for employment projections by DPA.

Figure 3.9 shows the projected 2045 employment density in the region in 2045, controlled by DBEDT’s control totals. The employment patterns are still largely suburban, low density.

Figure 3.8: Employment Projections by DPA

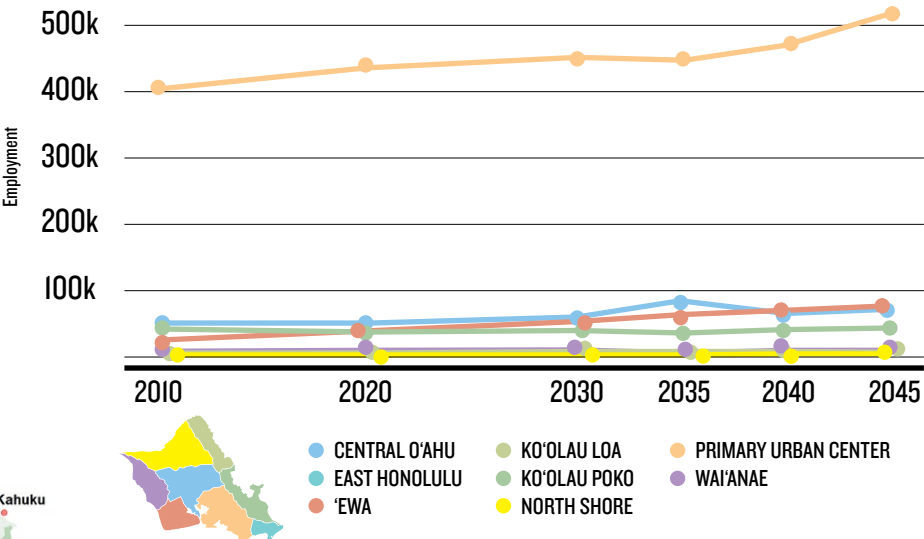
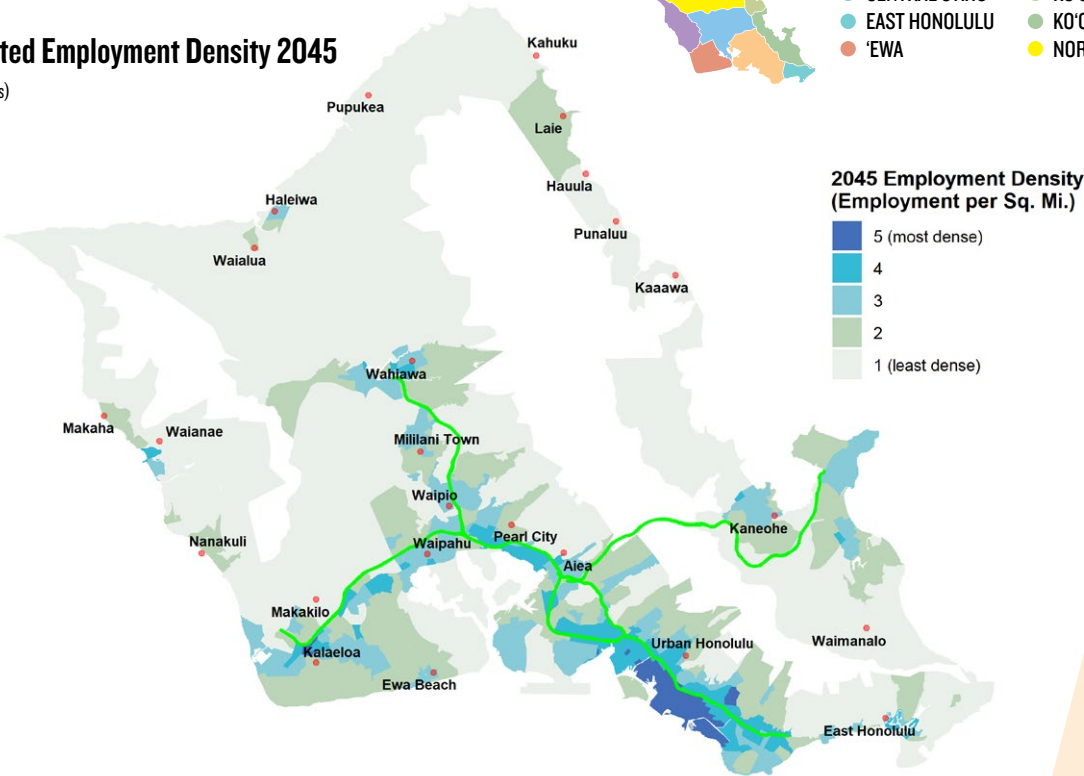


Figure 3.9: Projected Employment Density 2045

Source: TDFM (Version 7, 2020 TAZs)



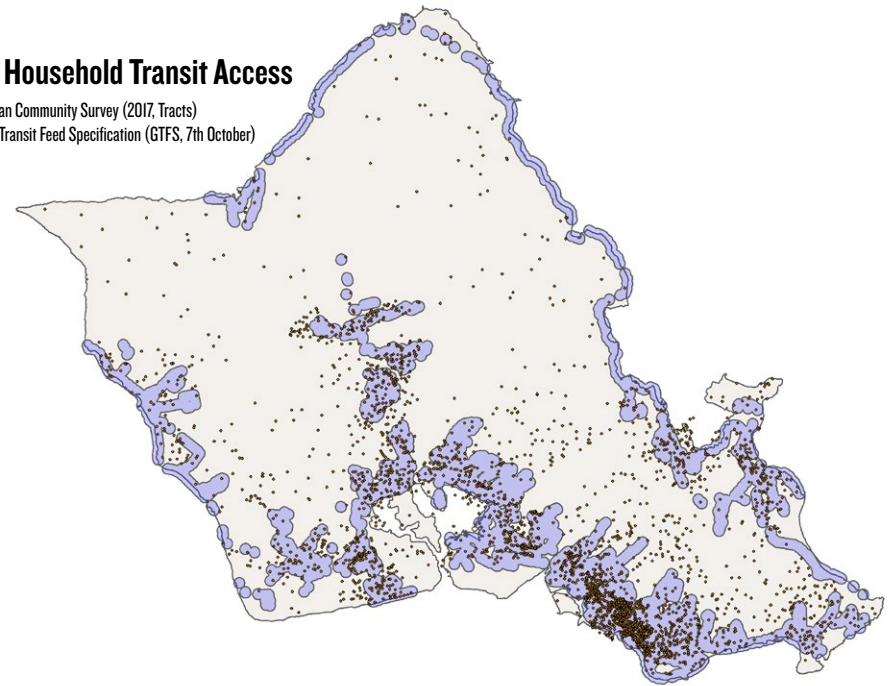


## Household and Employment Accessibility

Household and job accessibility are important in determining the extent to which public transportation service provision is catching up with travel needs. As the maps below highlight, about 70 percent of the region's households have access (proximity) to transit. Additionally, 90 percent of the jobs in the region are accessible by transit. Figure 3.10a and 3.10b show the distribution of households and jobs with access to transit. Each dot in Figure 3.10a is equivalent to 100 people and each dot in Figure 10b is equal to 100 jobs.

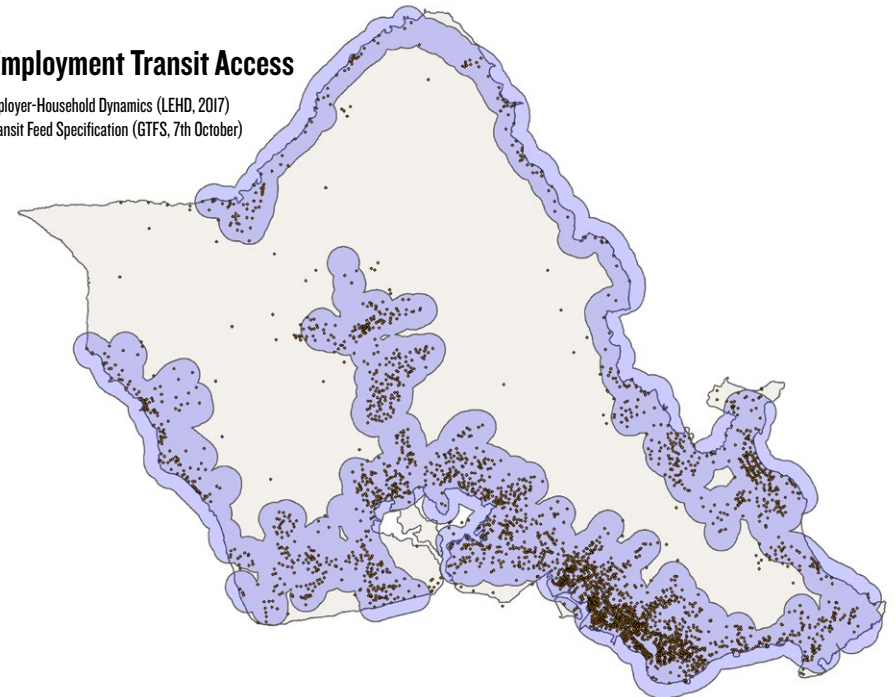
**Figure 3.10a: Household Transit Access**

Source: (1) 5-Year American Community Survey (2017, Tracts)  
(2) 2017 General Transit Feed Specification (GTFS, 7th October)



**Figure 3.10b: Employment Transit Access**

Source: (1) Longitudinal Employer-Household Dynamics (LEHD, 2017)  
(2) 2017 General Transit Feed Specification (GTFS, 7th October)



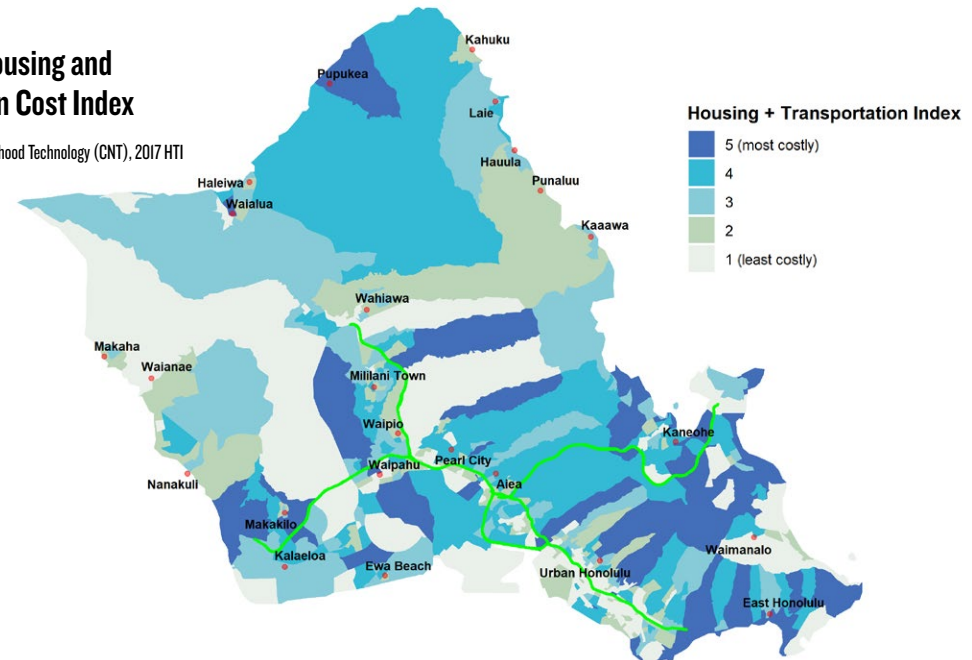
## Housing and Transportation Cost

Historically, the standard for housing affordability has been 30 percent of household income. This threshold excludes transportation costs—typically a household's third largest expenditure — both of which are largely location dependent. The Center for Neighborhood Technology (CNT) has made available a web application showing a transportation and housing affordability index for many metropolitan and micropolitan regions. The affordability index is known as the Housing + Transportation, or H + T index.

Figure 3.11 shows the average housing and transportation costs as a proportion of regional median household income. By this criterion, affordable housing is concentrated near the urban core and other areas of employment clusters. These areas are comprised of Urban Honolulu, Waimānalo, Punalu'u, Waialua, Wai'anāe, Nānākuli, and Wahiawā. Figures 3.12 and 3.13 show the housing and transportation components of the index, respectively.

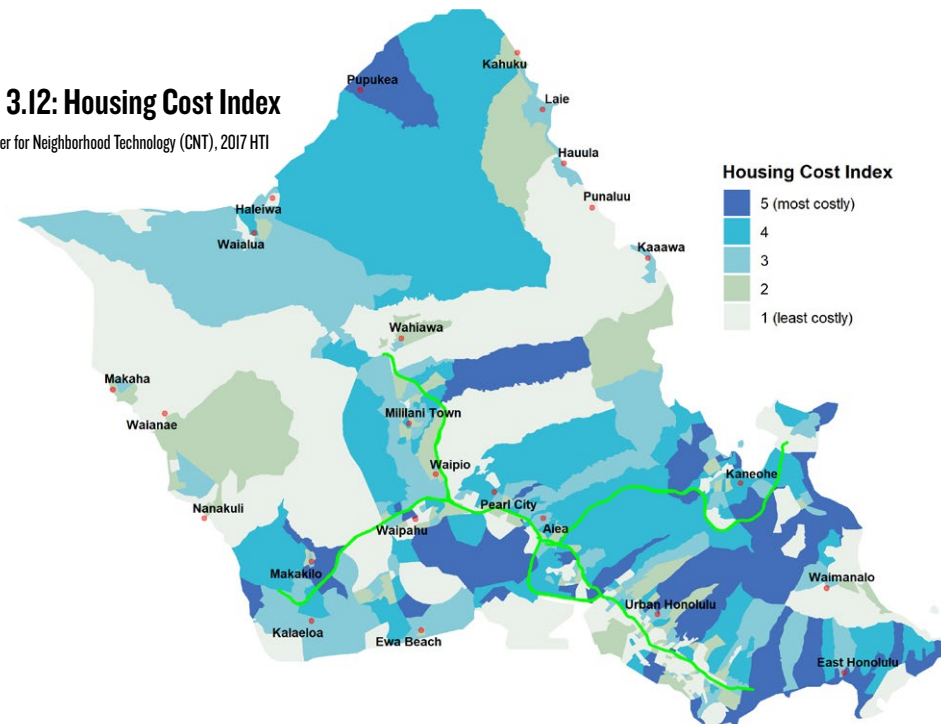
**Figure 3.11: Housing and Transportation Cost Index**

Source: Center for Neighborhood Technology (CNT), 2017 HTI



**Figure 3.12: Housing Cost Index**

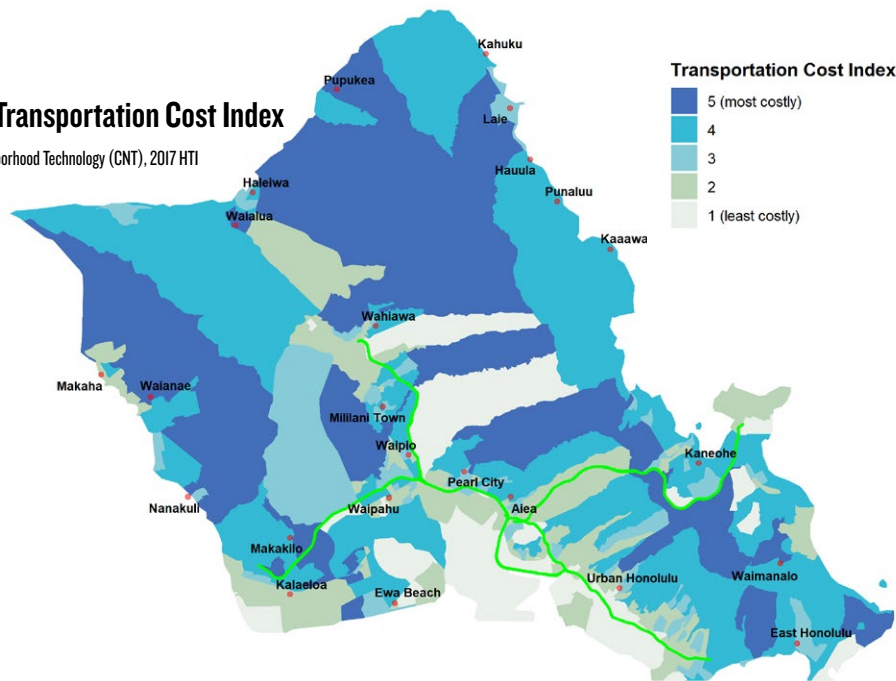
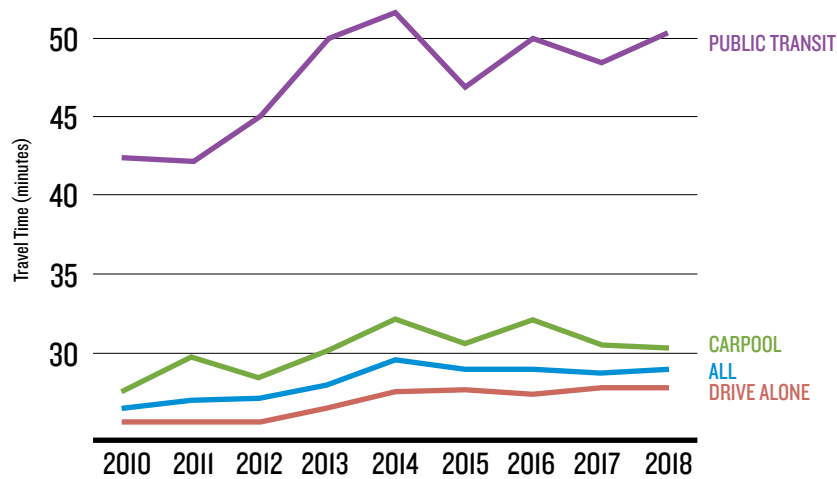
Source: Center for Neighborhood Technology (CNT), 2017 HTI





**Figure 3.13: Transportation Cost Index**

Source: Center for Neighborhood Technology (CNT), 2017 HTI

**Figure 3.14: Regional Commute Times**

## Commuting Patterns

### REGIONAL COMMUTE TIMES

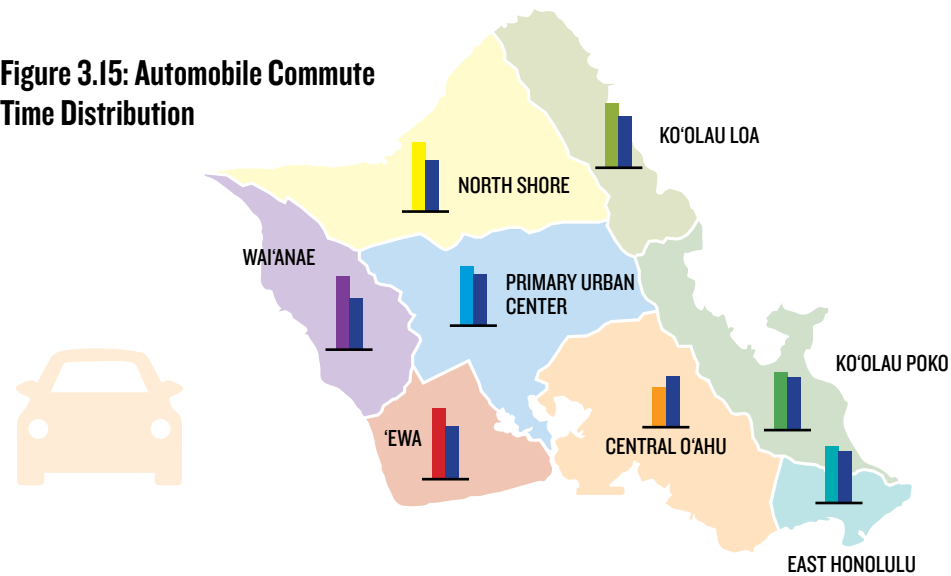
Commuting patterns shed some light on overall travel patterns. Data obtained from the American Community Survey (ACS) 1-Year Estimates shows that the travel time to work is relatively short within the region. According to 2018 ACS data, the average commuter on O'ahu had a one-way commute of 29 minutes, slightly above the national average of 27 minutes. Virtually all workers reside in tracts that have mean commute times under 30 minutes, slightly above the national average of 27 minutes. However, the regional commute time trend is on the increase.

The average commute time by public transportation in the region takes about twice as long as the average commute by car. In 2018, the average commute by car, truck, or van took about 28 minutes, whereas the average commute by public transportation took 50 minutes. Figure 3.14 shows the average commute times for workers who either drive or take public transportation to work.



Figures 3.15 and 3.16 show car and transit commute times by DPA, respectively. The 2018 data on automobile commute times across the DPAs overwhelmingly demonstrate a higher than regional average commute times, except in the Primary Urban Center, where the job-housing balance is close to unity. A comparison of regional and DPA transit commute times (2018) reveals higher than regional average commute times in the following DPAs: North Shore, Central O’ahu, Wai’anae, and ‘Ewa. The same data show that residents in the Primary Urban Center commute less than the regional average because of their proximity to jobs. Ko’olau Poko, Ko’olau Loa, and East Honolulu did not show any noticeable change from regional average commute times.

**Figure 3.15: Automobile Commute Time Distribution**



**Figure 3.16: Transit Commute Time Distribution**

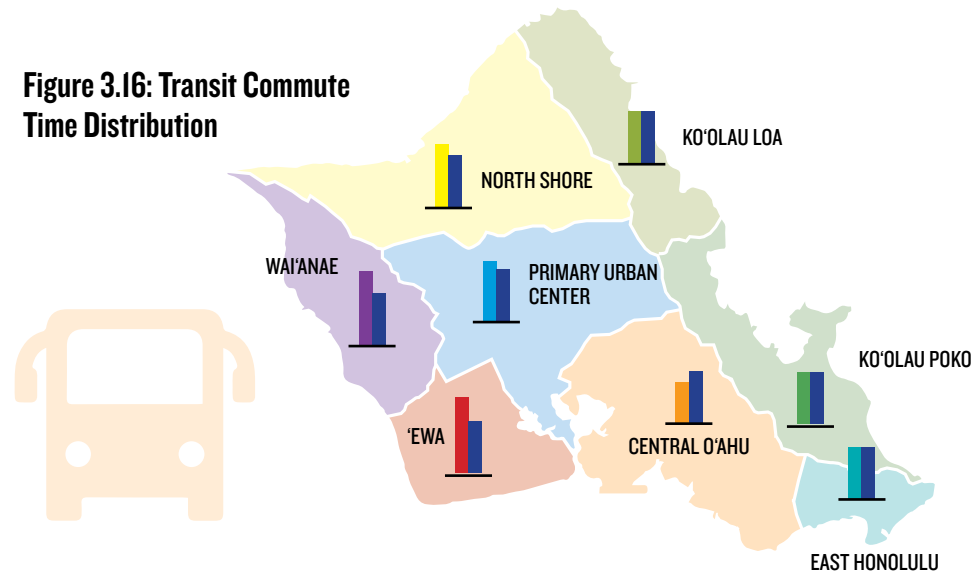
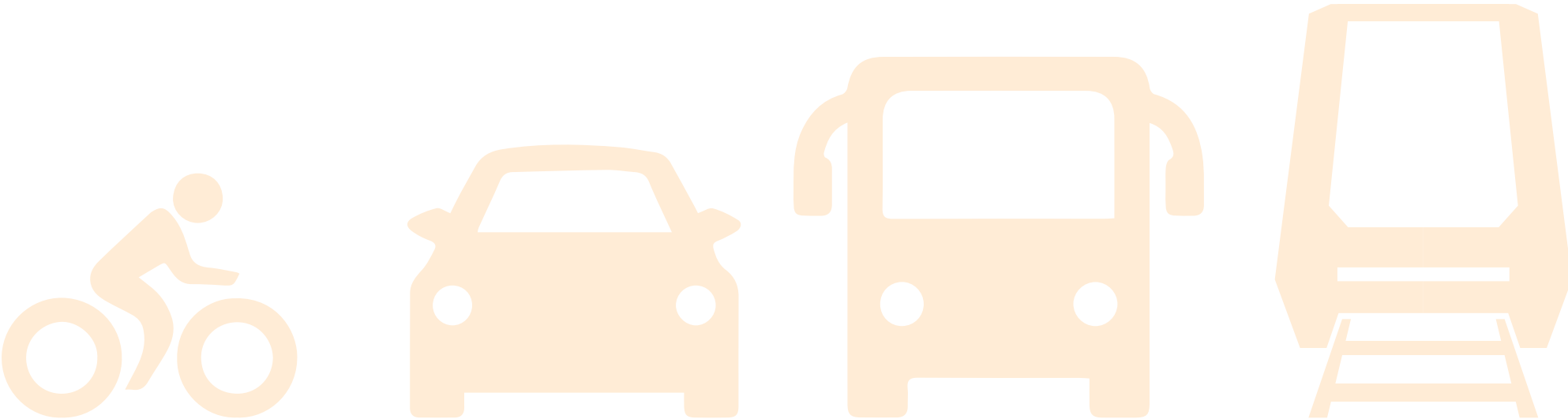
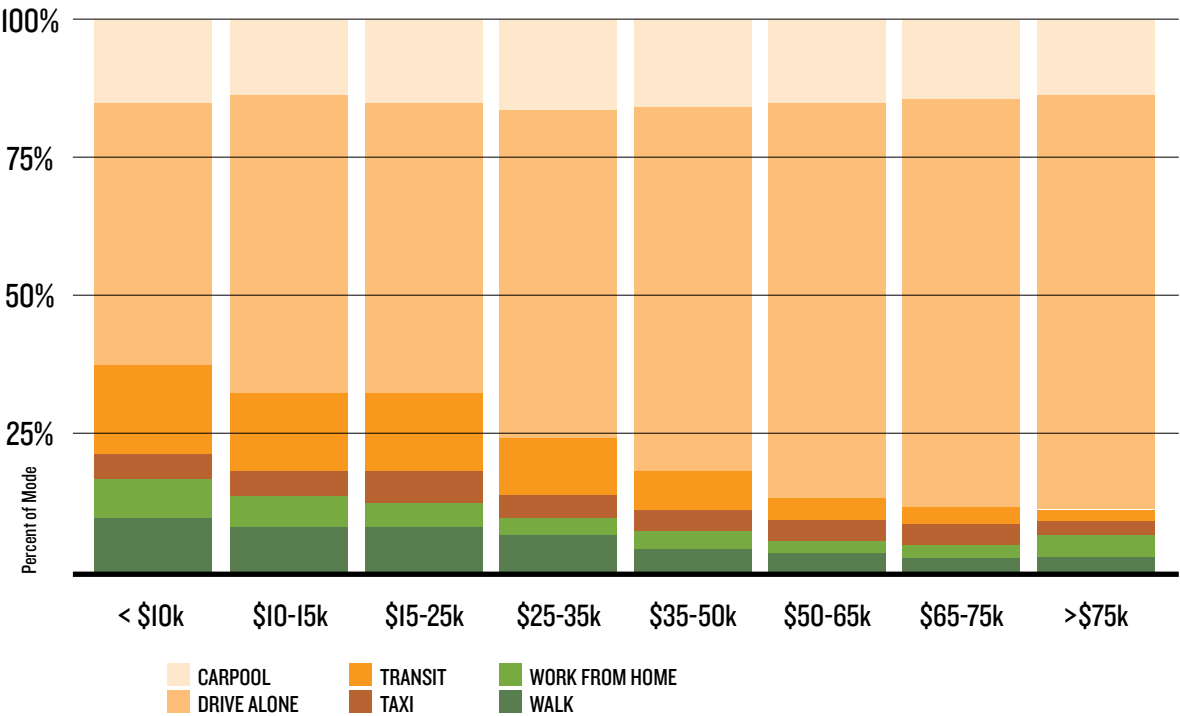


Figure 3.17: Commute Mode by Income

COMMUTE MODE BY INCOME

Figure 3.17 shows commute modes by income level for the region. Low-income workers are less likely to drive alone to work and more likely to take public transportation than those with higher incomes.



## Title IV and Environmental Justice

The primary goal of environmental justice analysis is to ultimately gauge the level at which benefits and burdens of transportation investments are distributed and make sure that the environmental justice communities living within the region share equitably in the benefits of the ORTP investments without bearing a disproportionate share of the burdens. The Civil Rights Act of 1964 (Title VI), Executive Orders 12898 (Environmental Justice) and 13166 (Limited English Proficiency) provide the legal basis for incorporating these populations in OahuMPO's activities.

Title VI of the Civil Rights Act of 1964 prohibits Federal agencies, recipients, sub-recipients, and contractors who receive Federal funds from discriminating based on race, color, or national origin, against participants or clients of programs that receive Federal financial assistance.

Executive Orders 12898 (Environmental Justice) and 13166 (Limited English Proficiency) reinforced the basic rights and legal requirements contained in Title VI of the Civil Rights Act and directed each Federal agency to review its procedures and make environmental justice part of its key products. This includes:

1

Develop strategies to help identify and address disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority and low-income populations;

2

Provide minority and low-income communities with access to public information and opportunities for public participation in matters relating to human health or the environment; and

3

Identify populations that may experience barriers to mobility and therefore, may be adversely affected by transportation planning decisions.

### OAHUMPO ANALYZED DATA ABOUT SEVEN ENVIRONMENTAL JUSTICE AND TITLE VI (T6EJ) GROUPS IN THE ORTP. THESE ARE:



**DISABLED POPULATIONS**



**OLDER ADULT POPULATIONS (65+ YEARS OLD)**



**LIMITED ENGLISH PROFICIENCY (LEP) POPULATIONS**



**ZERO CAR HOUSEHOLDS**



**UNDER 18 YEARS OLDS**



**POOR HOUSEHOLDS**



**LOW INCOME AND MINORITY**





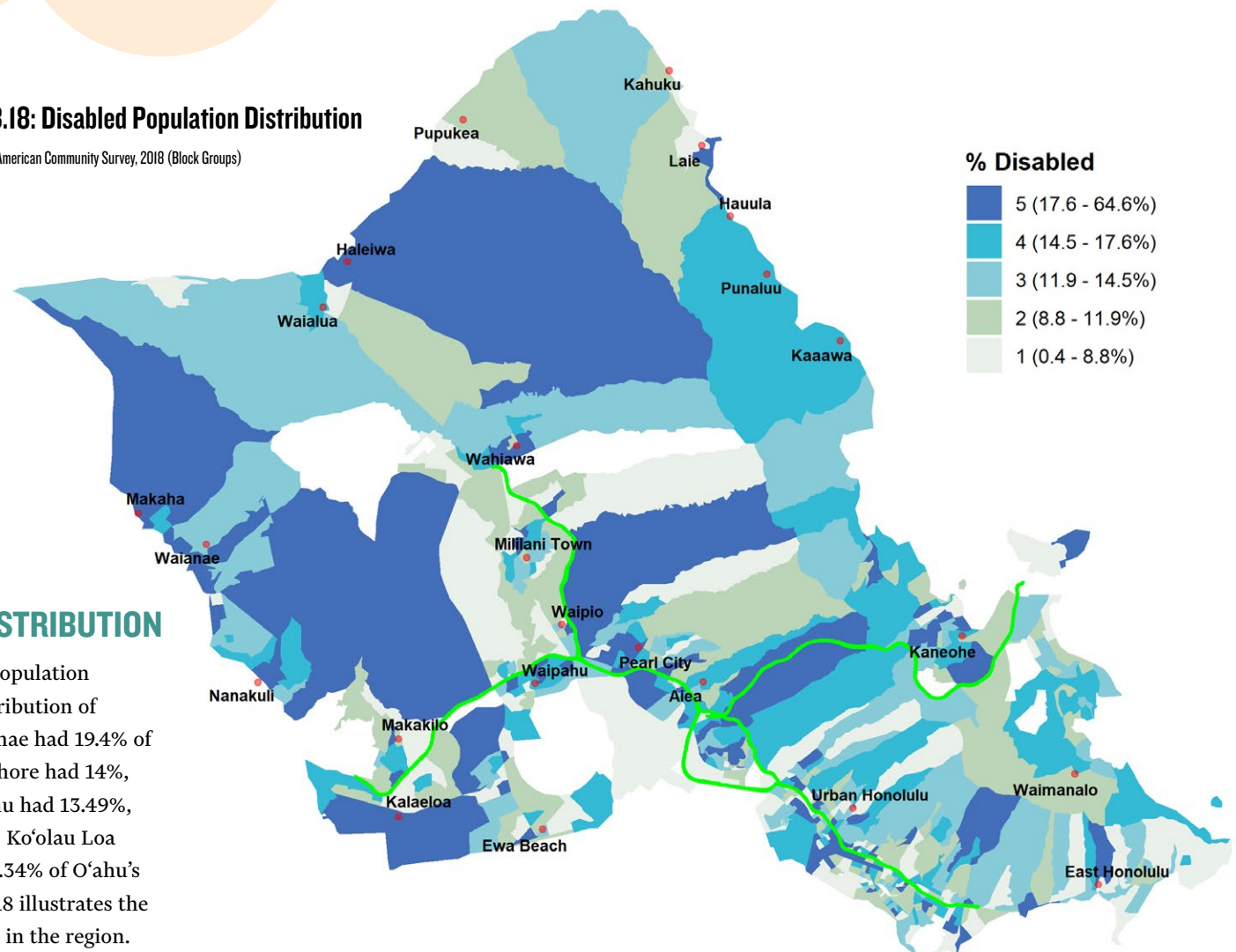
**Figure 3.18: Disabled Population Distribution**

Source: 5-year American Community Survey, 2018 (Block Groups)



## DISABLED POPULATION DISTRIBUTION

On O'ahu, approximately 14% of the population had some disabilities (2018). The distribution of disabilities by DPA showed that Wai'anāe had 19.4% of its population being disabled, North Shore had 14%, Ko'olau Poko had 13.53%, Central O'ahu had 13.49%, the PUC had 13.49%, 'Ewa had 13.31%, Ko'olau Loa had 12.91%, and East Honolulu had 11.34% of O'ahu's population with a disability. Figure 3.18 illustrates the distribution of people with disabilities in the region.



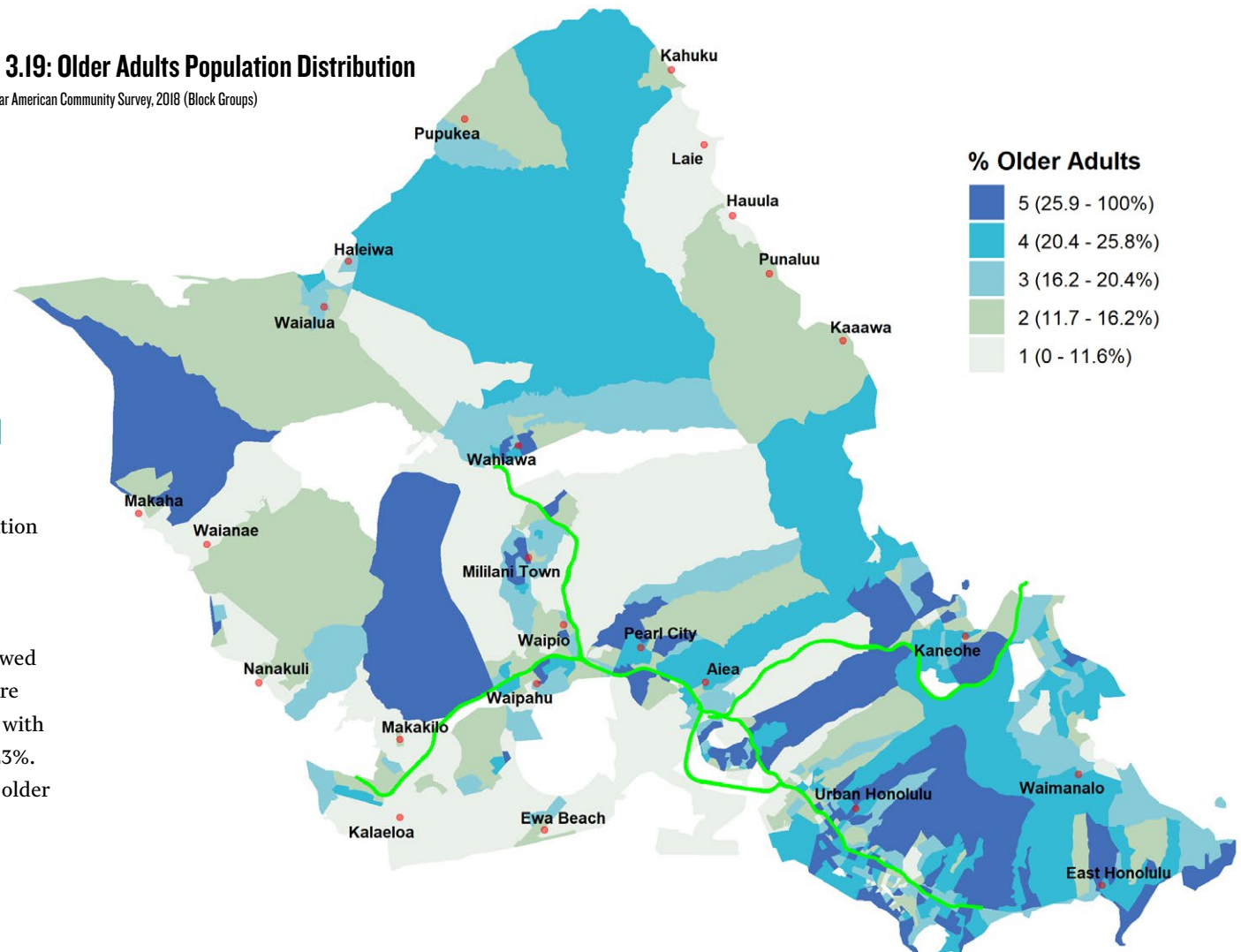


## OLDER ADULTS POPULATION DISTRIBUTION

Overall, about 19% of the region's population is comprised of older adults, with East Honolulu having the highest percentage at 24.55%. The PUC follows with 20.65%; Ko'olau Poko was next with 20.35%, followed by Central O'ahu with 16.56%; North Shore with 15.59%; Wai'anae with 13.17%; 'Ewa with 13.02%; and finally, Ko'olau Loa with 11.23%. Figure 3.19 illustrates the distribution of older adults in the region.

**Figure 3.19: Older Adults Population Distribution**

Source: 5-year American Community Survey, 2018 (Block Groups)



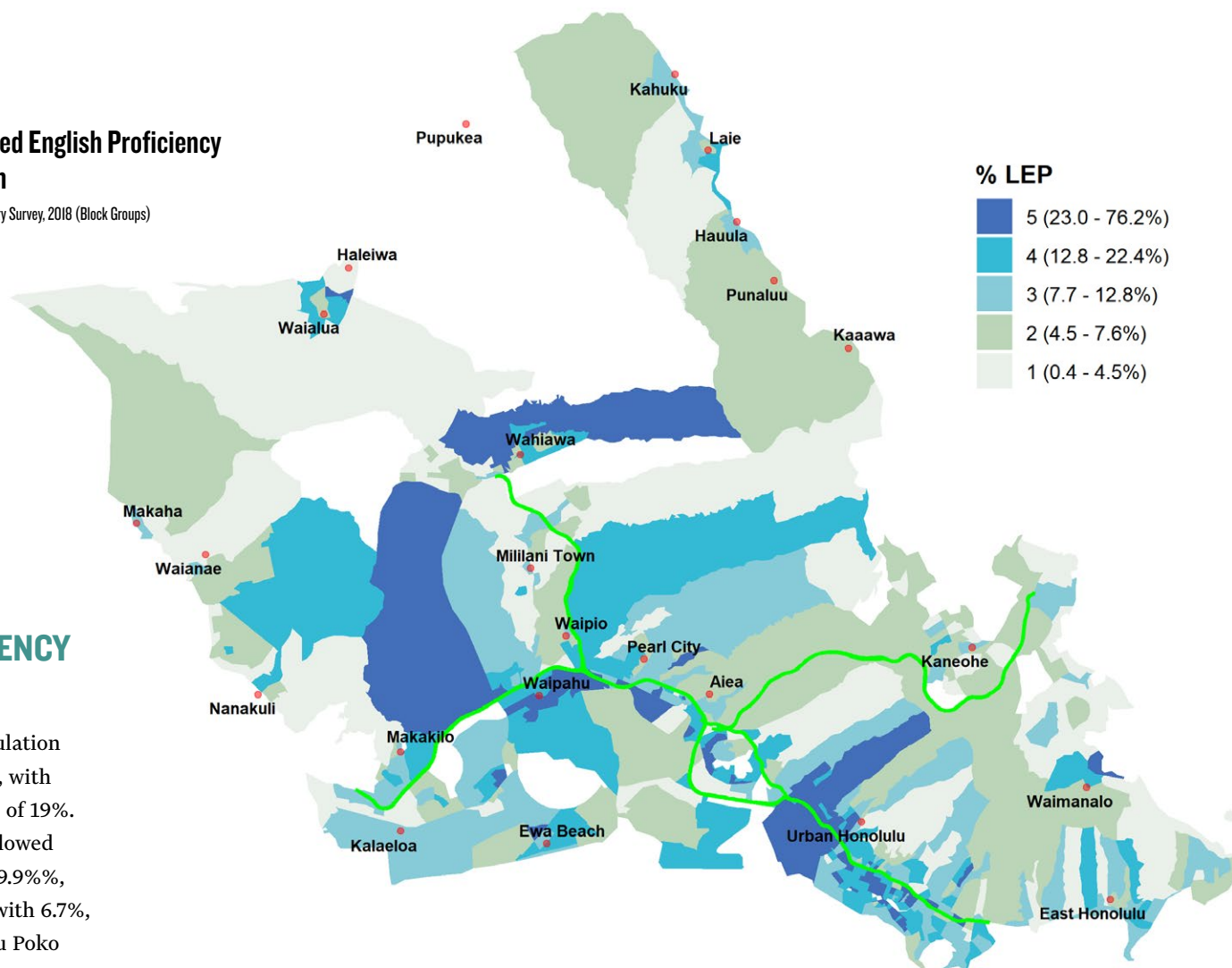
**Figure 3.20: Limited English Proficiency (LEP) Distribution**

Source: 5-year American Community Survey, 2018 (Block Groups)



## LIMITED ENGLISH PROFICIENCY (LEP) DISTRIBUTION

Overall, about 14% of the region's population has Limited English Proficiency (LEP), with the PUC having the highest percentage of 19%. Central O'ahu was next with 11.8%, followed by North Shore with 11.2%, 'Ewa with 9.9%, Ko'olau Loa with 7.7%, East Honolulu with 6.7%, Wai'anae with 5.8%, and finally Ko'olau Poko with 5.6%. Figure 3.20 illustrates the Limited English Proficiency population distribution.



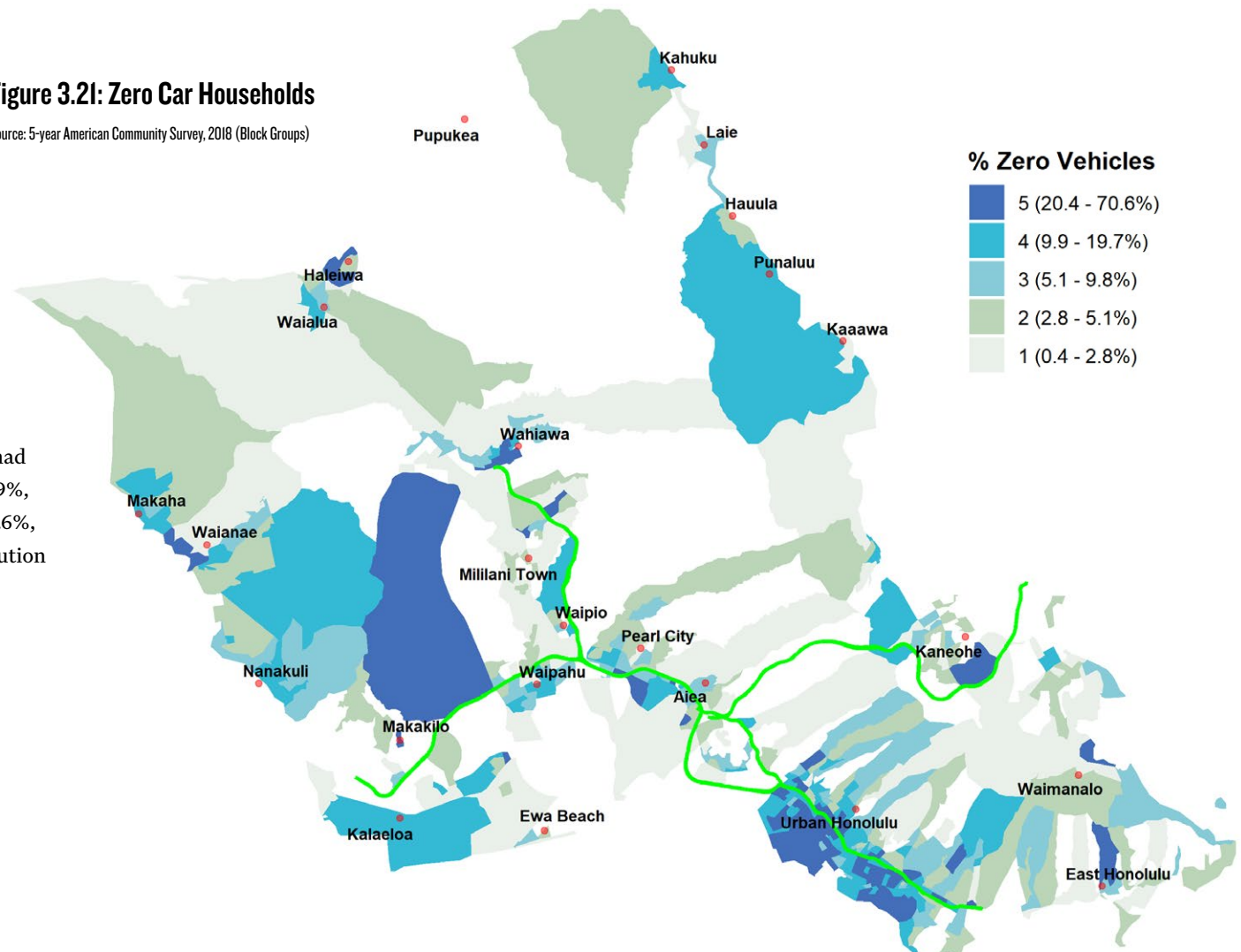


## ZERO CAR HOUSEHOLDS

As of 2018, about 12% of the regional population had no vehicle. Wai'anae and the PUC had 12% and 16% zero-vehicle households, respectively. Central O'ahu had 8.2%, North Shore had 7.5%, 'Ewa had 6.9%, Ko'olau Loa had 6.5%, Koolaopoko had 5.6%, and East Honolulu had 5.5%. The distribution by block groups is shown in Figure 3.21.

**Figure 3.21: Zero Car Households**

Source: 5-year American Community Survey, 2018 (Block Groups)





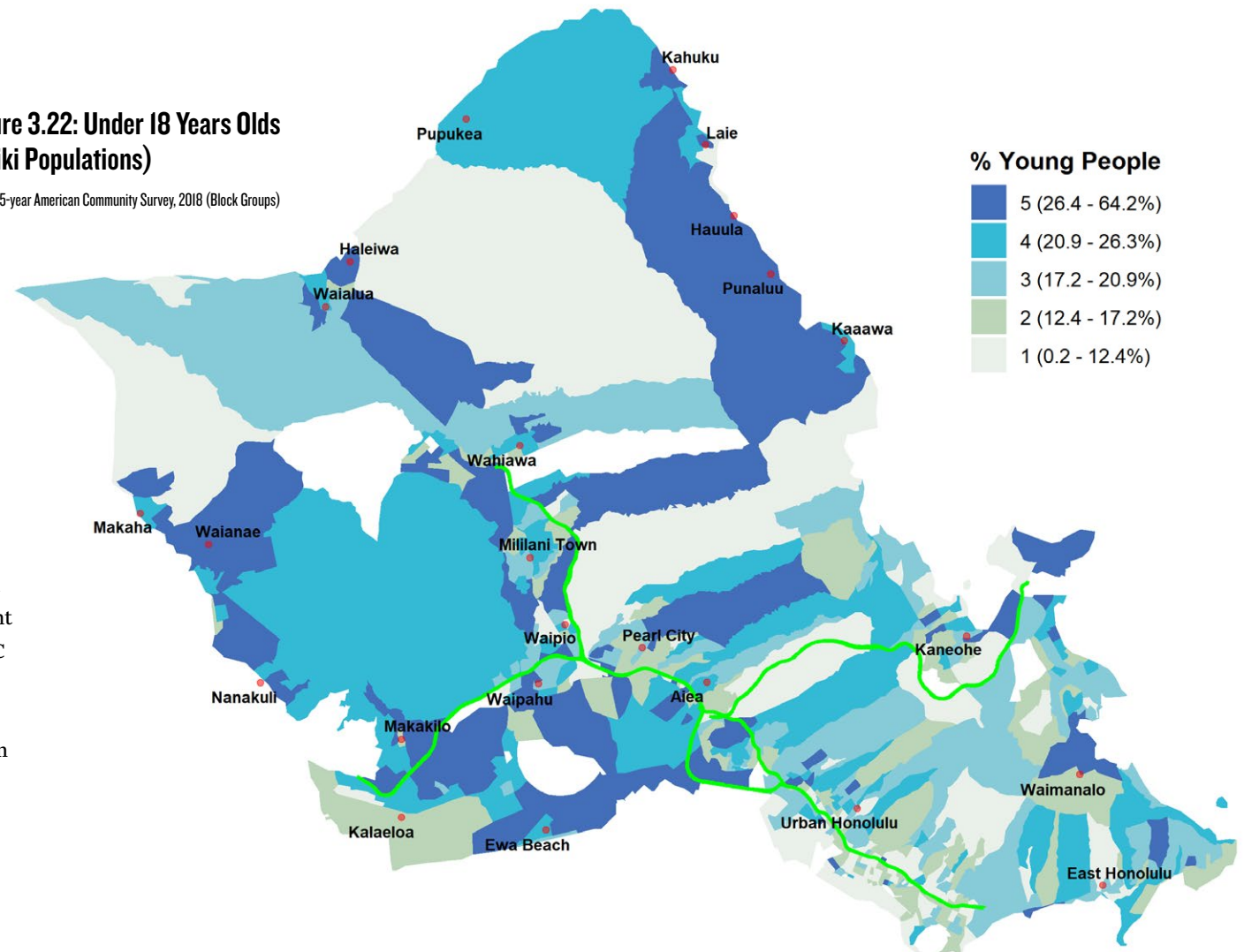


**Figure 3.22: Under 18 Years Olds  
(Keiki Populations)**

Source: 5-year American Community Survey, 2018 (Block Groups)

## UNDER 18 YEARS OLDS (KEIKI POPULATIONS)

Approximately one-fifth the region's population is under 18 years. Figure 3.22 shows the distribution of this population in the region. Wai'anāe had the highest percent of the young population (28%) and the PUC had the lowest percentage of its population being young (17%). The distribution of the young population for the rest of the DPAs in descending order, are: 'Ewa 26.9%, Ko'olau Loa (26.6%), Central O'ahu (22.8%), North Shore (22.2%), East Honolulu (19.8%), and Ko'olau Poko (17.1%).



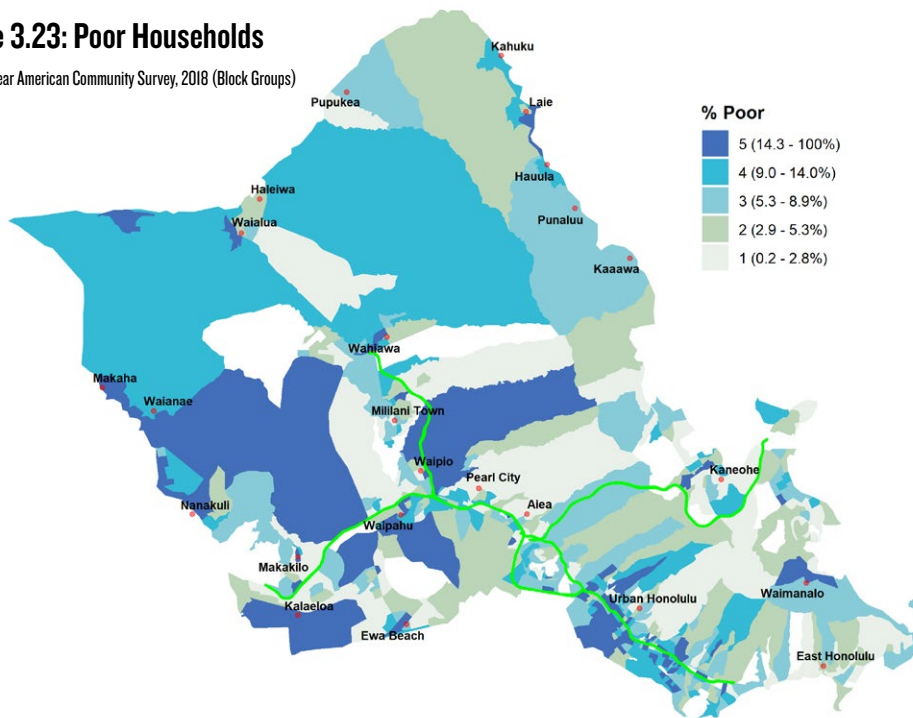


## POOR HOUSEHOLDS

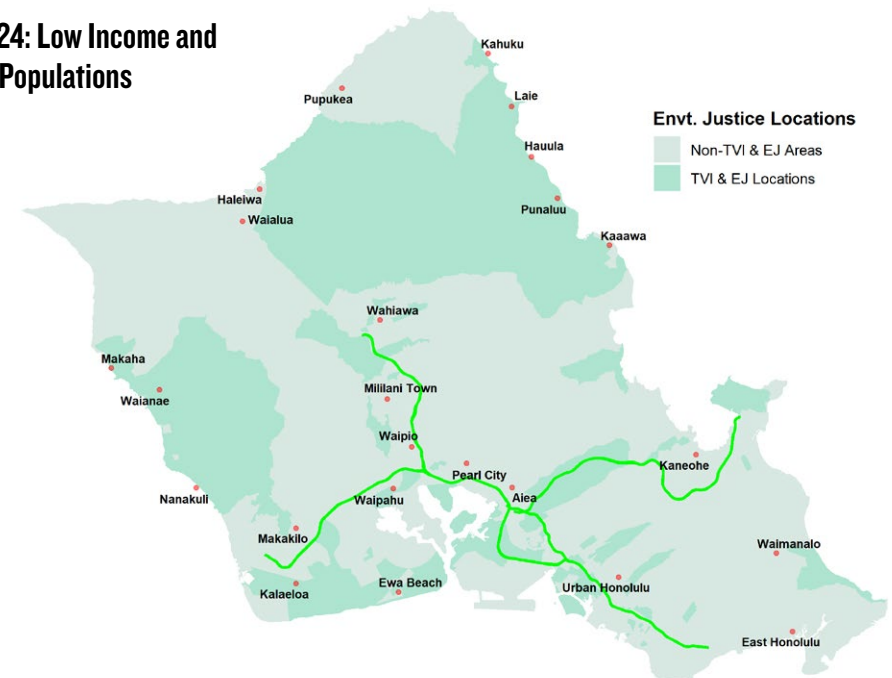
The regional average poverty rate was 9.9%, ranging from 3.5% in East Honolulu to 22% in Waiʻanae. The PUC and Centarl Oʻahu had 10.9% and 10.7% poverty rates, respectively. The North Shore, Koʻolau Loa, ʻEwa, and Koʻolau Poko registered 9.5%, 9.1%, 6.6%, and 5.7%, respectively. See Figure 3.23 for the spatial location of poverty in the region.

**Figure 3.23: Poor Households**

Source: 5-year American Community Survey, 2018 (Block Groups)



**Figure 3.24: Low Income and Minority Populations**



The T6EJ analysis was undertaken using low income and race variables from 2014-19 ACS data and 2010 census, respectively. Due to time constraints in getting consultants to work on this task and unavailability of 2020 census data, T6EJ analysis was not changed from the methods used in the ORTP 2040.