

STATE OF HAWAII PRIMARY CARE NEEDS ASSESSMENT DATA BOOK 2016



Family Health
Services Division



FAMILY HEALTH SERVICES DIVISION
HAWAII DEPARTMENT OF HEALTH
MAY 2016

Updates to Printed Version

5/24/2016

Summary Table 4: NR added for one community due to <5 cell count

Table 4-5: NR added for one community and confidence intervals suppressed for cell counts <20

Map 3-11: Color template reversed

Maps 4-3, 4-4, 4-5, 4-6, 5-1: Maps revised due to inaccurate neighbor island depiction for some communities

1/24/2017

Page 111: Oral Health Indicator Definition Revised to reflect Teeth extraction rather than dental cleaning

Back Cover: Updated affirmative action statement

PCNA FEEDBACK SURVEY

Family Health Services Division
Attn: PCNA Data Book Feedback Survey
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The Family Health Services Division is committed to making the *Primary Care Needs Assessment Data Book* as useful and user-friendly as possible. Please complete this questionnaire and mail or fax it to us. The form could also be completed online at <http://health.hawaii.gov/fhsd/evaluation-forms-2/>. Mahalo for your assistance.

Organizational Identity (circle one)

1. Your organization or role is best described as a:

- | | |
|---------------------------------------|---------------------------------|
| (a) Community non-profit organization | (b) Government office |
| (c) Student/Educational institution | (d) For-profit medical provider |
| (e) Political representative | (f) Private citizen |
| (g) Other: _____ | |

Feedback on the Data Book (select all that apply)

2. The Data Book helps you accomplish:

- | | |
|---|-----------------------------------|
| (a) Planning | (b) Needs assessment |
| (c) Grant writing | (d) Facility or services planning |
| (e) Recruitment or retention of providers | (f) Other: _____ |

3. Please describe how you use the information shared in this book (knowing specific examples would be helpful).

4. Which health indicators/information did you use most often in your work?

5. Which health indicators/information were less important in your work?

6. What other data/information would you like included in future Data Books?

FOREWORD

The Hawai'i Department of Health is pleased to present this edition of the *Primary Care Needs Assessment Data Book* (Data Book). This version has been substantially revised based on input from community stakeholders to better characterize the scope of primary care in Hawai'i. In particular, I would like to thank the community health centers, the Hawai'i Primary Care Association, and Papa Ola Lōkahi for their guidance and suggestions.

This revision includes a presentation of the Native Hawaiian Health Care System to highlight the culturally appropriate services provided to address health disparities often experienced by Native Hawaiians and their families. There were also some new indicators including public health coverage, uninsured, preventable oral health emergency room visits, overall mortality and overall hospitalization rates.

The Data Book is intended to serve as a source of comparative health statistics on primary care service areas in the State of Hawai'i. By presenting information on small areas, the document shows the variation among communities in terms of selected risk and resource indicators. This enables communities not only to examine their specific needs, but also to have a sense of their needs within the larger context of their county and the state.

It is my hope that this document will be a useful source of quantitative information for health policy makers, planners and all of us in the community who share a common desire to improve access to primary care, especially for the underserved and vulnerable populations of Hawai'i.

Your feedback on the information in the Data Book is important to us. Please take a moment and tell us how you used the information in your work.



Danette Wong Tomiyasu, M.B.A.
Deputy Director, Health Resources Administration

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SUMMARY

OVERVIEW

This document provides information for over 50 health and socio-economic indicators spanning the life course by geographic communities in Hawai'i. There are significant differences between communities and it is important to examine data to better understand why these differences exist. Some differences are pronounced and lend themselves to developing interventions to eliminate disparities and help decrease the overall burden of disease. However, these issues are complex and require multiple strategies to effectively make a difference. This report serves to bring awareness to disparities to help frame future activities to characterize why they exist and what can be done to resolve them.

Recommendations include:

1. Further analysis looking at relationships between indicators, particularly variations due to distributions of poverty and other indicators of socio-economic determinants of health;
2. Improved access and availability of services;
3. Promotion of utilization of primary care services;
4. Development and use of effective culturally appropriate interventions through collaborations with community partners; and
5. Developing collaboration across many sectors and multi-disciplinary approaches to better understand and raise awareness of the differences.

ORGANIZATION OF DATA BOOK

This section provides summary tables for all the indicators used in this Data Book. The reader is encouraged to review the first chapter of the Data Book to learn how the primary care service areas were defined along with some historical perspective on previous editions and changes with the current edition which has included some new indicators. Each indicator chapter includes information on how the various indicators were defined along with presentation of prevalence estimates or rates in detailed tables and on maps. Specifically, the first chapter defines the primary care service areas, introduces the concept of risk indicators, and identifies key limitations inherent with the data available and their impact on interpretation of the data. The second chapter highlights the Family Health Services Division's Office of Primary Care and Rural Health and its role in working with community providers to ensure those most at need have access to services. The third chapter summarizes population and socio-economic status indicators for each of the primary care service areas. Chapters four through eight focus on maternal and infant health risk, adult morbidity, the leading causes of death, adult oral health, and mental health.

Summary Table 1: Population Characteristics, 2010-2014

Service Area	Under 18 Years of Age (%)	65 Years of Age and Older (%)	Foreign Born (%)	Households with Linguistic Isolation (%)	No Insurance (%)	Public Coverage (%)
State of Hawai'i	22.1	15.4	17.9	7.5	8.1	32.7
Honolulu County	21.9	15.4	19.4	9.2	7.2	31.3
Hawai'i Kai - Kaimuki	18.6	23.4	14.8	5.7	5.8	29.2
Waikiki - Pālolo	12.5	19.7	24.9	11.2	9.9	33.1
McCully - Makiki	14.6	17.6	21.6	9.9	8.5	29.6
Ala Moana - Nu'uuanu	13.9	20.1	27.4	15.4	9.8	31.9
Downtown - Kalihi	20.4	18.3	40.1	27.0	8.4	41.4
Airport - Moanalua	26.2	14.3	24.4	12.1	6.4	29.0
Hickam - Pearl City	21.6	18.0	14.2	7.7	6.1	33.0
Waipahu	22.5	13.9	30.2	8.9	6.9	30.9
'Ewa - Kalaelo	24.9	11.9	11.0	3.3	4.7	22.6
Kapolei - Makakilo	27.4	10.1	18.5	6.3	5.1	24.7
Mililani	26.5	9.2	20.4	5.6	7.0	28.1
Wahiawā	28.7	9.0	14.1	5.9	7.7	26.9
Wai'anae	31.0	9.4	8.1	4.2	7.4	48.4
Waialua	22.6	11.9	12.9	4.6	7.7	28.8
Ko'olauloa	25.4	10.4	12.1	2.2	9.4	28.0
Ko'olaupoko	21.6	15.8	7.4	3.1	6.8	30.2
Hawai'i County	22.4	16.1	11.2	3.7	9.8	39.9
Hilo	21.0	18.8	8.2	3.7	7.6	40.1
Puna	22.8	13.7	11.2	4.7	12.0	47.7
Ka'ū	19.4	20.7	18.6	3.7	11.4	52.1
South Kona	22.1	17.5	6.7	2.5	12.2	36.3
North Kona	20.8	14.8	14.7	3.2	10.9	32.8
South Kohala	27.6	13.9	9.7	3.3	7.3	32.1
North Kohala	26.2	17.3	7.1	1.5	7.0	44.1
Hāmakuā	24.4	16.2	17.8	3.6	8.6	39.6
Maui County	22.7	14.1	17.7	4.1	10.4	31.7
Hāna	28.5	13.9	4.7	3.9	13.9	39.4
Makawao	21.8	14.9	9.4	2.0	10.7	28.5
Wailuku	23.3	13.4	22.0	5.1	10.3	32.6
Lāhainā	19.9	13.0	21.6	4.7	10.4	27.8
Lāna'i	26.9	15.5	25.6	4.8	6.2	28.6
Moloka'i	26.3	18.6	5.3	4.5	8.5	51.4
Kaua'i County	22.5	16.3	15.8	4.4	9.8	33.5
Hanalei	22.8	13.9	13.6	4.3	14.9	32.1
Kapa'a	20.1	16.3	10.2	3.3	11.4	29.7
Līhu'e	25.8	15.8	22.8	5.6	7.2	35.2
Kōloa	22.8	18.3	16.8	5.6	8.2	37.1
Waimea	21.0	15.7	16.2	3.3	8.9	35.0

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

Summary Table 2: Socio-economic Characteristics, 2010-2014

Service Area	<100% of Federal Poverty Level (%)	Children in Households Receiving Assistance (%)	Household Receiving SNAP (%)	Civilian Labor Force Unemployed (%)	Adults with No High School Diploma (%)	Average per Capita Income (\$)
State of Hawai'i	11.4	25.4	11.8	7.6	10.6	29,500
Honolulu County	9.8	22.2	10.1	7.2	10.8	30,700
Hawai'i Kai - Kaimuki	4.3	5.8	2.4	6.1	5.9	46,700
Waikiki - Pālolo	12.0	20.4	8.2	7.3	9.5	33,300
McCully - Makiki	11.6	17.4	7.6	6.1	8.7	34,000
Ala Moana - Nu'uuanu	11.9	17.9	9.2	6.5	9.5	37,900
Downtown - Kalihi	17.5	38.3	22.9	5.8	24.3	22,300
Airport - Moanalua	8.5	16.9	8.0	7.2	14.4	25,300
Hickam - Pearl City	6.9	20.1	7.4	7.4	8.5	31,300
Waipahu	8.9	28.0	12.6	5.9	13.6	26,500
'Ewa - Kalaeloa	4.4	11.2	4.4	7.9	6.5	35,700
Kapolei - Makakilo	4.1	18.2	9.3	6.5	9.1	29,000
Mililani	8.0	21.7	10.4	8.8	11.2	27,900
Wahiawā	11.9	17.5	14.4	11.9	12.2	22,100
Wai'anae	24.2	55.5	33.3	11.8	15.8	17,800
Waialua	9.9	17.3	9.1	7.3	11.8	26,200
Ko'olauloa	11.7	25.2	11.7	7.1	6.3	25,700
Ko'olaupoko	7.7	19.1	7.7	7.4	7.5	34,700
Hawai'i County	19.2	38.0	18.9	9.5	9.8	24,400
Hilo	18.2	39.0	19.0	10.0	10.2	24,000
Puna	29.3	52.1	26.4	11.0	11.1	18,900
Ka'ū	27.6	49.3	24.1	11.3	10.9	20,700
South Kona	13.8	25.1	10.8	12.3	8.9	29,100
North Kona	14.4	30.8	14.2	8.5	9.6	28,500
South Kohala	10.3	25.4	13.6	5.6	5.1	30,600
North Kohala	19.8	38.1	18.5	10.6	8.0	22,700
Hāmakuā	13.8	31.1	16.5	8.7	11.8	21,700
Maui County	11.4	28.6	13.6	8.0	10.5	29,500
Hāna	16.2	21.4	9.4	10.1	10.3	20,600
Makawao	11.5	23.7	9.7	6.7	6.7	34,100
Wailuku	11.6	32.1	16.3	8.7	12.0	27,500
Lāhainā	8.3	20.0	9.6	6.6	11.3	31,900
Lāna'i	9.6	14.2	8.8	8.2	13.7	23,300
Moloka'i	18.2	46.2	24.7	12.6	9.9	23,000
Kaua'i County	11.7	26.1	11.7	6.6	9.4	27,100
Hanalei	13.1	30.0	10.4	9.6	7.2	26,700
Kapa'a	11.4	19.4	9.1	7.8	7.4	28,700
Līhu'e	12.6	31.1	15.2	3.9	12.5	24,900
Kōloa	12.8	26.9	12.5	6.5	9.9	28,200
Waimea	7.7	25.0	12.0	5.8	10.2	25,800

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

Summary Table 3: Race Groups, 2010

Service Area	White (alone or in any combination) (%)	Native Hawaiian (alone or in any combination) (%)	Filipino (alone or in any combination) (%)	Japanese (alone or in any combination) (%)	Chinese (alone or in any combination) (%)
State of Hawai'i	41.5	21.3	25.1	23.0	14.6
Honolulu County	36.8	19.1	24.6	25.3	16.3
Hawai'i Kai - Kaimuki	41.5	12.2	7.0	39.9	22.5
Waikiki - Pālolo	41.8	11.3	8.4	31.2	16.4
McCully - Makiki	33.3	12.1	9.8	38.2	18.8
Ala Moana - Nu'uuanu	30.8	13.0	10.4	30.8	20.1
Downtown - Kalihi	14.2	13.7	36.3	17.3	23.7
Airport - Moanalua	29.9	11.3	31.9	20.1	12.4
Hickam - Pearl City	34.7	14.7	23.8	33.7	13.8
Waipahu	19.6	13.2	54.4	19.7	10.8
'Ewa - Kalaeloa	38.2	18.3	26.5	38.7	16.8
Kapolei - Makakilo	39.7	27.2	41.2	16.3	15.5
Mililani	37.6	19.4	43.3	14.2	12.3
Wahiawā	47.3	14.6	26.9	13.3	8.0
Wai'anae	38.3	58.5	28.3	11.1	18.6
Waialua	56.2	18.2	29.0	12.3	8.7
Ko'olauloa	53.9	31.3	12.2	8.4	13.3
Ko'olaupoko	55.6	29.3	13.0	25.4	17.8
Hawai'i County	54.8	29.7	22.1	19.2	12.2
Hilo	41.5	32.5	22.1	33.8	14.7
Puna	60.2	32.0	24.4	13.4	12.4
Ka'ū	55.3	28.5	24.3	8.9	9.5
South Kona	53.6	30.2	16.7	21.0	10.1
North Kona	62.7	23.3	16.3	12.3	9.1
South Kohala	60.7	29.1	18.6	13.4	11.5
North Kohala	56.1	36.1	32.8	16.4	16.3
Hāmakuā	57.3	25.9	38.7	15.6	13.4
Maui County	50.4	23.7	29.0	14.7	9.2
Hāna	53.4	57.4	12.1	7.6	16.8
Makawao	69.0	23.5	15.6	14.6	9.6
Wailuku	41.4	22.3	35.1	17.3	9.3
Lāhainā	53.4	14.2	29.0	8.5	5.0
Lāna'i	27.8	19.5	63.9	10.8	10.2
Moloka'i	39.8	61.8	31.0	11.7	17.1
Kaua'i County	50.9	24.0	31.9	18.8	9.2
Hanalei	77.9	11.7	12.0	6.2	4.4
Kapa'a	55.5	29.0	25.4	17.9	10.2
Līhu'e	35.6	20.5	45.6	22.9	9.8
Kōloa	54.8	19.9	31.5	21.0	8.6
Waimea	37.1	33.8	43.0	21.8	11.1

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

Summary Table 4: Maternal Child Health, 2008-2013

Service Area	Crude Birth Rate (per 1,000)	Infant Mortality Rate* (per 1,000)	Less Than Adequate Prenatal Care Utilization (%)	Low Birth Weight (%)	Births Under 18 Years of Age (%)	Mothers with Pre-Existing Medical Conditions (%)
State of Hawai'i	14.0	5.6	31.0	8.2	1.8	48.4
Honolulu County	14.2	5.9	29.0	8.5	1.5	52.9
Hawai'i Kai - Kaimuki	8.0	4.1	24.1	8.4	0.3	52.9
Waikiki - Pālolo	9.9	5.2	30.9	7.7	0.6	53.7
McCully - Makiki	8.6	5.0	27.4	8.5	0.9	55.9
Ala Moana - Nu'uuanu	11.0	4.6	28.9	8.6	1.0	55.3
Downtown - Kalihi	12.8	7.0	36.1	9.0	2.0	60.0
Airport - Moanalua	18.6	6.3	31.2	9.2	1.2	48.7
Hickam - Pearl City	13.3	4.6	28.9	7.6	1.2	51.0
Waipahu	22.3	6.4	28.4	9.5	1.6	55.9
'Ewa - Kalaeloa	17.5	6.4	25.4	9.5	1.7	53.6
Kapolei - Makakilo	15.5	5.4	25.3	8.7	2.1	55.4
Mililani	4.3	5.7	25.5	8.4	1.2	54.6
Wahiawā	24.1	5.7	33.4	8.8	1.3	44.4
Wai'anae	19.2	8.8	27.3	8.6	4.6	65.3
Wai'alua	21.0	6.8	29.7	8.5	1.2	43.6
Ko'olauloa	18.2	6.9	34.1	5.8	1.4	51.5
Ko'olaupoko	14.2	4.7	27.1	7.1	1.0	46.3
Hawai'i County	13.3	5.3	39.6	7.9	2.7	30.4
Hilo	13.6	3.8	34.7	8.5	2.3	43.1
Puna	13.3	5.1	35.7	8.4	3.0	44.1
Ka'ū	10.3	5.5	53.3	9.5	4.8	25.0
South Kona	15.7	7.0	58.6	6.4	3.1	9.7
North Kona	13.6	6.5	47.3	7.1	3.0	11.6
South Kohala	14.1	3.5	32.4	6.9	2.2	20.7
North Kohala	8.7	9.7	30.6	5.2	NR	18.8
Hāmakuā	11.9	9.7	28.4	8.8	2.1	25.5
Maui County	13.3	4.4	38.6	7.1	2.2	43.1
Hāna	13.0	NR	45.8	5.0	3.4	34.1
Makawao	11.4	4.4	39.6	6.8	1.6	40.4
Wailuku	14.3	3.7	38.3	7.3	2.4	43.6
Lāhainā	13.4	5.6	42.3	6.1	1.8	41.7
Lāna'i	12.9	NR	33.8	12.8	2.1	48.6
Moloka'i	14.4	7.7	25.7	7.5	4.0	55.0
Kaua'i County	13.1	4.3	20.1	8.0	2.5	42.7
Hanalei	11.4	NR	28.0	5.4	1.5	34.6
Kapa'a	13.2	4.4	20.0	7.4	2.3	37.9
Līhu'e	13.5	5.1	16.3	10.4	3.0	47.1
Kōloa	12.8	3.4	17.7	7.8	2.0	44.9
Waimea	14.3	6.0	23.9	8.0	3.5	48.1

* Data years 2004-2013

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring;
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

NOTE: Rates were not reportable (NR) for areas with less than 5 events

Summary Table 5: Adult Morbidity, 2011-2014

Service Area	Adults who are Obese (%)	Adults who Smoke (%)	Adults who are Heavy Drinkers (%)	Adults with No Physical Activity (%)	Adults with Diabetes (%)	Adults with High Blood Pressure*
State of Hawai'i	22.4	14.7	7.5	20.4	9.5	29.3
Honolulu County	22.3	14.0	6.7	20.7	9.6	29.8
Hawai'i Kai - Kaimuki	12.6	7.2	7.5	17.1	7.8	34.3
Waikiki - Pālolo	14.4	13.4	9.1	15.7	5.8	26.4
McCully - Makiki	14.2	14.4	7.9	18.6	7.6	30.0
Ala Moana - Nu'uuanu	18.1	12.4	7.0	19.3	8.0	30.6
Downtown - Kalihi	22.9	16.0	3.4	24.7	10.0	31.3
Airport - Moanalua	20.4	11.0	4.4	23.0	7.7	28.6
Hickam - Pearl City	24.8	14.9	6.8	22.8	12.3	35.0
Waipahu	22.0	10.2	4.6	28.5	10.3	29.9
'Ewa - Kalaeloa	29.0	11.6	6.6	19.3	11.5	30.6
Kapolei - Makakilo	30.9	16.7	8.1	22.2	10.4	24.5
Mililani	23.6	13.7	3.4	16.8	11.9	22.9
Wahiawā	28.7	23.6	4.0	25.1	9.0	33.5
Wai'anae	40.9	25.2	8.2	24.8	15.1	30.2
Waialua	18.2	16.6	8.2	17.5	6.9	18.1
Ko'olauloa	27.1	15.3	9.2	16.3	6.3	26.4
Ko'olaupoko	21.1	13.7	8.4	18.2	9.1	30.3
Hawai'i County	22.9	18.3	9.0	20.5	9.5	29.7
Hilo	23.9	17.4	7.3	22.0	12.6	32.5
Puna	26.3	22.3	7.0	21.6	10.5	32.8
Ka'ū	21.7	21.7	8.8	19.9	9.0	29.4
South Kona	23.9	20.1	10.5	25.2	8.0	29.9
North Kona	19.3	15.6	9.0	17.5	6.2	25.5
South Kohala	19.7	12.7	14.2	16.0	6.8	23.3
North Kohala	23.6	14.8	20.4	20.3	7.5	24.2
Hāmakuā	24.6	21.8	8.3	22.5	9.0	33.7
Maui County	22.9	14.0	10.1	19.3	8.6	27.3
Hāna	28.3	NR	NR	NR	NR	NR
Makawao	20.3	15.4	10.0	15.6	6.5	26.2
Wailuku	25.0	12.5	9.0	20.6	9.4	27.8
Lāhainā	17.4	15.4	12.8	19.2	7.6	21.4
Lāna'i	16.7	20.4	10.7	17.3	10.9	33.6
Moloka'i	28.5	15.4	11.8	27.3	11.9	38.6
Kaua'i County	19.8	16.1	10.1	18.6	9.5	26.7
Hanalei	10.5	16.4	15.5	12.9	4.1	18.3
Kapa'a	21.2	14.5	11.9	18.2	9.4	24.6
Līhu'e	22.8	15.6	7.4	21.7	11.6	28.9
Kōloa	19.6	18.1	8.2	15.1	9.3	30.8
Waimea	23.0	16.7	9.4	24.7	12.6	31.2

* Data years 2011, 2013

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

NOTE: Rates were not reportable (NR) for areas with less than 50 respondents

Summary Table 6: Mortality, 2008-2013

Service Area	Overall Mortality Rate (per 100,000)	Disease of the Heart Mortality Rate (per 100,000)	Cancer (Malignant Neoplasm) Mortality Rate (per 100,000)	Stroke (Cerebrovascular Disease) Mortality Rate (per 100,000)	Unintentional Injury Mortality Rate (per 100,000)
State of Hawai'i	592.0	138.1	137.5	36.8	29.0
Honolulu County	576.2	134.1	134.6	36.6	27.5
Hawai'i Kai - Kaimuki	433.9	94.4	114.0	30.8	18.4
Waikiki - Pālolo	538.9	125.7	126.8	28.6	36.2
McCully - Makiki	491.5	108.8	108.4	34.1	21.3
Ala Moana - Nu'uaniu	537.9	124.2	128.2	37.9	27.5
Downtown - Kalihi	591.0	141.7	129.6	41.0	28.4
Airport - Moanalua	567.8	127.8	142.5	39.3	22.6
Hickam - Pearl City	551.0	122.0	131.2	38.4	20.9
Waipahu	791.7	193.2	173.8	46.9	33.4
'Ewa - Kalaeloa	497.5	126.0	110.9	23.2	21.2
Kapolei - Makakilo	605.8	154.1	141.7	34.2	22.8
Mililani	365.6	73.9	93.7	27.0	7.0
Wahiawā	661.4	158.2	142.7	46.7	31.0
Wai'anae	945.6	239.2	209.8	50.4	52.1
Waialua	645.6	156.2	156.2	29.7	49.1
Ko'olauloa	685.5	181.5	160.1	32.6	36.1
Ko'olaupoko	617.8	134.0	146.8	37.2	29.0
Hawai'i County	638.1	157.0	148.5	42.1	35.6
Hilo	681.3	176.2	146.8	47.7	36.9
Puna	648.5	154.6	151.6	38.5	36.8
Ka'ū	723.1	169.0	179.6	31.7	34.5
South Kona	620.7	144.5	163.9	30.6	42.3
North Kona	586.8	139.9	141.0	42.6	35.9
South Kohala	614.7	145.7	168.0	49.8	29.9
North Kohala	494.7	93.6	123.3	35.5	28.3
Hāmakuā	629.1	170.5	149.9	38.4	32.5
Maui County	596.1	144.2	139.6	29.7	30.6
Hāna	708.5	257.1	101.1	NR	63.2
Makawao	538.3	136.1	121.1	24.2	30.8
Wailuku	623.1	143.9	149.0	33.3	25.7
Lāhainā	536.0	136.2	132.9	27.6	39.3
Lāna'i	595.2	159.9	116.7	51.2	NR
Moloka'i	689.9	172.7	174.0	21.4	42.8
Kaua'i County	606.9	136.1	146.2	39.8	28.3
Hanalei	459.8	98.4	105.6	26.1	31.8
Kapa'a	662.0	157.3	156.0	52.8	15.7
Līhu'e	623.8	151.3	142.7	39.6	29.4
Kōloa	559.6	122.0	138.7	32.3	36.1
Waimea	656.4	122.3	180.8	39.8	37.0

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring;
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

NOTE: Rates were not reportable (NR) for areas with less than 5 events

Summary Table 7: Oral Health and Overall Hospital Admissions, 2010-2014

Service Area	Adults with No Dental Visit* (%)	Adults with Permanent Teeth Removed* (%)	Oral Health Emergency Room Visits Rate (per 10,000)	Overall Hospitalization Rate (per 10,000)
State of Hawai'i	29.0	42.4	16.8	741.5
Honolulu County	27.2	41.0	11.4	739.6
Hawai'i Kai - Kaimuki	18.9	35.7	5.1	650.6
Waikiki - Pālolo	27.3	37.6	10.6	570.1
McCully - Makiki	29.0	42.6	11.1	727.1
Ala Moana - Nu'uuanu	27.0	39.2	14.9	740.3
Downtown - Kalihi	32.1	47.0	17.8	871.5
Airport - Moanalua	29.0	41.5	11.0	712.5
Hickam - Pearl City	21.1	43.4	8.3	687.5
Waipahu	27.2	37.5	10.7	747.8
'Ewa - Kalaeloa	25.5	39.3	9.6	697.8
Kapolei - Makakilo	30.6	38.1	9.9	655.6
Mililani	21.6	42.4	5.0	573.6
Wahiawā	39.5	43.5	21.9	771.3
Wai'anae	41.9	54.8	11.4	1,006.6
Waialua	38.1	38.0	19.2	737.4
Ko'olauloa	30.8	44.6	21.0	807.6
Ko'olaupoko	25.5	39.4	10.3	808.7
Hawai'i County	34.6	46.3	36.0	786.1
Hilo	31.6	46.4	39.6	913.4
Puna	40.6	45.7	21.8	490.7
Ka'ū	37.4	46.9	82.2	1,845.5
South Kona	37.4	57.8	63.2	1,110.8
North Kona	32.2	40.1	31.3	746.8
South Kohala	32.7	46.6	26.6	659.0
North Kohala	25.1	48.0	48.0	650.4
Hāmakuā	35.4	51.8	42.9	703.6
Maui County	31.9	45.3	17.8	700.1
Hāna	NR	NR	NR	590.7
Makawao	32.0	45.0	18.7	640.2
Wailuku	30.2	43.9	18.8	749.5
Lāhainā	32.1	50.3	9.0	638.7
Lāna'i	51.0	52.2	11.2	590.6
Moloka'i	29.3	49.1	36.1	780.2
Kaua'i County	32.2	46.1	38.7	742.0
Hanalei	27.7	48.2	26.8	570.0
Kapa'a	32.4	44.0	54.7	676.6
Līhu'e	36.8	46.8	41.1	871.9
Kōloa	27.2	45.8	24.7	748.1
Waimea	35.0	49.4	30.7	833.2

* Data years 2012, 2014

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS); Hawai'i Health Information Corporation (HHIC)

NOTE: Rates were not reportable (NR) for areas with less than 50 respondents for "No dental visits and Permanent teeth removed measures", while rates were not reportable (NR) for areas with less than 10 events for "Emergency Room Visits."

Summary Table 8: Mental Health and Substance Related Admissions, 2010-2014

Service Area	Substance Related Disorder Rate (per 10,000)	Mood Disorder Rate (per 10,000)	Delirium / Dementia Disorder Rate (per 10,000)	Anxiety Disorder Rate (per 10,000)	Schizophrenia Disorder Rate (per 10,000)
State of Hawai'i	54.4	53.5	31.2	27.9	17.4
Honolulu County	51.2	51.1	34.9	27.5	18.4
Hawai'i Kai - Kaimuki	36.8	45.6	45.8	25.3	10.5
Waikiki - Pālolo	70.8	56.4	29.5	31.5	19.6
McCully - Makiki	52.7	59.4	47.7	30.9	19.8
Ala Moana - Nu'uuanu	80.0	68.7	38.6	36.5	29.8
Downtown - Kalihi	69.6	56.7	42.6	27.0	28.2
Airport - Moanalua	40.3	39.3	29.0	21.0	14.8
Hickam - Pearl City	30.5	38.0	38.7	22.0	13.5
Waipahu	30.2	36.5	41.2	19.8	20.2
'Ewa - Kalaeloa	28.2	38.1	24.4	22.3	10.3
Kapolei - Makakilo	37.0	41.3	18.4	22.6	10.8
Millilani	26.0	34.2	24.3	20.4	6.5
Wahiawā	45.8	52.4	27.1	31.8	13.1
Wai'anae	89.5	69.8	26.2	32.2	32.7
Waialua	61.7	59.3	31.4	35.6	13.4
Ko'olauloa	63.9	53.0	21.5	25.4	16.1
Ko'olaupoko	66.4	64.8	36.7	34.9	22.4
Hawai'i County	68.4	75.0	22.4	34.2	19.0
Hilo	73.8	94.1	38.3	39.4	28.6
Puna	43.0	56.5	11.6	26.6	12.3
Ka'ū	203.1	220.1	36.1	95.1	43.8
South Kona	113.7	84.2	23.5	46.0	25.3
North Kona	74.3	63.4	17.1	30.8	16.6
South Kohala	38.5	42.1	11.6	20.8	5.8
North Kohala	45.6	39.8	17.7	18.2	9.0
Hāmakuā	37.2	50.7	20.7	23.0	11.3
Maui County	60.2	45.3	20.9	23.4	10.4
Hāna	48.7	40.7	9.5	18.2	13.8
Makawao	53.1	45.7	17.5	24.9	8.8
Wailuku	63.8	49.8	25.9	25.5	12.2
Lāhainā	70.8	34.4	11.9	15.3	7.3
Lāna'i	33.0	30.3	13.8	20.2	8.5
Moloka'i	43.6	35.6	20.4	19.3	9.9
Kaua'i County	47.9	47.9	27.4	27.0	15.3
Hanalei	48.5	36.6	21.1	20.9	13.2
Kapa'a	45.5	49.5	22.5	27.2	16.8
Līhu'e	52.3	59.4	38.7	27.6	18.6
Kōloa	45.3	41.5	26.9	27.9	13.4
Waimea	50.7	46.3	27.0	29.6	11.8

Source: Hawai'i Health Information Corporation (HHIC);
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

CHAPTER 1: INTRODUCTION

PURPOSE

The *Primary Care Needs Assessment Data Book* is a compendium of comparative health statistics on 35 primary care service areas in the State of Hawai'i. This Data Book was developed to assist policy makers, health planners, health care professionals and community members in making assessments of the relative health risks and primary health care needs of these communities. This Data Book demonstrates significant differences in risks related to geography, but it is important to be aware there are other characteristics such as race/ethnicity, gender, age, education, poverty, and other factors that may explain observed differences. In strategic planning to address differences at the community level, it is essential to consider the impact of all measures due to the complex nature of disparities. It is hoped that the Data Book continues to be a valuable resource on population-level measures of risks along the life course from birth until death.

HISTORY OF THE DATA BOOK

In the early 1990's, meetings were held to develop the *Primary Care Access Plan* for the State of Hawai'i. Stakeholders from the public and private sectors were brought together to identify primary care needs and recommend appropriate allocation of resources to ensure the best possible primary care services for the people of Hawai'i. In 1994, the *Primary Care Access Plan* was released and included the development of a *Primary Care Needs Assessment Data Book* that could be used for strategic planning purposes. Primary care is defined in this plan to be the integration of services that promote and preserve health, prevent disease, injury and disabilities, and provide a regular source of care for acute and chronic illness and disabilities. Primary care providers are seen as the entry point into the larger health services system. The primary care provider incorporates community needs, risks, strengths, resources, and cultures into clinical practice while sharing an ongoing responsibility for health care with each family.

The earliest editions of this Data Book primarily addressed maternal and infant health and socio-economic risks, but over the years the focus was expanded to include more comprehensive indicators reflecting the diversity of primary care. The 2005 edition introduced several new indicators including smoking, diabetes, obesity, stroke and heart disease mortality, and some measures of adult oral health. The 2009 revision reorganized and broadened the scope by including several new risk factors for chronic disease and cancer mortality. The 2012 edition added information on hospital discharge data related to mental health and substance use disorders. In addition, some of the socio-economic data was changed to reflect data available in the American Community Survey. There was also a change from previous versions in which the three largest areas in Honolulu County were expanded to 11 areas to show a finer level of detail. These three original areas were maintained in that edition for historical purposes and to highlight the diversity found in these areas. In the current, 2016 version, these three historical areas have been removed to simplify presentation of the data. This edition represents a change from previous versions with a change to hospital admission rate calculations from simple proportion of hospital admissions that first occurred in the last Data Book released in 2012.

Additional indicators were added including public coverage for health insurance, no health insurance, overall age adjusted mortality rate, preventable emergency department visit rate related to oral health, and an overall hospital admission rate. There were also some changes in the presentation of data to clarify the community level maps including consolidation of the three separate Health Professional Shortage Designations into one map. The addition of the Native Hawaiian Health Care System was added as a federally funded project that provides important services to high risk populations in the state.

Comments on the usefulness of the information and suggestions for new indicators were obtained through feedback surveys, presentations to the Hawai'i Primary Care Association, and through an online survey sent to those who were mailed a copy of the previous edition.

DATA SOURCES

Data was collected from public and unpublished files by several government agencies, namely: the United States Bureau of the Census, for socio-economic and demographic data; the Hawai'i Department of Health, Office of Health Status Monitoring (OHSM), for vital statistics data; the Behavioral Risk Factor Surveillance System Program, for adult chronic disease risk factors and oral health data; and the Hawai'i Health Information Corporation, for oral health emergency room, substance use and mental health hospitalization data.

United States Bureau of the Census

The U.S. Constitution requires the U.S. Census to count every resident in the United States every 10 years. The last Census was done in 2010. Census information affects the numbers of seats each state occupies in the U.S. House of Representatives. Data from the Census can be analyzed to determine demographic information such as number of residents, their ages, their race/ethnicity, family composition, and other measures living in a particular census tract. The Census no longer collects specific information on what used to be found on the long form. The American Community Survey (ACS) was expanded to capture most of this information. The ACS is collected on an annual basis and provides data at the census tract level on a rolling basis rather than every 10 years. For this Data Book, a five year (2010-2014) aggregate is used to report out information based on census tract estimates.

Vital Statistics

The collection of Vital Statistics data including births, deaths, and marriages in the state is coordinated by the Office of Health Status Monitoring in the Hawai'i Department of Health. This data is used to report on indicators of health status for the state. The birth certificate data includes demographic and other characteristics about the infant, the parents, and factors related to the pregnancy and delivery. The information from the death certificate includes demographic and some basic information related to the cause and circumstance of the death. More information on the Hawai'i vital statistics data is available online at <http://hawaii.gov/health/statistics/vital-statistics/index.html>.

Behavioral Risk Factor Surveillance System Survey

The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based survey that collects information on adult health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. The BRFSS, first implemented in Hawai'i in 1986, is funded by the Centers for Disease Control and Prevention. It is a disproportionate stratified random-digit telephone-based survey that provides weighted estimates to reflect those living in Hawai'i. In 2011, there was a change in weighting methodology so estimates are not comparable to earlier periods and so only data from 2011-2014 were available for use. In this Data Book, all estimates based on the BRFSS data for the population size and the number of individuals with a particular indicator are rounded to the nearest 100. More information on the Hawai'i BRFSS data is available online at <http://hawaii.gov/health/statistics/brfss/brfss/index.html>.

Hawai'i Health Information Corporation

The mission of the Hawai'i Health Information Corporation (HHIC) is to collect, analyze, and disseminate statewide health information in support of efforts to continuously improve the quality and cost-efficiency of health care services provided to the people of Hawai'i. HHIC is a private, not-for-profit corporation established in 1994 by the state's major private health care organizations. HHIC maintains one of the largest healthcare databases in Hawai'i, including inpatient, emergency department, and financial data. As an independent organization, HHIC has collected inpatient hospital data from licensed acute care hospitals in Hawai'i since 1995. The inpatient database currently includes approximately two million patient records. In 2000, Emergency Department (ED) data was added to HHIC's data repository and currently contains three million patient records. More information on HHIC and use of their data is available online at <http://hhic.org>.

HEALTH DISPARITIES

When looking at overall population level health, it's important to acknowledge that there are some groups in that population that may have differences when compared to other groups. The term disparity is often used to portray differences in health as being unjust and that a particular population group is at a disadvantage or suffering an increase burden of disease due to the differences. These differences could be related to multiple factors, which may include potentially (changeable, adjustable) modifiable factors such as inadequate access to health care services, socio-economic differences, education, health behaviors, and having a medical home. Whereas, non-modifiable factors could include population groups defined by age, race/ethnicity, and gender.

Often disparity research focuses on highlighting disparities among the non-modifiable factors such as race/ethnicity as it is relatively easy to measure and a simple way to categorize people. This simple categorization gets much more complicated when applied to a society with the diversity found in Hawai'i where more than a third of mothers who have a live birth and nearly a third of fathers report belonging to more than one of the five federal race groups (White, Black, Asian, Native Hawaiian and Other Pacific Islander, American Indian and Alaskan Native).¹ However, it's important to consider that race/ethnicity perhaps represents a cascade of different factors including modifiable behaviors common for particular subgroups. This contrasts with some conditions that may have an underlying genetic reason. It is imperative to assess if additional factors may be contributing to the disparity. It is also important to look at what factors may be contributing to better health outcomes among groups to determine if certain protective factors could benefit disadvantaged groups. Often, the true underlying reasons for disparities are not well characterized, but it is crucial to continue to monitor disparate populations and determine if these groups are improving or continuing to suffer an increased burden compared to others. Understandings disparities can lead to appropriate interventions to improve the overall health of the population.

The Centers for Disease Control and Prevention (CDC) developed National Healthy People Objectives and Goals to improve the health of society. Fundamental to reaching these objectives will require the elimination of long-standing and pervasive health disparities related to race/ethnicity, socioeconomic status, and other key dimensions of health. The Determinants of Health are central to address these concerns and are defined in Healthy People 2020 in five categories: 1) Policy Making; 2) Social Factors; 3) Health Services; 4) Individual Behavior; and 5) Biology and Genetics.

Determinants of Health reach beyond the boundaries of traditional health care and public health sectors. Sectors such as education, housing, transportation, agriculture, and environment can be chief allies in improving population health. The interrelationships among these influence individual and population health so interventions that target multiple Determinants of Health are more likely to be effective.²

In this report, estimates are reported at three distinct geographic levels: 1) Primary care service area; 2) County; and 3) State. Differences across the levels are important to understand, but it's also important to look at other Determinants of Health that can contribute to disparities such as age, race/ethnicity, education, geography, insurance status, household federal poverty level, and medical home. The importance of more in depth analyses such as qualitative methods are often needed to understand the underlying reasons why a particular disparity exists. This report provides a lot of information and the reader is encouraged to use it in conjunction with other resources when planning and implementing public health activities.

1 Hamilton BE, Ventura SJ. Characteristics of births to single-and multiple-race women: California, Hawaii, Pennsylvania, Utah, and Washington, 2003. National Vital Statistics Reports; vol 55 no 15. 2007.

2 U.S. Department of Health and Human Services. Healthy People 2020 Maternal and Infant Health Objectives. 2010. Available at <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26> .

RISK INDICATORS

A quantitative measure of the health and socio-economic risk faced by a population is used as a proxy for measuring the level of need for primary care services. It is implicitly assumed the higher the measured risk in a particular service area, the greater is the perceived need for primary care services. While the risk assessment approach may not be sufficient to capture all the complex dimensions of need, it allows for ease and objectivity in the comparative analysis of service areas. Risk indicators were selected for use in this Data Book from stakeholders input and the availability of data at the census tract or zip code level.

DELINEATION OF PRIMARY CARE SERVICE AREAS

Primary care service areas were selected to describe the delivery of primary health services in the State of Hawai'i through participation of multiple stakeholders in the early 1990's. The rural health associations of the Hawai'i, Maui and Kaua'i Counties delineated *rational service areas* under their respective jurisdictions. The Needs Assessment Committee of the Primary Care Roundtable participated in the delineation of *rational service areas* for Honolulu County. These *rational service areas* will be referred to as primary care service areas in this report. Clustering of neighborhoods into these primary care service areas is intended to provide information below the county or island level with demarcation between adjacent neighborhoods. Census tracts are used in defining these areas due to their availability in census and vital statistic data. The size of the population in these areas, based on the 2010 U.S. Census data, vary from 170 individuals in Ni'ihau and 2,291 in Hāna to 115,164 in Ko'olaupoko. Thus direct comparisons in estimates between primary care service areas are limited and this limitation will be described later in this chapter. Clusters of census tracts were defined using both 2010 and 2000 census tracts depending on the data source. Both groupings are presented in Table 1-1 and detail on usage in particular data sets are presented later in this chapter.

Kalawao County

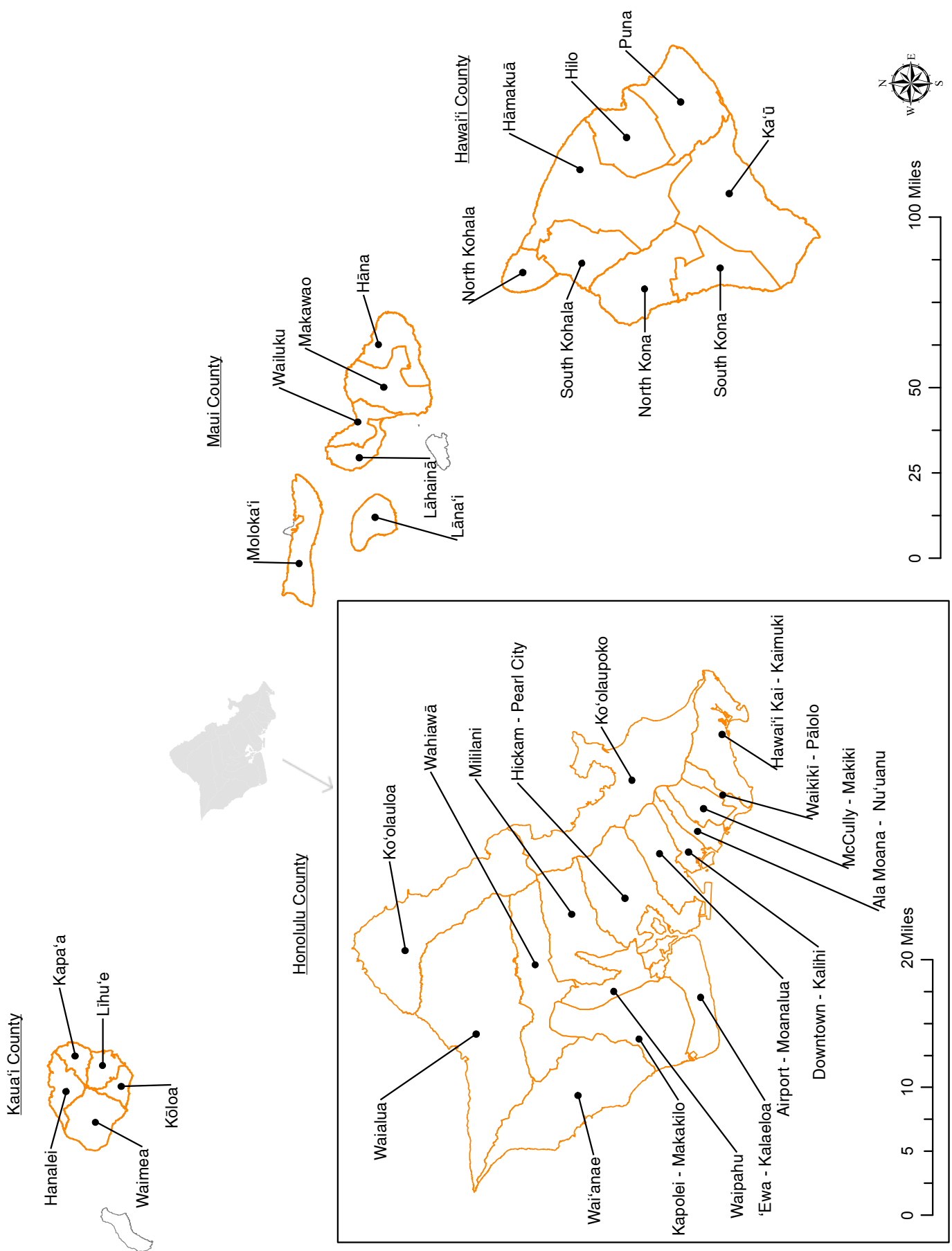
Kalawao County occupies the Kalaupapa Peninsula on Moloka'i. The county does not have its own county government, and is administered by the Hawai'i State Department of Health. Its occupants are primarily Hansen's disease patients who chose to remain after 1969 when the quarantine policy was lifted, and those who work with them. An agreement with the state permits the current residents to reside there for the remainder of the lives. Access to the county by the public is restricted. The U.S. Census Bureau's 2010 population for Kalawao County was 90 with a median age of 55.3 years living in 69 households. Because Kalawao is a small, institutionalized population with unique social-demographic characteristics, its health data is generally not reported with those of the general population. For this Data Book, due to limitations described, general data is not included specifically for Kalawao County.

Ni'ihau

Ni'ihau is located southwest of the island of Kaua'i and is part of Kaua'i County. The island has been privately owned since 1864 with access to the island severely restricted. The 2010 U.S. Census reports Ni'ihau's population at 170. The population fluctuates as people move to and from Kaua'i for educational and economic opportunities. Medical services are generally acquired by residents on the island of Kaua'i. Due to its small population, absence of data, and unique social-demographic characteristics, health data is generally not reported for the island. Although Ni'ihau was one of the original primary care service areas identified in the *Primary Care Access Plan*, it is not included as a primary care service area for any of the indicators due to the limitations described above.

Table 1-1: Primary Care Areas Defined, 2000 and 2010 Census Tracts

Geography	2000 Census Tracts	2010 Census Tracts
State of Hawai'i		
Honolulu County		
Hawai'i Kai - Kaimuki	1 - 9	1 - 9, 9800
Waikiki - Pālolo	10 - 20	10 - 20
McCully - Makiki	21 - 33	21 - 33
Ala Moana - Nu'uuanu	34 - 45	34 - 45
Downtown - Kalihi	46 - 62	46 - 62
Airport - Moanalua	63 - 72	63 - 71, 9802, 9813, 9814
Hickam - Pearl City	73 - 81	73 - 80, 114
Waipahu	82, 87 - 88, 89.05, 89.10 - 89.14, 89.20 - 89.99	87 - 88, 89.12 - 89.14, 89.20 - 89.25
'Ewa - Kalaeloa	83 - 84, 86.05	83 - 85, 9803
Kapolei - Makakilo	85 - 86.04, 86.06 - 86.99	86, 115
Mililani	89.06 - 89.09, 89.15 - 89.19	89.06 - 89.09, 89.15 - 89.18, 89.26 - 89.31
Wahiawā	90 - 95	90 - 95, 9806, 9807
Wai'anae	96 - 98	96 - 98, 9400.02
Waialua	99 - 100	99 - 100
Ko'olauloa	101 - 102	101 - 102
Ko'olaupoko	103 - 113	103 - 113, 9400.01, 9808, 9810, 9811
Hawai'i County		
Hilo	201 - 209	201 - 209
Puna	210 - 211	210 - 211
Ka'ū	212	212
South Kona	213 - 214	213 - 214
North Kona	215 - 216	215 - 216
South Kohala	217	217
North Kohala	218	218
Hāmakuā	219 - 221	219 - 221
Maui County		
Hāna	301	301
Makawao	302 - 305	302 - 305, 9800
Wailuku	306 - 313	307 - 311, 319
Lāhainā	314 - 315	314 - 315, 320
Lāna'i	316	316
Moloka'i	317 - 318	317 - 318
Kaua'i County		
Hanalei	401	401
Kapa'a	402 - 403	402 - 403, 9400
Līhu'e	404 - 405	404 - 405
Kōloa	406 - 407	406 - 407
Waimea	408 - 409	408 - 409



Map 1-1: Locations of Primary Care Service Area

Changes between 2000 and 2010 Census Tracts

Most 2010 census tracts remained unchanged, but a number of census tracts were split, merged, or revised resulting in changes to the census tract numbering. Other census tract numbering changes has occurred to reflect 1) Hawaiian Home Land Tracts (9400 - 9499), 2) Special Land Use Tracts (9800 - 9899), and 3) Water Tracts (9900 - 9989). Because the US Census Bureau changed their methodology, census tract numbering will be unique only within counties so there may be duplicate census tract numbers within the state. Such as CT 319 for Kalawao, and Spreckelville, Maui and CT 9800 for Hanauma Bay, Oahu and Kahoolawe, Maui. The data sources vary on use of census tracts so somewhat different definitions were used in this report based on the available data. The following narrative identifies what tracts were used in the respective data sources and table 1-1 shows the census tracts used for the Primary Care Service Area.

Primary Care Service Areas and US Census Data

Data from the 2010-2014 American Community Survey (ACS) and the 2010 U.S. Census was obtained at the census tract level. Primary Care Service Areas were assigned based on aggregated census tracts as noted in Table 1-1. All data from the 2010-2014 ACS was reported based on 2010 census tracts.

Primary Care Service Areas and Vital Statistics Data

Vital statistics is obtained at the census tract level and assigned to the appropriate primary care service area based on the 2000 census tracts as noted in Table 1-1. When census tract information was listed as unknown for a particular county, it was included in the county and state totals and not in an individual primary care service area.

Primary Care Service Areas and BRFSS Data

BRFSS data is collected at the zip code level. When zip codes overlap census tracts, individuals are assigned to a census tract using a random number calculation based on a crosswalk obtained from the Missouri Census Data Center from 2010 census tracts using a 5% threshold (if more than 5% occurred in one area, this proportion was assigned to that area). For example, zip code 96786 overlaps two primary care service areas (Wahiawa and Waialua), but 94% of the population with a 96786 zip code reside in one of the areas (Wahiawa) based on the 2010 U.S. Census. Therefore, we randomly selected 94% of the respondents with this zip code to be assigned to Wahiawa, with the remaining 6% being assigned to Waialua. For the island of Ni'ihau, the island's small population and the limited number of land-line telephones mean very few if any of the residents would be captured in the BRFSS survey. Therefore, all respondents with a zip code 96769 were assigned to the primary care service area of Waimea which shares the same zip code.

Primary Care Service Areas and HHIC Data

HHIC data was available at the zip code level and were assigned to appropriate primary care service areas using the same procedure done with the BRFSS data.

MAP DEVELOPMENT

Throughout this Data Book, Geographical Information System (GIS) software was used to portray graphically some key information for the State of Hawai'i. In the first map, the individual primary care service areas were superimposed on a map for the State of Hawai'i. The second chapter overlays of the primary care service areas in Hawai'i are included to demonstrate how they interact with the standard federal designations representing areas at greatest need. As both the primary care service areas and the federal designations are based on census tracts, it is informative to see that some overlap completely; while others only a portion of the primary care service area is considered a federally designated area. For example on Map 1-2, within the primary care service area of South Kohala, only the census tract corresponding to Waikoloa is considered a Primary Care Health Professional Shortage Area (HPSA). The map also demonstrates the consolidation of three separate HPSA maps into one and highlights the areas where more than one HPSA designation is present. Another aspect of the federally designated areas would be the inclusion of Kalawao County, as it is considered a Primary Care HPSA, but is not considered one of the primary care service areas for this book.

Additionally, maps were developed to graphically portray each indicator using basic percentiles in six categories so the darkest color represent those primary care service areas with the highest risk (1-6), while the lightest color represents those at the lowest risk (31-35). These summary maps are useful to demonstrate variation in ranking of the individual indicators for the primary care service areas, but please refer to the section on *Data Limitations and Interpretation* when making conclusions based on these maps and corresponding tables.

DATA LIMITATIONS AND INTERPRETATION

The Small Numbers Problem

The *Small Numbers Problem* is a result of a small at-risk population. While there are clear advantages to using rates as a measure of frequency, there is a major limitation when the number of events (e.g., births, population) in the denominator is very small. To reduce this problem, data for six years was aggregated, whenever possible. However, even with such aggregation, the events number very few for some service areas. It is therefore advised that considerable caution be exercised in the interpretation of these rates, particularly in making comparisons. For example, in cases when the numerator of a multiple year period refers to a very small number of events (fewer than 20), the confidence interval is often too wide to make meaningful comparisons. In these instances a standardized ratio can be computed instead of a confidence interval.³ A standardized ratio is the relationship between the observed number of events versus the expected number of events. To calculate the expected number of events, state rates are applied to the area denominator to generate an expected number of events if the area rate was the same as the state rate. The equation for the expected number of events is:

$$\text{Area Denominator} \times \text{State Rate} = \text{Expected Number of Events}$$

A standardized ratio can then be calculated by dividing the observed number of events by the expected number and multiplying by 100. When the standardized ratio is greater than 200, the area in question is likely to have a rate that is significantly higher than the overall rate for the state.

$$\text{Standardized Ratio} = \frac{\text{Observed Number of Events}}{\text{Expected Number of Events}} \times 100$$

³ Family Health Outcomes Project (FHOP), Guidelines for Using Federal Data Templates with Small Numbers (1997).

Comparison of Primary Care Service Areas

The 35 primary care service areas are unweighted with respect to the size of the resident population so caution has to be used when comparing estimates between areas. Generally, estimates based on smaller populations will have less precision and be more variable when compared to those based on much larger populations. The presentation of confidence intervals highlight the variability found in the indicators by community and can facilitate comparisons to estimates found for the state, county, and with other primary care service areas.

Notes on Confidence Intervals

In order to assess if a particular primary care service area's rate on a health status indicator is different from some baseline rate or from the county or state average, it is necessary to compare the rates. But simply looking at the rates and determining which is higher or lower may not be meaningful when the *Small Numbers Problem* exists. For example, there are random fluctuations every year in the number of deaths that occur in a community, apart from the real changes in mortality rates due to epidemics, poor access to care, etc... In areas with very small populations and number of deaths, these fluctuations can produce large changes in mortality rates from year to year. A certain amount of variation between rates that can be expected due to chance and is not indicative of true changes occurring in the population is referred to as *random variation*. One way of interpreting the magnitude of random variation between rates is by using *confidence intervals*.

The confidence interval calculated for a particular service area rate indicates the expected range of random variation in the estimate. Suppose the service area rate is being compared to the state rate. If the confidence interval for the state rate overlaps the confidence interval for the service area, it can be inferred that the difference between the rates is probably due to random fluctuation (or chance) and there is probably no meaningful difference between the rates. On the other hand, if there is no overlap, it can be concluded that the difference between the rates is meaningful or statistically significant. The smaller the denominator used to calculate the rate for a particular service area, the larger the random fluctuation in the estimate, and the more likely that there may not actually be a meaningful differences. This is important to bear in mind during the comparison and interpretation of the rates. An example of the use of confidence intervals⁴ follows:

	Infant Mortality Rate	Confidence Interval	Number of Deaths	Number of Live Births
State	6.9	6.4 – 7.4	731	105,823
Service area X	6.8	5.8 – 7.8	179	26,186
Service area Y	4.7	3.4 – 6.1	47	9,897

Since the confidence interval for the state overlaps that of service area X, it can be concluded that service area X's infant mortality rate is not meaningfully different from the state rate. On the other hand, service area Y's infant mortality rate of 4.7 can be said to be significantly lower than the state rate since the confidence interval for service area Y does not overlap with the confidence interval for the state.

While confidence intervals are not a rigorous test of significance, they provide a reasonable guide to the interpretation of the magnitude of the random fluctuations in the difference between rates. Confidence intervals based on vital statistics and hospital discharge information were calculated using the standard formula introduced in the example above on infant mortality. American Community Survey Data standard 90% confidence intervals provided in the data were converted to 95% confidence intervals for consistency throughout this report. Statistical software, accounting for the complex survey design, was used to calculate the 95% confidence intervals for indicators based on BRFSS data. No confidence intervals were calculated for the 2010 census data population estimates for race groups.

⁴ *Confidence Interval Lower Limit* = $p - 1.96 * SE$. *Confidence Interval Upper Limit* = $p + 1.96 * SE$.
p = area rate. SE= Standard error = $(p/\text{sqrt}(n))$. n = the number of events in the area.

CHAPTER 2: PRIMARY CARE OFFICE, FEDERAL DESIGNATIONS, AND CLINICAL SYSTEMS

PRIMARY CARE OFFICE

The Hawai'i Primary Care Office (PCO) is located in the Department of Health (DOH), Family Health Services Division. This comprehensive program promotes and supports access to primary care, oral health care, and mental health care services for underserved communities in Hawai'i. The PCO is responsible for overseeing the development and recertification of Health Professional Shortage Areas (HPSA), and Medically Underserved Area/Populations (MUA/P) designations. Designations document the medical, dental, and mental health needs in specific geographic areas. Once an area receives a shortage designation it is eligible for important federal programs including the National Health Service Corps (NHSC), Centers for Medicare & Medicaid Services (CMS) Medicare Incentive Payments, CMS Rural Health Clinic Program, J-1 Visa Waiver Program, Rural Health Clinic certification, and Federally Qualified Health Center (FQHC) and FQHC look-alikes.

The PCO is funded through the Health Services Administration (HRSA), State Primary Care Office grant. The program's following core functions are to:

- Support organizational effectiveness and foster collaboration;
- Provide technical assistance to organizations and communities wishing to expand access to primary care for underserved populations;
- Conduct needs assessment(s) and data sharing;
- Support workforce development for the National Health Service Corps and safety Net/Health Center Network; and
- Review and update shortage designation areas.

The Hawai'i PCO works in close collaboration with Federally Qualified Health Centers (FQHCs), primary care contractors, the Hawai'i Primary Care Association, the Hawai'i State Office of Rural Health, Hawai'i/Pacific Basin Area Health Education Centers, the Native Hawaiian Health Scholarship Program, community stakeholders, and other public and private organizations to support the development, viability, and expansion of a statewide comprehensive primary health care system. An integral part of the program is the provision of high-quality, culturally competent, coordinated, primary care services to the uninsured and underinsured through contracts with 13 of the FQHCs throughout the state and two private community clinics. Services covered under these contracts include medical care, behavioral health, dental treatment, and pharmaceutical services. Program data demonstrates an ever increasing demand for services.

Having an accurate picture of our communities' health status and needs is critical for planning and program needs. This is accomplished through a needs assessment process supported by the PCO. The product of the statewide assessment is the PCO Needs Assessment Data Book a biennial publication, which provides essential data for identifying community, shortage designation, health workforce, and primary care health needs.

BACKGROUND ON FEDERAL DESIGNATIONS

Health Professional Shortage Areas (HPSAs)

Health Professional Shortage Areas (HPSAs) are designated by HRSA as having shortages of primary medical, dental or mental health providers and may be geographic (e.g., county or specific service area), population (e.g., low income, homeless) or facility (e.g., public, non-profit, private practice). Health Professional Shortage Area designations are based on specific designation criteria, and guidelines specific to each of the three types of designations (e.g., primary care, dental and mental health). Information about the specific designation criteria may be found at: <http://bhpr.hrsa.gov/shortage/hpsas/>.

The National Health Service Corps (NHSC) and the Rural Health Clinic Certification Program are two of several federal programs requiring a HPSA designation. The Area Health Education Center (AHEC) Program gives special consideration to centers that serve HPSAs with higher percentages of underserved minorities, and also provides special funding priority to centers offering substantial training experience in HPSAs. The Division of Shortage Designation of the Bureau of Health Professions with the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services is responsible for reviewing and designating HPSAs.

Medically Underserved Area/Population (MUA/MUP)

Medically Underserved Areas/Populations (MUA/Ps) are areas or populations designated as having too few primary care providers, high infant mortality rates, high poverty rates, or a high elderly population. A MUA/P may be a whole county or a group of contiguous counties, a group of county or civil divisions or a group of urban census tracts. Medically Underserved Populations (MUPs) may include groups of persons who face economic, cultural or linguistic barriers to health care. Like HPSAs, MUA/Ps are determined using a set of eligibility criteria that computes an Index of Medical Under-service score. This score determines if an area may be designated as either a MUA or MUP. For more information on the criteria and scoring methodology see the website: <http://bhpr.hrsa.gov/shortage/muaps/index.html>.

Sources: 42 CFR Chapter 1, Part 5; Health Resources and Services Administration, Bureau of Primary Health Care Guidelines; and the National Health Service Corps website, <http://nhsc.hrsa.gov/>.

The National Health Service Corps (NHSC)

The National Health Service Corps is one of several scholarship and loan repayment assistance programs operated by the Bureau of Health Workforce (BHW) to support the recruitment and retention of health care professionals to work in a HPSA. The NHSC program requires a service commitment by an individual to work at an approved health care site for at least two years in exchange for financial assistance. Eligible healthcare professionals under the NHSC Loan Repayment Programs are:

- Primary Care Physicians (Family Medicine, General Internal Medicine, General Pediatrics, Obstetrics/Gynecology, General Psychiatry)
- Nurse Practitioners
- Physician Assistants
- Certified Nurse-Midwives
- Dentists (General Dentistry and Pediatric Dentistry)
- Dental Hygienists
- Mental and Behavioral Health Professionals (Psychiatrists, Health Service Psychologists, Clinical Social Workers, Licensed Professional Counselors, Marriage and Family Therapists, and Psychiatric Nurse Specialists)

Many types of practices can apply to become eligible sites for the placement of NHSC Scholars and Loan Repayers, including:

- FQHCs, FQHC Look-A-Likes, and Rural Health Clinics
- Public Health Departments
- Hospital Affiliated outpatient primary care
- Group Practices
- Solo Practices/Partnerships
- State and Federal Prisons
- U.S. Immigration, Customs & Enforcement
- Tribally Run Indian Health Service Sites and Federal Indian Health Service Sites
- Other (Critical Access Hospitals, Community Mental Health Centers, Free Clinics, Mobile units, School-based clinics)

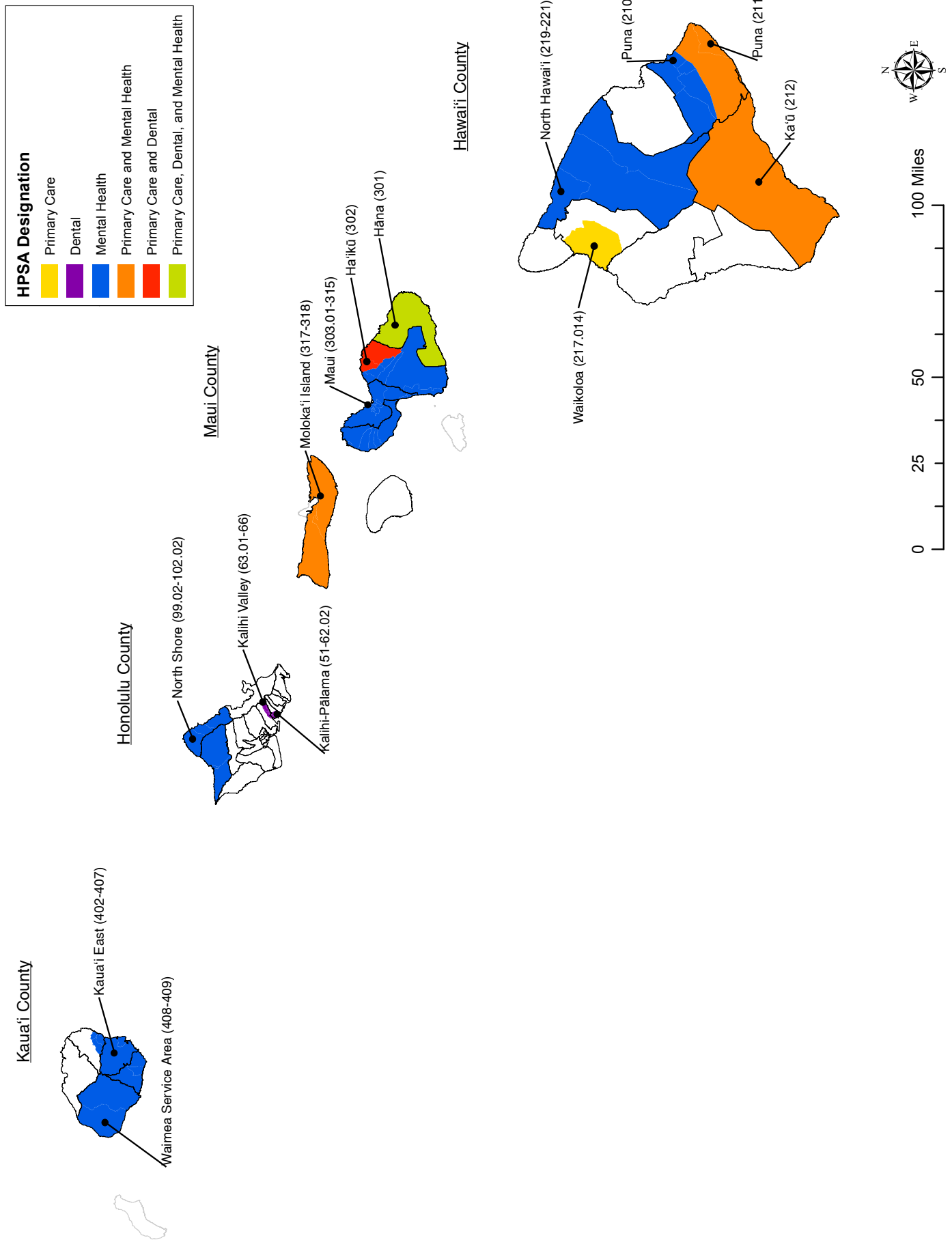
The BHW also has Nurse Corps scholarship and loan repayment programs as well as Faculty Loan programs.

More information and application forms for interested health professionals and practice sites can be found at <http://nhsc.hrsa.gov>. For further assistance call the NHSC Helpline at 1-800-221-9393 (available from 9 a.m. to 5:30 p.m. EST) or through the new Customer Service Portal @ <https://programportal.hrsa.gov/extranet/landing.seam>.

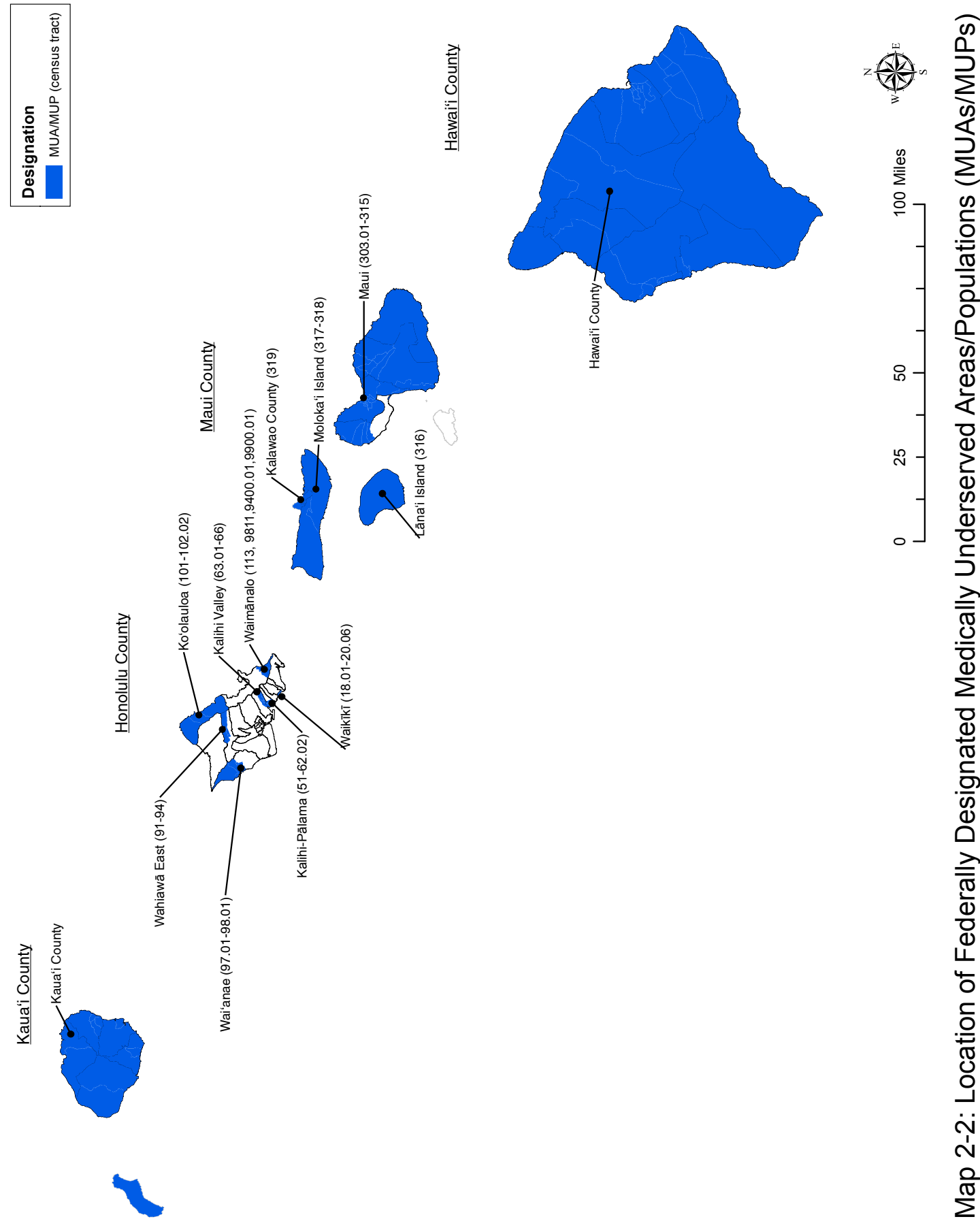
Table 2-1: Medically Underserved Area/Population and Health Professional Shortage Area Designations by Area, Type, Score, and Designation Date

Area (Census Tract)	Medically Underserved Area/Population (MUA/P)	Primary Care HPSA	Dental HPSA	Mental Health HPSA	Primary Care	Dental	Mental Health
	Designation	HPSA Scores			Date of Last HPSA Update		
Honolulu County							
Waikīkī (18.01-20.06)	GOV MUA						
Kalihi-Pālāma (51-62.02)	GOV MUA		** 11			Jun 2011	
Kalihi Valley (63.01-66)	MUA		** 11			Jun 2011	
Wahiawā East (91-94)	GOV MUP				Mar 2013		
Wai'anae (97.01-98.01)	MUA						
North Shore (99.01-102.02)				** 16			Jun 2013
Ko'olauloa (101-102.02)	MUA						
Waimānalo (113.01-113.02)	GOV MUA						
Hawai'i County							
Hawai'i County	MUA						
Puna (210.01-211)		* (211) 13		* 11	Aug 2012		Aug 2007
Ka'ū (212)		* 15		* 14	Nov 2011		Aug 2011
Waikoloa (217.01)		* 12			Nov 2011		
North Hawai'i (219-221)				* 17			May 2012
Maui County							
Hāna/Ha'ikū (301-302)	GOV MUA	* 14	** 16	* (301) 10	Aug 2011	Oct 2012	Sep 2011
Maui (303.01-315)	MUP						
Maui (302.01-320)				* 14			Apr 2014
Lāna'i Island (316)	MUP						
Moloka'i Island (317-318)	MUA	* 16		* 17	Dec 2012		Aug 2007
Kaua'i County							
Kaua'i County	GOV MUA						
Kaua'i East (402-407)				* 9			Aug 2011
Waimea Service Area (408-409)				* 8			May 2012
Kalawao County							
Kalawao County (319)	MUA						
MUA — Medically Underserved Area MUP — Medically Underserved Population HPSA — Health Professional Shortage Area GOV MUP — Medically Underserved Area requested by Governor * — Approved as an Area designation ** — Approved as a Population designation							

Note: Designations listed are as of May 2015



Map 2-1: Location of Federally Designated Health Professional Shortage Areas (HPSAs)



Map 2-2: Location of Federally Designated Medically Underserved Areas/Populations (MUAs/MUPs)

COMMUNITY HEALTH CENTERS AND CLINICS

Access to health care occurs in many settings. Ideally, an individual will have a central medical home where all services are coordinated. This data report focuses on primary care access among Rural Health Clinics, FQHCs, and State Primary Care contractors.

Rural Health Clinic (RHC)

The Rural Health Clinic (RHC) program is intended to increase primary care services for Medicaid and Medicare patients in rural communities. A RHC can be public, private, or non-profit, and must be located in rural underserved areas as designated under Section 1861(aa)(2) of the Social Security Act. An advantage of having a RHC status is the enhanced reimbursement rates for providing Medicaid and Medicare services. A RHC is required to use a team approach of physicians and mid-level practitioners such as nurse practitioners, physician assistants, and certified nurse midwives to provide services. The clinic must be staffed at least half time with a mid-level practitioner and must provide the same services that are required of a community health center.

Federally Qualified Health Center (FQHC)

Federally Qualified Health Centers (FQHCs) include all organizations receiving grants under Section 330 of the Public Health Service Act (PHS). FQHCs qualify for enhanced reimbursement from Medicare and Medicaid, as well as other benefits. FQHCs must serve an underserved area or population, offer a sliding fee scale, provide comprehensive services, have an ongoing quality assurance program, and have a governing board of directors. The 14 FQHC's in Hawai'i are critical safety nets for individuals and families with limited financial resources. Many of the centers have satellite sites expanding their service area capacity. In 2013, the FQHCs served 146,489 clients.¹ Fifty-three percent of the patients were on Medicaid/Quest, 76% were below 100% of the federal poverty level, and 92% were below 200% of the poverty level. In order to simplify the map on page 27, we have only shown the satellite clinics located outside of Honolulu County.

State Funded Primary Care Contractors

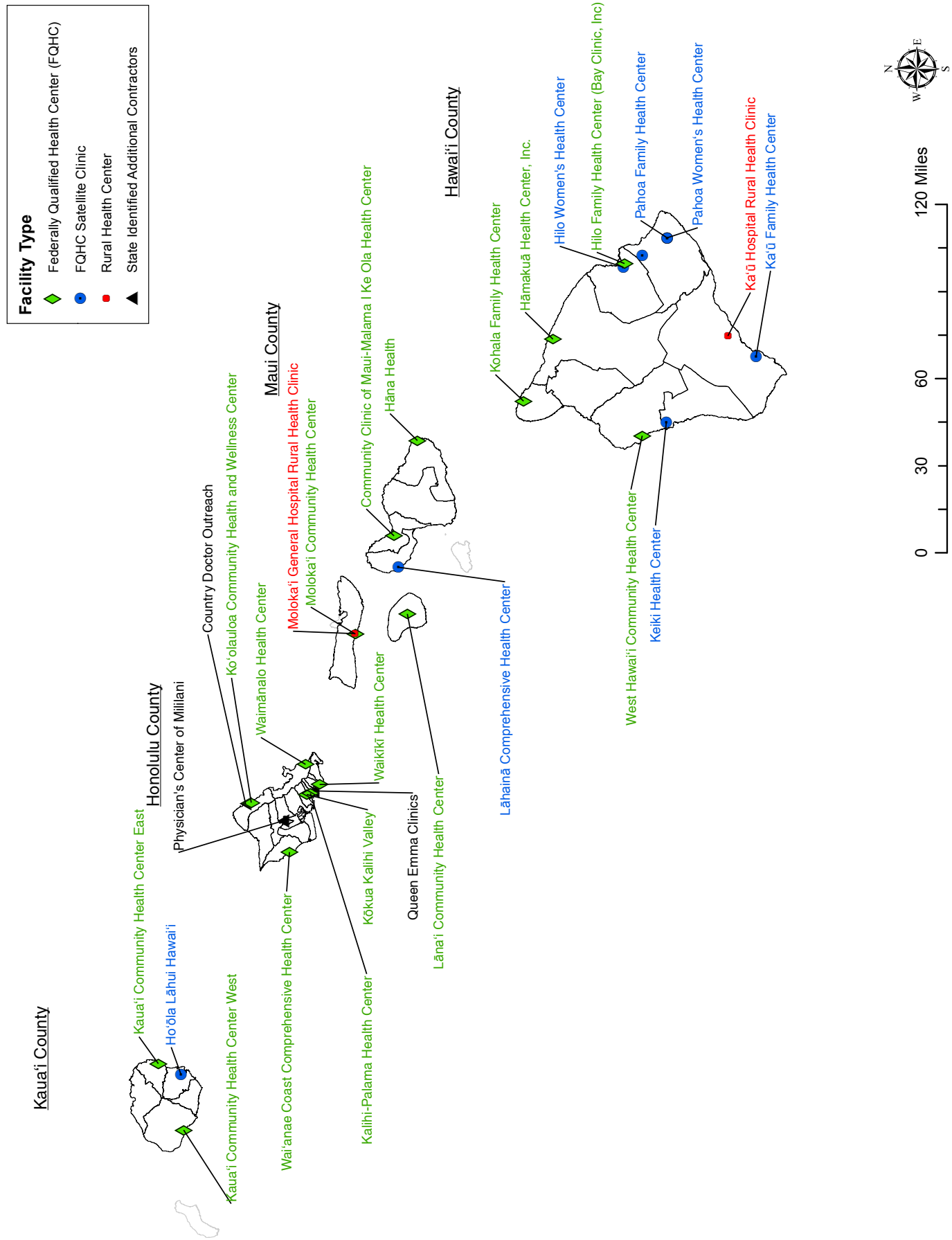
The Department of Health identified the need to provide primary care services to areas that did not meet the requirements for a RHC or FQHC, but were critical in ensuring appropriate access to services. Currently, there are 16 sites that receive such funding identified through an open and competitive procurement process. These health centers and clinics expand access to primary care services for the medically underserved that are coordinated, culturally sensitive, and focus on health promotion and disease prevention.

¹ Hawai'i Primary Care Association Report. 2013.

Table 2-2: Automatic Facility Health Professional Shortage Area Scores by Area, Type, and Classification

Facility	Primary Care Designation Score	Dental Health Designation Score	Mental Health Designation Score	Facility Classification
Honolulu County				
Kalihi-Pālama Health Center	17	18	16	FQHC
Kōkua Kalihi Valley	10	10	10	FQHC
Ko'olauloa Health and Wellness Center	17	24	16	FQHC
Ke Ola Mamo	NA	NA	NA	NHHCS
Wai'anae Coast Comprehensive Health Center	14	18	18	FQHC
Waikīkī Health Center	18	17	12	FQHC
Waimānalo Health Center	15	20	21	FQHC
Federal Detention Center Honolulu	12	12	12	Correctional
Hālawa Correctional Facility	3	-	6	Correctional
Women's Community Correctional Center	3	-	-	Correctional
Hawai'i County				
Hui Mālama Ola Nā 'Ōiwi	-	-	NA	NNHCS
Bay Clinic	17	21	16	FQHC
Hāmākua Health Center	17	19	19	FQHC
West Hawai'i Health Center	15	17	22	FQHC
Maui County				
Community Clinic of Maui	14	17	20	FQHC
Hāna Community Health Center	19	25	21	FQHC
Hui No Ke Ola Pono	NA	NA	NA	NHHCS
Lāna'i Community Health Center	8	2	7	FQHC
Moloka'i 'Ohana Health Care	18	17	19	FQHC
Moloka'i General Hospital	17	-	21	RHC
Na Pu'uwai	-	-	NA	NHHCS
Ke Ola Hou O Lāna'i	-	-	NA	NHHCS
Kaua'i County				
Ho'ola Lahui Hawai'i/Kaua'i Community Health Center	5	10	10	FQHC, NHHCS
<p>FQHC — Federally Qualified Health Center NHHCS - Native Hawaiian Health Care System HPSA — Health Professional Shortage Area RHC — Rural Health Clinic NA -- Score not applicable - services provided -- No services provided</p> <p>Note: Automatic Facility HPSA Scores may be subject to change. Check for updated scores at http://hpsafind.hrsa.gov/HPSASearch.aspx (under "Type" choose the type of facility)</p> <p>Clinics may use the higher of their parent site's Automatic Facility Score or the geographic or population group score for the Census Tract in which they are located (see Table 11)</p>				

Note: Designations listed are as of March 2015



Map 2-3: Location of Community Health Centers and Clinics

NATIVE HAWAIIAN HEALTH CARE SYSTEM

Native Hawaiians face cultural, financial, social, and geographic barriers that prevent them from utilizing existing health services. In addition, health services are often unavailable in their community. The Native Hawaiian Health Care System (NHHCS), authorized by the Native Hawaiian Health Care Act of 1988 (42 USC§11701) and funded within the Health Center Program appropriation. The system improves the health status of Native Hawaiians by making health education, health promotion, and disease prevention services available through the support of the Native Hawaiian Health Care System.

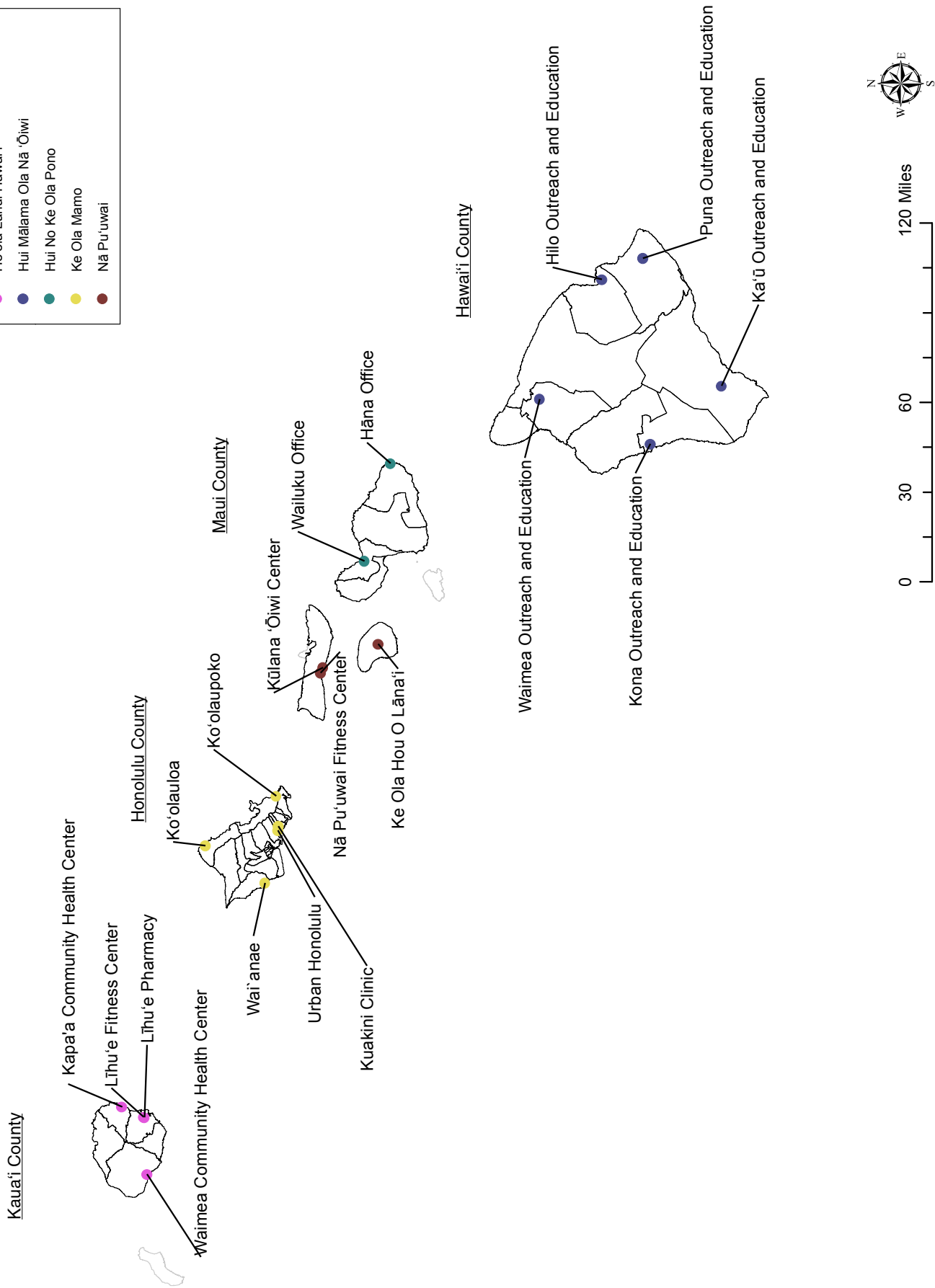
The Native Hawaiian Health Care System use a combination of outreach, referral, and linkage mechanisms to provide or arrange services. Services provided include nutrition programs, screening and control of hypertension and diabetes, immunizations, and basic primary care services. In 2012, the NHHCS program provided medical and enabling encounters to more than 6,600 people per the Health Services Program in the Health Resources and Services Administration: <http://bphc.hrsa.gov/qualityimprovement/supportnetworks/specialpopulations/>. The NHHCS program also supports a health professions scholarship program for Native Hawaiians, the Native Hawaiian Health Scholarship Program, and administrative costs for Papa Ola Lōkahi, an organization that coordinates and assists health care programs provided to Native Hawaiians: <http://papaolalokahi.org>.

Table 2-3: Native Hawaiian Health Care System

Island	Health Care System	System Locations
Oahu	Ke Ola Mamo	Urban-Honolulu Ko'olauloa Ko'olaupoko Wai'anae
Hawai'i	Hui Mālama Ola Nā 'Ōiwi	Hilo Outreach and Education Puna Outreach and Education Ka'ū Outreach and Education Kona Outreach and Education Waimea Outreach and Education
Maui	Hui No Ke Ola Pono	Wailuku Office Hāna Office
Moloka'i	Nā Pu'uwai	Kūlana 'Ōiwi Center Nā Pu'uwai Fitness Center
Lāna'i	Nā Pu'uwai	Ke Ola Hou O Lāna'i
Kaua'i	Ho'ōla Lāhui Hawai'i	Waimea Community Health Center Kapa'a Community Health Center Līhu'e Fitness Center Līhu'e Pharmacy

Native Hawaiian Health Care System

- Ho'ōla Lāhui Hawai'i
- Hui Mālama Ola Nā 'Ōiwi
- Hui No Ke Ola Pono
- Ke Ola Mamo
- Nā Pu'u'uwai



Map 2-4: Location of Native Hawaiian Health Care System Locations

HAWAI'I HEALTH SYSTEMS CORPORATION AND CRITICAL ACCESS HOSPITALS

Hospitals provide advanced services for those with and without health insurance. There are some hospitals with 24 hour emergency services, some with urgent care, and others that focus on long-term care. This section highlights hospital resources organized within the Hawai'i Health Systems Corporation (HHSC) and those designated as a Critical Access Hospital (CAH).

Hawai'i Health Systems Corporation (HHSC)

The Hawai'i Health Systems Corporation was established by the Hawai'i State Legislature in 1996 to more efficiently and effectively manage and operate the 13 community-based hospitals in the state (<http://www.hhsc.org>). The HHSC is the fourth largest public healthcare system in the United States, and in Hawai'i, the single largest provider of long-term care services and collectively the largest provider of emergency services. HHSC restructured the original 13 acute and long-term care hospitals of the state into five regions, providing quality healthcare to the Neighbor Island communities. All HHSC hospitals are fully licensed and certified or accredited by a state or federal accrediting organization.




Critical Access Hospital (CAH)

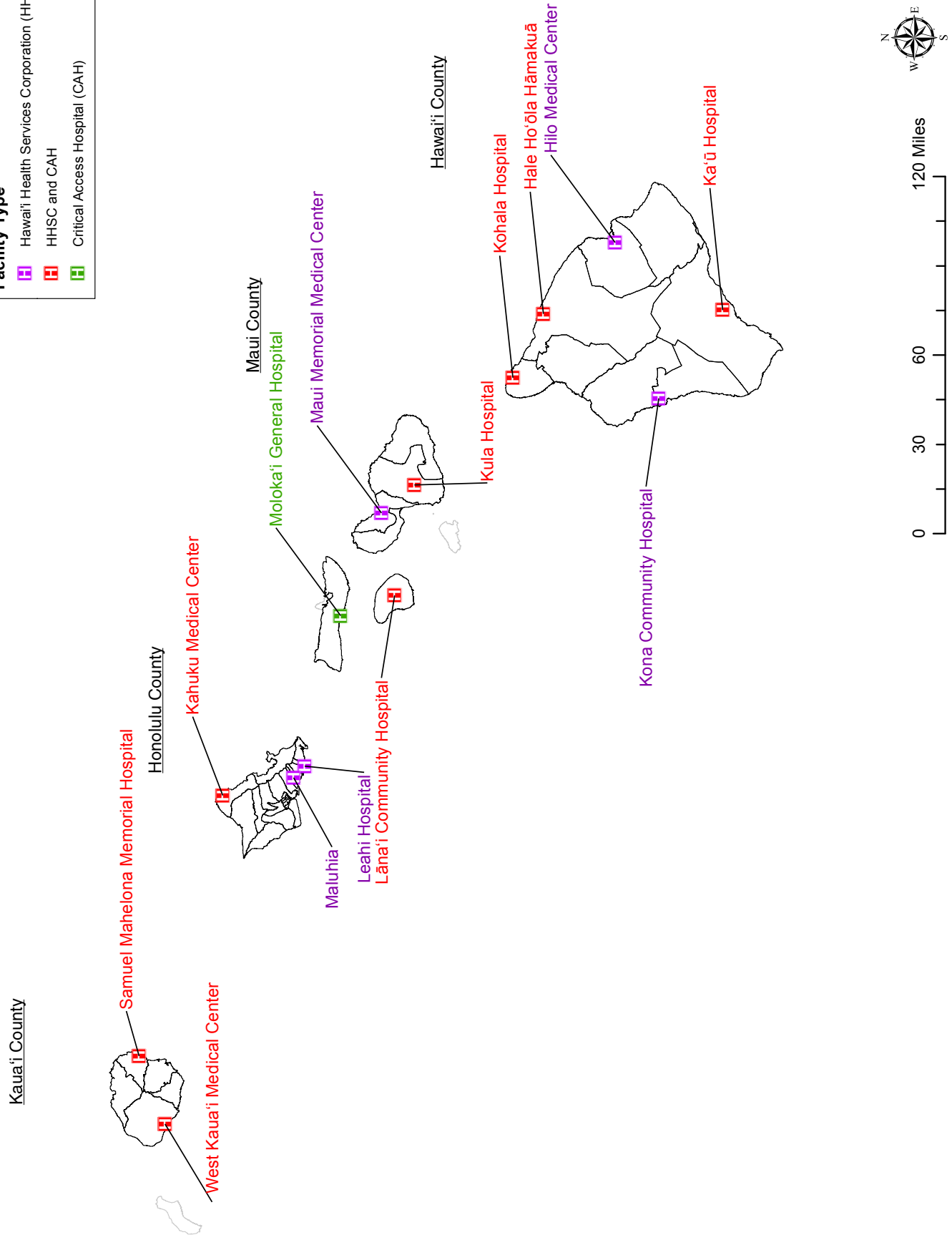
A Critical Access Hospital is a small, rural hospital considered critical to providing access to medical care to the populations they serve. These hospitals have 25 or fewer acute care beds and must maintain 24-hour emergency departments. Because these hospitals are considered critical for maintaining the rural health safety net, they receive cost-based reimbursement from Medicare. There are 9 CAH statewide in Hawaii (<http://health.hawaii.gov/opcrh/home/office-for-the-rural-advancement-of-technology-and-hospital-improvement-orathi/medicare-rural-hospital-flexibility-program-flex/>).

Table 2-4: Hawai'i Health Systems Corporation (HHSC) and Critical Access Hospitals

County	HHSC Hospitals	Critical Access Hospitals
Honolulu	Kahuku Medical Center Leahi Hospital Maluhia	Kahuku Medical Center
Hawai'i	Kohala Hospital Hale Ho'ōla Hāmākua Ka'ū Hospital Kona Community Hospital Hilo Medical Center	Kohala Hospital Hale Ho'ōla Hāmākua Ka'ū Hospital
Maui	Maui Memorial Medical Center Kula Hospital Lāna'i Community Hospital	Kula Hospital Lāna'i Community Hospital Moloka'i General Hospital
Kaua'i	West Kaua'i Medical Center Samuel Mahelona Medical Center	West Kaua'i Medical Center Samuel Mahelona Medical Center

Facility Type

-  Hawai'i Health Services Corporation (HHSC)
-  HHSC and CAH
-  Critical Access Hospital (CAH)



Map 2-5: Location of Hawai'i Health Services Corporation and Critical Access Hospitals

CHAPTER 3: POPULATION AND SOCIO-ECONOMIC

Population level factors often contribute to disparities in health with significantly higher risks in most adverse outcomes among those living in poverty, some racial/ethnic groups, those with low education and with other factors. This chapter was developed to highlight many of the key population and socio-economic indicators that may be related to the health disparities observed between populations.

POPULATION INDICATORS

Total Number of Residents	=	Number of resident population in each service area
Percent of Population Under 18 Years of Age	=	$\frac{\text{Number of persons under 18 years of age}}{\text{Total population}}$
Percent of Population 65 Years of Age and Older	=	$\frac{\text{Number of persons 65 years of age and older}}{\text{Total population}}$
Percent of Population that are White	=	$\frac{\text{Number of White (alone or in combination) in each service area}}{\text{Total number of persons in each service area}}$
Percent of Population that are Native Hawaiian	=	$\frac{\text{Number of Native Hawaiians (alone or in combination) in each service area}}{\text{Total number of persons in each service area}}$
Percent of Population that are Filipino	=	$\frac{\text{Number of Filipinos (alone or in combination) in each service area}}{\text{Total number of persons in each service area}}$
Percent of Population that are Japanese	=	$\frac{\text{Number of Japanese (alone or in combination) in each service area}}{\text{Total number of persons in each service area}}$
Percent of Population that are Chinese	=	$\frac{\text{Number of Chinese (alone or in combination) in each service area}}{\text{Total number of persons in each service area}}$

* Area for Population density includes all land in respective area and does not differentiate land designation or utilization.

** Total Population for race groups used 2010 Census Data. Other Estimates used 2010-2014 American Community Survey Data.

SOCIO-ECONOMIC INDICATORS

Percent of Population with No Health Insurance	=	$\frac{\text{Number of persons with no health insurance}}{\text{Total Population}}$
Percent of Population with Public Coverage of Health Insurance	=	$\frac{\text{Number of persons with public coverage of health insurance}}{\text{Total Population}}$
Percent of Population Below 100% of Federal Poverty Level	=	$\frac{\text{Number of persons with incomes below 100 percent of the federal poverty level}}{\text{Total population}}$
Per Capita Income	=	Average Annual income (U.S. dollars) per person
Percent of Civilian Labor Force Unemployed	=	$\frac{\text{Number of persons in civilian labor force (25-64 years of age) unemployed}}{\text{Total civilian labor force}}$
Percent of Population 25 Years of Age and Older with No High School Diploma	=	$\frac{\text{Number of persons 25 years of age and older with no high school diploma}}{\text{Total population 25 years of age and older}}$
Percent of Children in Households Receiving Assistance	=	$\frac{\text{Receipt of Supplemental Security Income (SSI), cash public assistance, or Food stamps/SNAP in past 12 months for children under 18 years of age in households}}{\text{Total number of households}}$
Percent of Households Receiving SNAP	=	$\frac{\text{Number of households receiving food stamps/ Supplemental Nutrition Receipt (SNAP) in past 12 months}}{\text{Total number of households}}$
Percent of Population Foreign Born	=	$\frac{\text{Number of persons born outside the United States}}{\text{Total population}}$
Percent of Households Linguistic Isolation	=	$\frac{\text{Number of households with no one 14 years of age and older who speaks English only or English very well}}{\text{Total number of households}}$

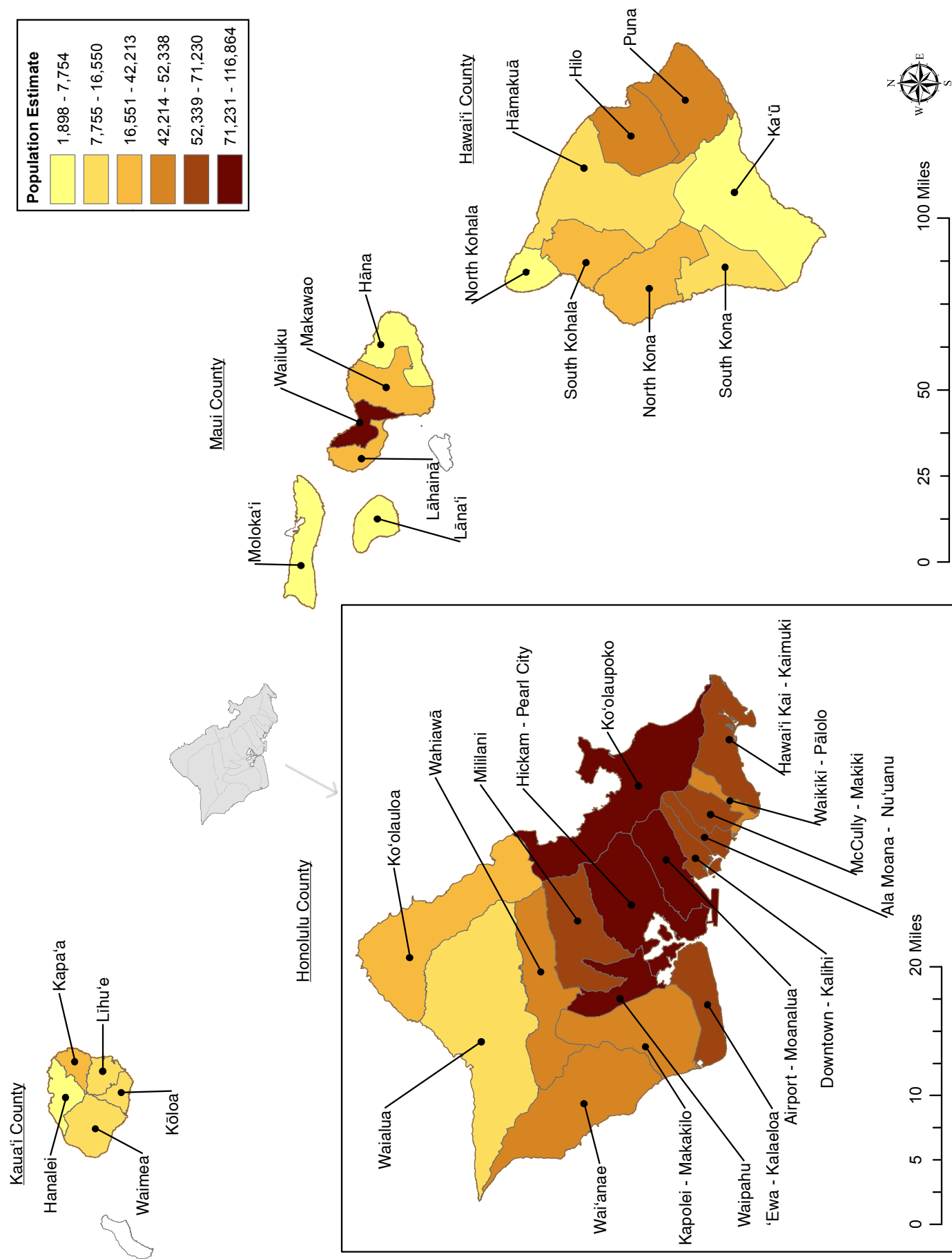
RACIAL POPULATION FIGURES UPDATE

Due to the growing changes in the racial and ethnic makeup of the country and in order to collect data that would better reflect the diversity of the country's population, the U.S. Census Bureau modified the way they collected race data in the year 2000 Census. Respondents were allowed to identify one or more races to indicate their racial identity. There were 15 check box response categories and three write-in areas on the Census 2000 questionnaire, compared with 16 check box response categories and two write-in areas for the 1990 Census. Consequently, data on race from the 2000 Census are not directly comparable with those from the 1990 Census and previous censuses due, in part, by allowing respondents the option to report more than one race. There were no changes with how race was collected in the 2010 census. Data on race can be presented using several different options. The following table based on data from the 2010 U.S. Census illustrates the differences in groups when comparing those of a single race to those classified as "alone or in any combination."

Population Group	State of Hawai'i	Honolulu County	Hawai'i County	Maui County	Kaua'i County
White Alone	336,599	198,732	62,348	53,336	22,159
White Alone or in Any Combination	564,323	350,690	101,344	78,090	34,166
Native Hawaiian Alone	80,337	47,951	15,812	11,440	5,097
Native Hawaiian Alone or in Any Combination	289,970	182,120	54,919	36,758	16,127
Filipino Alone	197,497	142,238	15,834	27,314	12,108
Filipino Alone or in Any Combination	342,095	234,894	40,878	44,892	21,423
Japanese Alone	185,502	149,701	18,086	11,449	6,264
Japanese Alone or in Any Combination	312,292	241,290	35,586	22,802	12,607
Chinese Alone	54,955	51,743	1,661	1,060	490
Chinese Alone or in Any Combination	199,751	156,625	22,634	14,315	6,171

Of the Native Hawaiian population living in Hawai'i, there were 289,970 who were identified as Native Hawaiian alone or in combination with one or more of the other races. The more than three-fold increase in the numbers of Native Hawaiian population for the state reflects the multi-racial identity of the population in Hawai'i by including those that are sometimes reported as "part-Hawaiian". The White, Filipino, and Japanese populations saw approximately a 1.7 fold increase and the Chinese population a 3.6 fold increase when alone or in combination with one or more of the other races are included for the state population. Similar ratios are seen by county except for the Filipino population in Hawai'i County which had a 2.6 fold difference, and the Chinese population which had a 12-14 fold increase outside of Honolulu County. These are the five most common race groups for "alone or in any combination" and are shown in this book by primary care service area.

The focus of this report is to identify overall community risks and it is hoped that showing a brief overview of various race/ethnic groups may provide assistance in planning for primary care needs. It is important to consider that disparities seen in health are complex in nature and may be related to age, gender, race/ethnicity, socio-economic conditions, and other factors so a comprehensive approach is needed to improve health and address disparities.

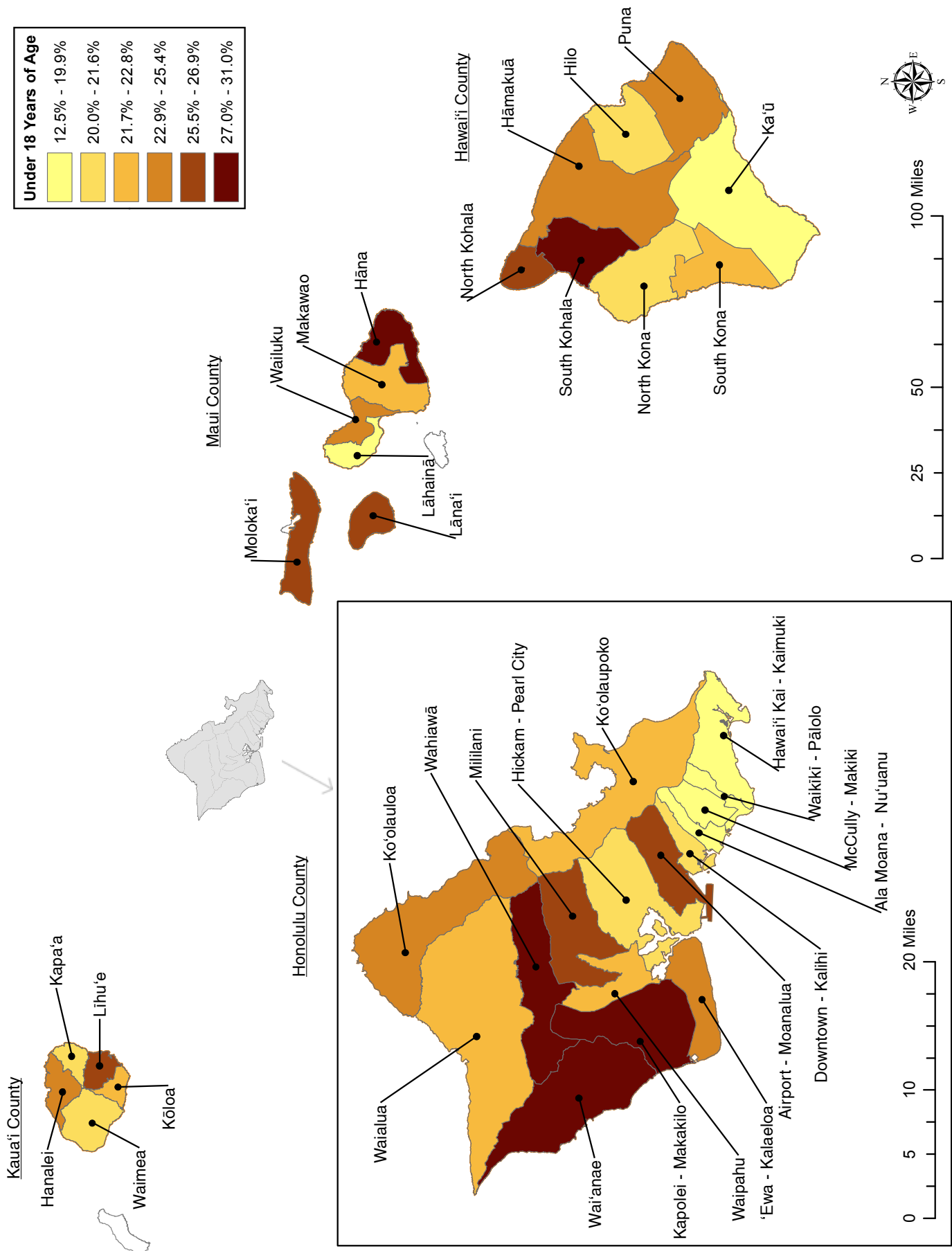


Map 3-1: Population Count by Primary Care Service Area

Table 3-1: Population Under 18 Years of Age, 2010-2014

Service Area	Annual Total Population (N)	Number Under 18 Years of Age (n)	Percent Under 18 Years of Age (%)	95% Confidence Interval
State of Hawai'i	1,392,675	307,467	22.1	(21.8 - 22.3)
Honolulu County	975,729	213,618	21.9	(21.6 - 22.2)
Hawai'i Kai - Kaimuki	69,878	13,021	18.6	(17.6 - 19.6)
Waikiki - Pālolo	51,351	6,417	12.5	(11.5 - 13.5)
McCully - Makiki	61,774	8,993	14.6	(13.5 - 15.6)
Ala Moana - Nu'uuanu	70,922	9,893	13.9	(12.9 - 15.0)
Downtown - Kalihi	71,230	14,501	20.4	(19.4 - 21.3)
Airport - Moanalua	72,844	19,118	26.2	(25.2 - 27.3)
Hickam - Pearl City	94,447	20,367	21.6	(20.6 - 22.5)
Waipahu	77,499	17,425	22.5	(21.4 - 23.6)
'Ewa - Kalaeloa	54,438	13,548	24.9	(23.5 - 26.3)
Kapolei - Makakilo	52,338	14,332	27.4	(25.9 - 28.8)
Mililani	55,359	14,695	26.5	(25.4 - 27.7)
Wahiawā	45,475	13,061	28.7	(27.4 - 30.0)
Wai'anae	47,774	14,812	31.0	(29.7 - 32.3)
Waialua	13,197	2,985	22.6	(20.5 - 24.7)
Ko'olauloa	20,340	5,165	25.4	(24.1 - 26.7)
Ko'olaupoko	116,864	25,286	21.6	(20.8 - 22.5)
Hawai'i County	189,382	42,355	22.4	(21.6 - 23.2)
Hilo	51,744	10,842	21.0	(19.6 - 22.3)
Puna	44,382	10,129	22.8	(21.1 - 24.6)
Ka'ū	7,669	1,490	19.4	(15.6 - 23.2)
South Kona	10,750	2,372	22.1	(19.2 - 24.9)
North Kona	40,480	8,435	20.8	(19.1 - 22.6)
South Kohala	18,189	5,019	27.6	(24.6 - 30.6)
North Kohala	6,550	1,717	26.2	(22.3 - 30.1)
Hāmakuā	9,618	2,351	24.4	(22.3 - 26.6)
Maui County	158,820	36,060	22.7	(21.9 - 23.5)
Hāna	1,898	541	28.5	(25.9 - 31.1)
Makawao	42,213	9,187	21.8	(20.2 - 23.3)
Wailuku	82,092	19,122	23.3	(22.2 - 24.4)
Lāhainā	22,200	4,410	19.9	(17.9 - 21.9)
Lāna'i	3,526	947	26.9	(21.4 - 32.4)
Moloka'i	6,885	1,809	26.3	(23.4 - 29.1)
Kaua'i County	68,745	15,434	22.5	(21.3 - 23.6)
Hanalei	7,754	1,770	22.8	(20.6 - 25.0)
Kapa'a	21,312	4,277	20.1	(18.1 - 22.0)
Līhu'e	16,550	4,267	25.8	(23.1 - 28.5)
Kōloa	14,418	3,287	22.8	(20.3 - 25.3)
Waimea	8,711	1,833	21.0	(18.4 - 23.7)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

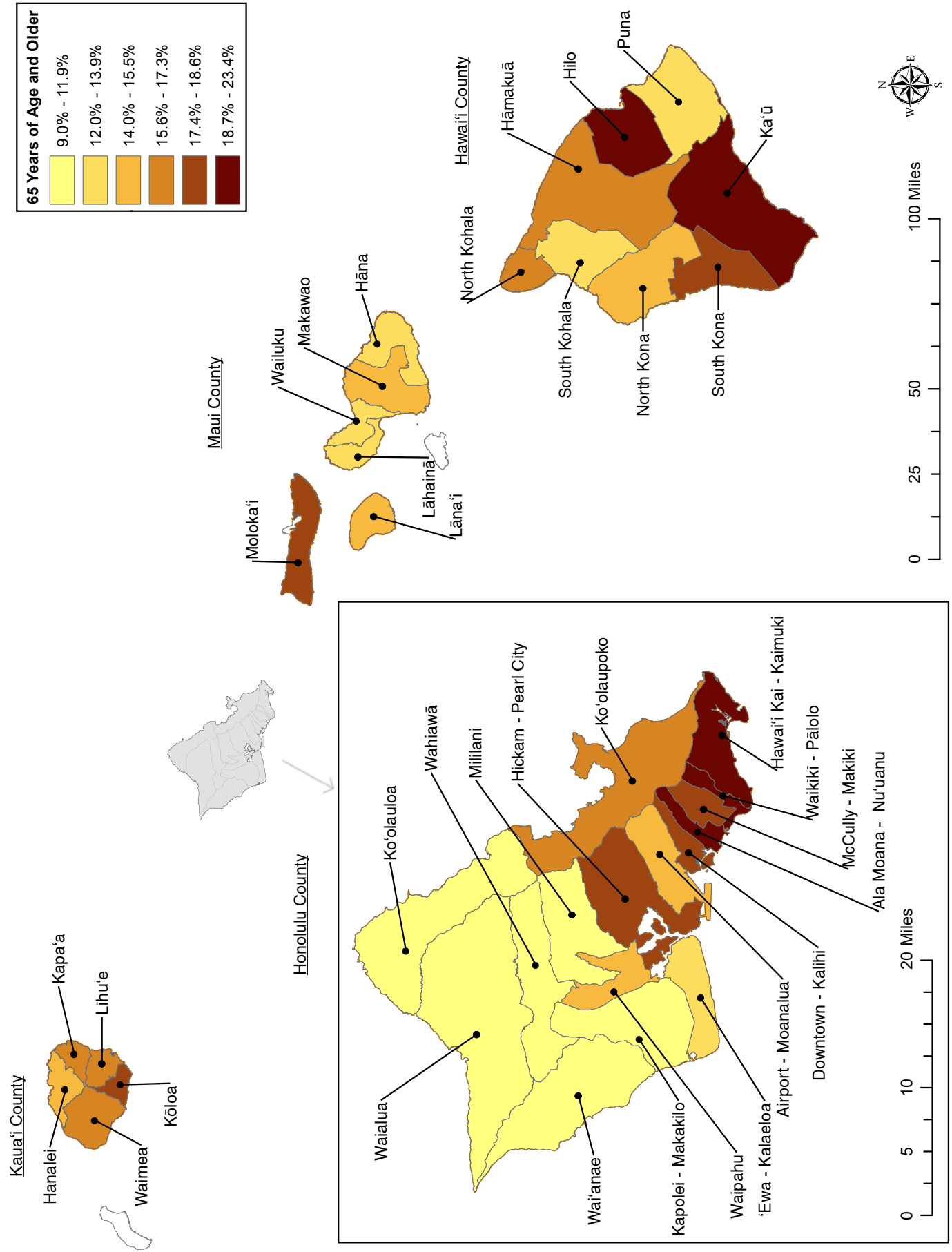


Map 3-2: Population Under 18 Years of Age by Primary Care Service Area

Table 3-2: Population 65 Years of Age and Older, 2010-2014

Service Area	Annual Total Population (N)	Number 65 Years of Age and Older (n)	Percent 65 Years of Age and Older (%)	95% Confidence Interval
State of Hawai'i	1,392,675	203,919	15.4	(15.2 - 15.6)
Honolulu County	975,729	150,413	15.4	(15.2 - 15.6)
Hawai'i Kai - Kaimuki	69,878	16,358	23.4	(22.5 - 24.3)
Waikiki - Pālolo	51,351	10,126	19.7	(18.7 - 20.7)
McCully - Makiki	61,774	10,852	17.6	(16.7 - 18.5)
Ala Moana - Nu'uuanu	70,922	14,278	20.1	(19.2 - 21.1)
Downtown - Kalihi	71,230	13,048	18.3	(17.5 - 19.1)
Airport - Moanalua	72,844	10,441	14.3	(13.5 - 15.1)
Hickam - Pearl City	94,447	16,976	18.0	(17.3 - 18.6)
Waipahu	77,499	10,792	13.9	(13.1 - 14.8)
'Ewa - Kalaeloa	54,438	6,502	11.9	(11.1 - 12.8)
Kapolei - Makakilo	52,338	5,265	10.1	(9.0 - 11.1)
Mililani	55,359	5,091	9.2	(8.4 - 10.0)
Wahiawā	45,475	4,082	9.0	(8.2 - 9.8)
Wai'anae	47,774	4,494	9.4	(8.7 - 10.1)
Waialua	13,197	1,570	11.9	(10.6 - 13.2)
Ko'olauloa	20,340	2,106	10.4	(9.4 - 11.3)
Ko'olaupoko	116,864	18,436	15.8	(15.2 - 16.3)
Hawai'i County	189,382	30,489	16.1	(15.5 - 16.7)
Hilo	51,744	9,702	18.8	(17.8 - 19.7)
Puna	44,382	6,097	13.7	(12.1 - 15.4)
Ka'ū	7,669	1,588	20.7	(18.1 - 23.3)
South Kona	10,750	1,879	17.5	(15.4 - 19.6)
North Kona	40,480	6,007	14.8	(13.7 - 16.0)
South Kohala	18,189	2,524	13.9	(11.7 - 16.0)
North Kohala	6,550	1,131	17.3	(14.8 - 19.8)
Hāmakuā	9,618	1,563	16.2	(14.3 - 18.2)
Maui County	158,820	22,329	14.1	(13.5 - 14.6)
Hāna	1,898	263	13.9	(11.3 - 16.4)
Makawao	42,213	6,281	14.9	(13.8 - 16.0)
Wailuku	82,092	10,998	13.4	(12.7 - 14.1)
Lāhainā	22,200	2,891	13.0	(12.0 - 14.0)
Lāna'i	3,526	546	15.5	(11.8 - 19.2)
Moloka'i	6,885	1,284	18.6	(16.2 - 21.1)
Kaua'i County	68,745	11,175	16.3	(15.5 - 17.0)
Hanalei	7,754	1,080	13.9	(12.0 - 15.9)
Kapa'a	21,312	3,476	16.3	(14.9 - 17.7)
Līhu'e	16,550	2,611	15.8	(14.2 - 17.4)
Kōloa	14,418	2,644	18.3	(16.6 - 20.1)
Waimea	8,711	1,364	15.7	(13.9 - 17.4)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

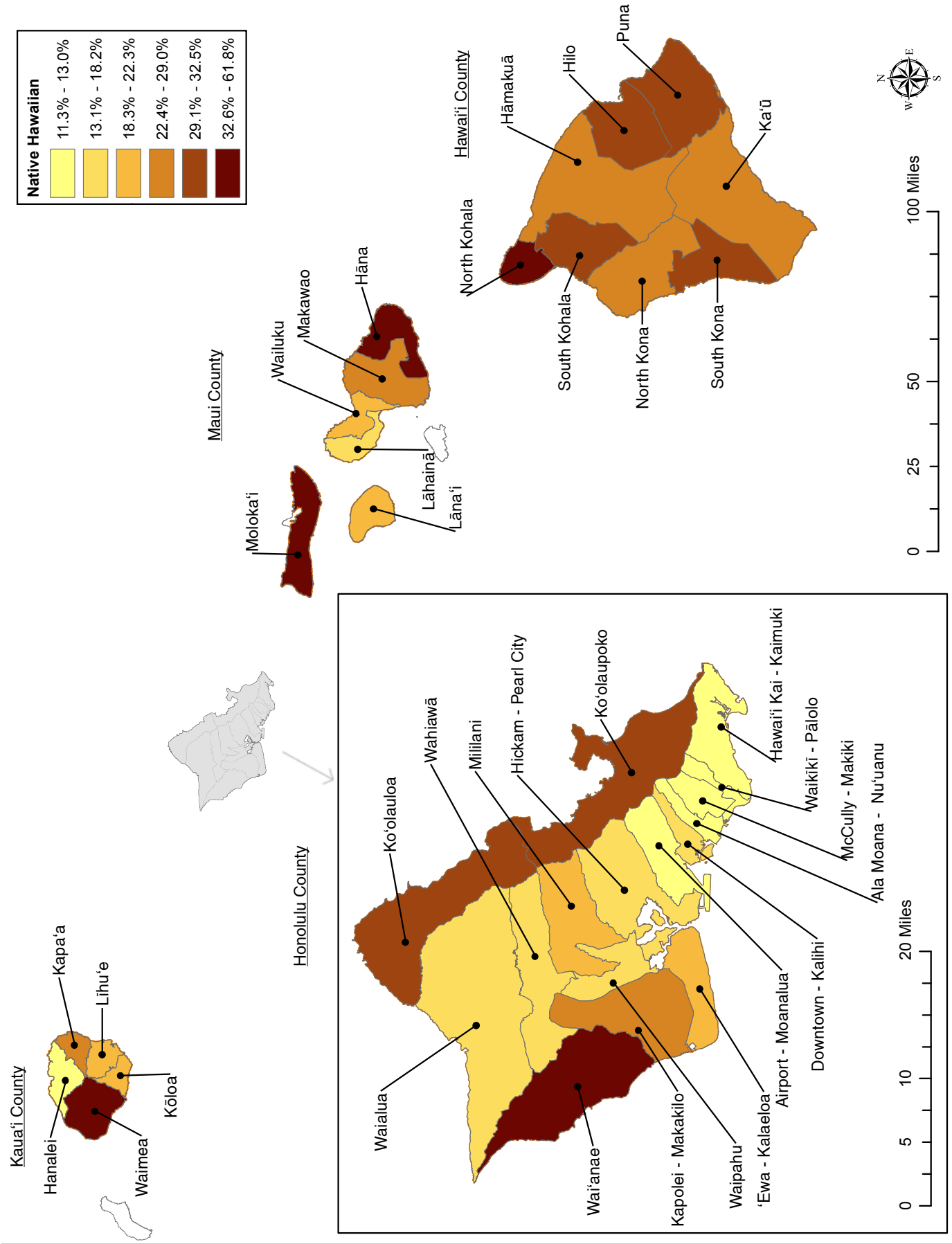


Map 3-3: Population 65 Years of Age and Older by Primary Care Service Area

Table 3-3: Population of Native Hawaiian (alone or in any combination), 2010

Service Area	Annual Total Population (N)	Number Native Hawaiian (alone or in any combination) (n)	Percent Native Hawaiian (alone or in any combination) (%)
State of Hawai'i	1,360,301	289,970	21.3
Honolulu County	953,207	182,120	19.1
Hawai'i Kai - Kaimuki	70,638	8,616	12.2
Waikiki - Pālolo	52,489	5,925	11.3
McCully - Makiki	60,510	7,310	12.1
Ala Moana - Nu'uuanu	71,372	9,263	13.0
Downtown - Kalihi	69,010	9,444	13.7
Airport - Moanalua	66,070	7,454	11.3
Hickam - Pearl City	95,025	13,987	14.7
Waipahu	74,760	9,885	13.2
'Ewa - Kalaeloa	54,207	9,943	18.3
Kapolei - Makakilo	46,972	12,774	27.2
Mililani	52,803	10,251	19.4
Wahiawā	41,216	6,018	14.6
Wai'anae	48,519	28,404	58.5
Waialua	13,046	2,376	18.2
Ko'olauloa	21,406	6,709	31.3
Ko'olaupoko	115,164	33,761	29.3
Hawai'i County	185,079	54,919	29.7
Hilo	50,927	16,527	32.5
Puna	45,326	14,517	32.0
Ka'ū	8,451	2,409	28.5
South Kona	9,997	3,024	30.2
North Kona	37,875	8,821	23.3
South Kohala	17,627	5,125	29.1
North Kohala	6,322	2,284	36.1
Hāmakuā	8,554	2,212	25.9
Maui County	154,834	36,758	23.7
Hāna	2,291	1,314	57.4
Makawao	41,887	9,844	23.5
Wailuku	77,758	17,317	22.3
Lāhainā	22,508	3,191	14.2
Lāna'i	3,135	611	19.5
Moloka'i	7,255	4,481	61.8
Kaua'i County	67,091	16,127	24.0
Hanalei	7,828	917	11.7
Kapa'a	20,992	6,096	29.0
Līhu'e	14,683	3,011	20.5
Kōloa	14,086	2,800	19.9
Waimea	9,332	3,154	33.8

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

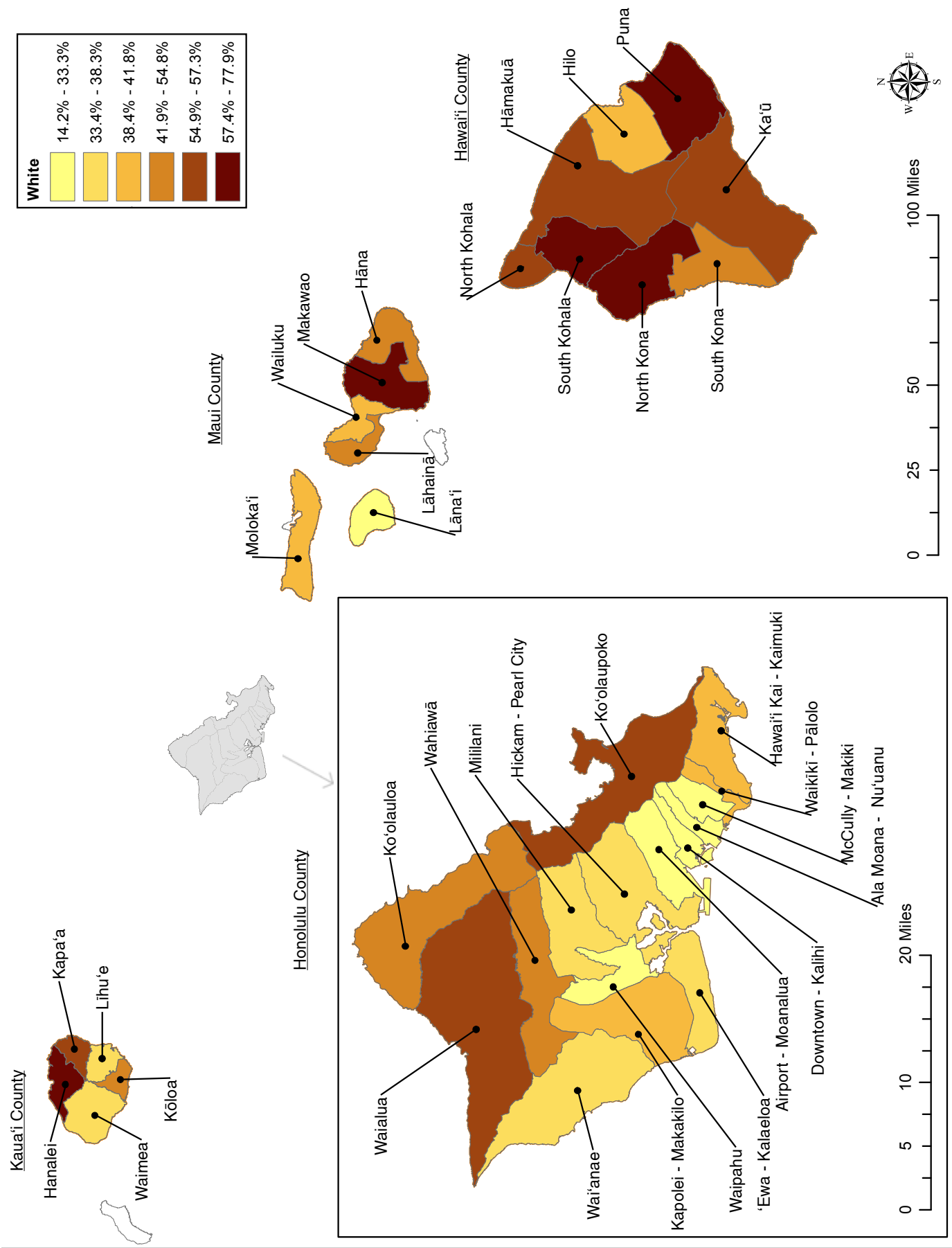


Map 3-4: Population of Native Hawaiian (alone or in any combination) by Primary Care Service Area

Table 3-4: Population of White (alone or in any combination), 2010

Service Area	Annual Total Population (N)	Number White (alone or in any combination) (n)	Percent White (alone or in any combination) (%)
State of Hawai'i	1,360,301	564,323	41.5
Honolulu County	953,207	350,690	36.8
Hawai'i Kai - Kaimuki	70,638	29,284	41.5
Waikiki - Pālolo	52,489	21,916	41.8
McCully - Makiki	60,510	20,143	33.3
Ala Moana - Nu'uuanu	71,372	21,980	30.8
Downtown - Kalihi	69,010	9,770	14.2
Airport - Moanalua	66,070	19,760	29.9
Hickam - Pearl City	95,025	32,999	34.7
Waipahu	74,760	14,630	19.6
'Ewa - Kalaeloa	54,207	20,712	38.2
Kapolei - Makakilo	46,972	18,643	39.7
Mililani	52,803	19,875	37.6
Wahiawā	41,216	19,511	47.3
Wai'anae	48,519	18,569	38.3
Waialua	13,046	7,336	56.2
Ko'olauloa	21,406	11,548	53.9
Ko'olaupoko	115,164	64,014	55.6
Hawai'i County	185,079	101,344	54.8
Hilo	50,927	21,148	41.5
Puna	45,326	27,285	60.2
Ka'ū	8,451	4,677	55.3
South Kona	9,997	5,359	53.6
North Kona	37,875	23,732	62.7
South Kohala	17,627	10,693	60.7
North Kohala	6,322	3,547	56.1
Hāmakuā	8,554	4,903	57.3
Maui County	154,834	78,090	50.4
Hāna	2,291	1,224	53.4
Makawao	41,887	28,908	69.0
Wailuku	77,758	32,187	41.4
Lāhainā	22,508	12,010	53.4
Lāna'i	3,135	870	27.8
Moloka'i	7,255	2,891	39.8
Kaua'i County	67,091	34,166	50.9
Hanalei	7,828	6,097	77.9
Kapa'a	20,992	11,645	55.5
Līhu'e	14,683	5,231	35.6
Kōloa	14,086	7,718	54.8
Waimea	9,332	3,461	37.1

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

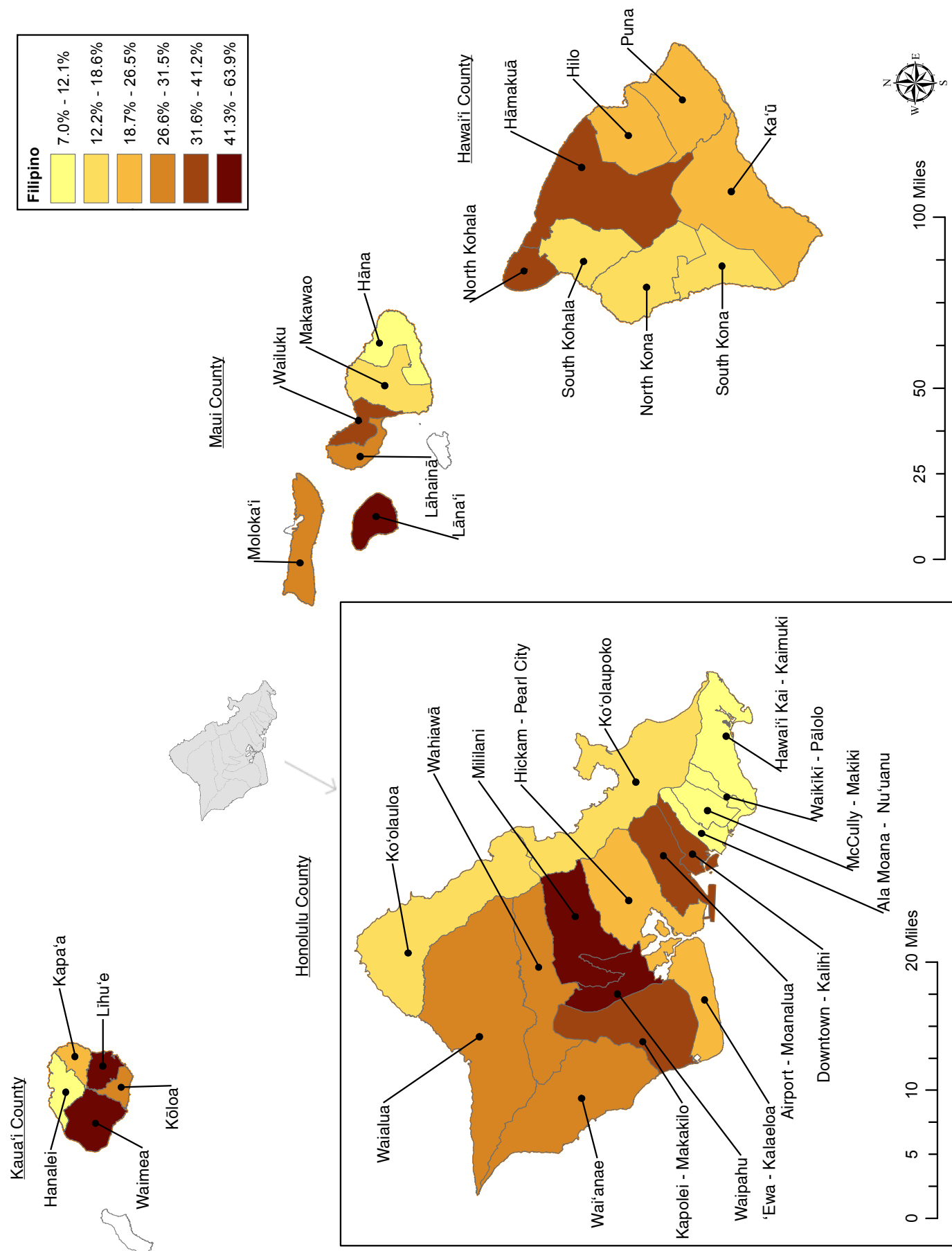


Map 3-5: Population of White (alone or in any combination) by Primary Care Service Area

Table 3-5: Population of Filipino (alone or in any combination), 2010

Service Area	Annual Total Population (N)	Number Filipino (alone or in any combination) (n)	Percent Filipino (alone or in any combination) (%)
State of Hawai'i	1,360,301	342,095	25.1
Honolulu County	953,207	234,894	24.6
Hawai'i Kai - Kaimuki	70,638	4,912	7.0
Waikiki - Pālolo	52,489	4,434	8.4
McCully - Makiki	60,510	5,932	9.8
Ala Moana - Nu'uuanu	71,372	7,414	10.4
Downtown - Kalihi	69,010	25,044	36.3
Airport - Moanalua	66,070	21,080	31.9
Hickam - Pearl City	95,025	22,587	23.8
Waipahu	74,760	40,652	54.4
'Ewa - Kalaeloa	54,207	14,391	26.5
Kapolei - Makakilo	46,972	19,365	41.2
Mililani	52,803	22,853	43.3
Wahiawā	41,216	11,095	26.9
Wai'anae	48,519	13,729	28.3
Waialua	13,046	3,787	29.0
Ko'olauloa	21,406	2,614	12.2
Ko'olaupoko	115,164	15,005	13.0
Hawai'i County	185,079	40,878	22.1
Hilo	50,927	11,264	22.1
Puna	45,326	11,046	24.4
Ka'ū	8,451	2,051	24.3
South Kona	9,997	1,668	16.7
North Kona	37,875	6,181	16.3
South Kohala	17,627	3,285	18.6
North Kohala	6,322	2,075	32.8
Hāmakuā	8,554	3,308	38.7
Maui County	154,834	44,892	29.0
Hāna	2,291	277	12.1
Makawao	41,887	6,551	15.6
Wailuku	77,758	27,299	35.1
Lāhainā	22,508	6,516	29.0
Lāna'i	3,135	2,003	63.9
Moloka'i	7,255	2,246	31.0
Kaua'i County	67,091	21,423	31.9
Hanalei	7,828	942	12.0
Kapa'a	20,992	5,331	25.4
Līhu'e	14,683	6,694	45.6
Kōloa	14,086	4,432	31.5
Waimea	9,332	4,014	43.0

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

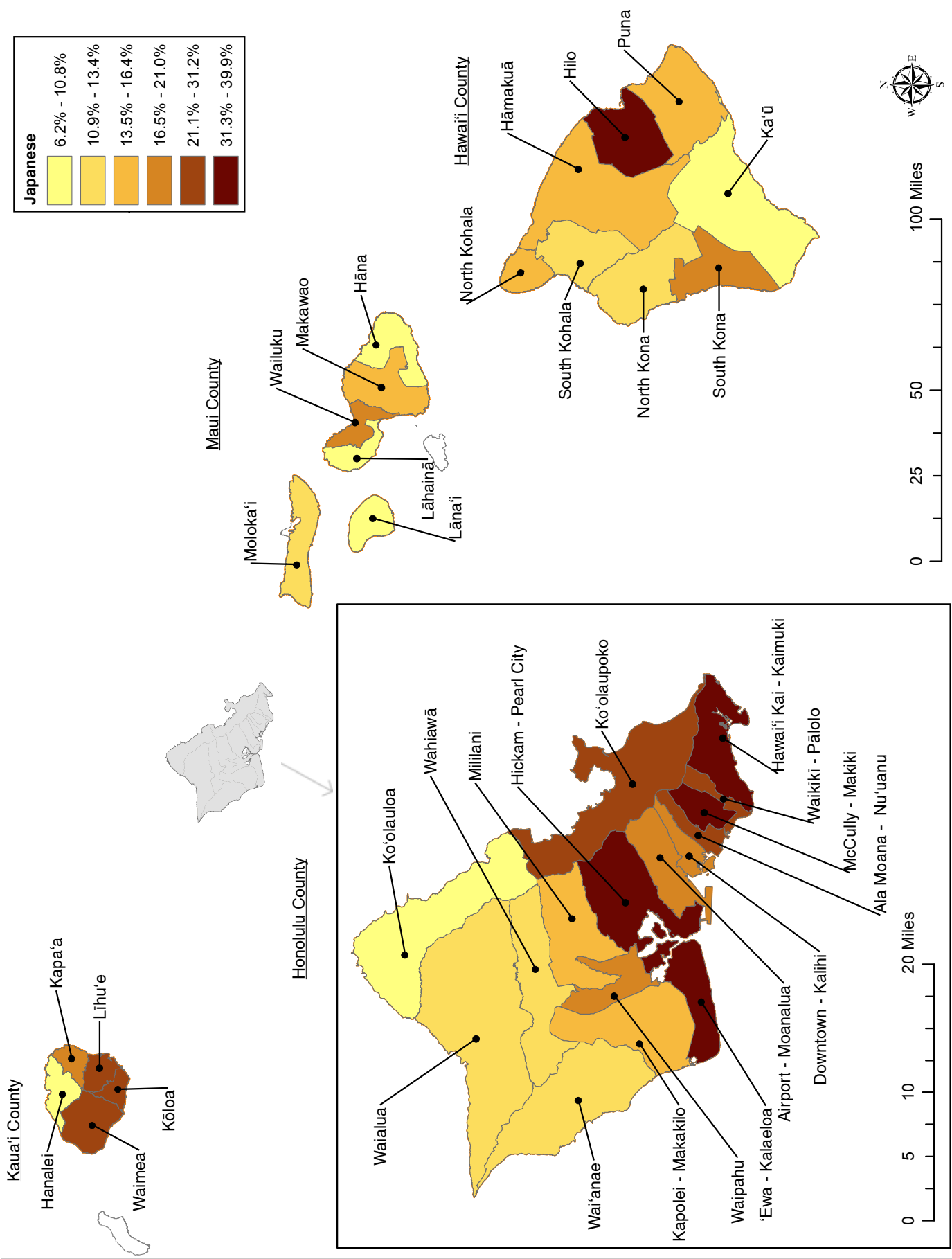


Map 3-6: Population of Filipino (alone or in any combination) by Primary Care Service Area

Table 3-6: Population of Japanese (alone or in any combination), 2010

Service Area	Annual Total Population (N)	Number Japanese (alone or in any combination) (n)	Percent Japanese (alone or in any combination) (%)
State of Hawai'i	1,360,301	312,292	23.0
Honolulu County	953,207	241,290	25.3
Hawai'i Kai - Kaimuki	70,638	28,185	39.9
Waikiki - Pālolo	52,489	16,374	31.2
McCully - Makiki	60,510	23,140	38.2
Ala Moana - Nu'uuanu	71,372	21,993	30.8
Downtown - Kalihi	69,010	11,909	17.3
Airport - Moanalua	66,070	13,252	20.1
Hickam - Pearl City	95,025	32,037	33.7
Waipahu	74,760	14,709	19.7
'Ewa - Kalaeloa	54,207	20,977	38.7
Kapolei - Makakilo	46,972	7,652	16.3
Mililani	52,803	7,497	14.2
Wahiawā	41,216	5,492	13.3
Wai'anae	48,519	5,406	11.1
Waialua	13,046	1,610	12.3
Ko'olauloa	21,406	1,791	8.4
Ko'olaupoko	115,164	29,266	25.4
Hawai'i County	185,079	35,586	19.2
Hilo	50,927	17,232	33.8
Puna	45,326	6,096	13.4
Ka'ū	8,451	756	8.9
South Kona	9,997	2,099	21.0
North Kona	37,875	4,662	12.3
South Kohala	17,627	2,366	13.4
North Kohala	6,322	1,039	16.4
Hāmakuā	8,554	1,336	15.6
Maui County	154,834	22,802	14.7
Hāna	2,291	174	7.6
Makawao	41,887	6,109	14.6
Wailuku	77,758	13,421	17.3
Lāhainā	22,508	1,910	8.5
Lāna'i	3,135	338	10.8
Moloka'i	7,255	850	11.7
Kaua'i County	67,091	12,607	18.8
Hanalei	7,828	487	6.2
Kapa'a	20,992	3,757	17.9
Lihu'e	14,683	3,361	22.9
Kōloa	14,086	2,961	21.0
Waimea	9,332	2,035	21.8

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

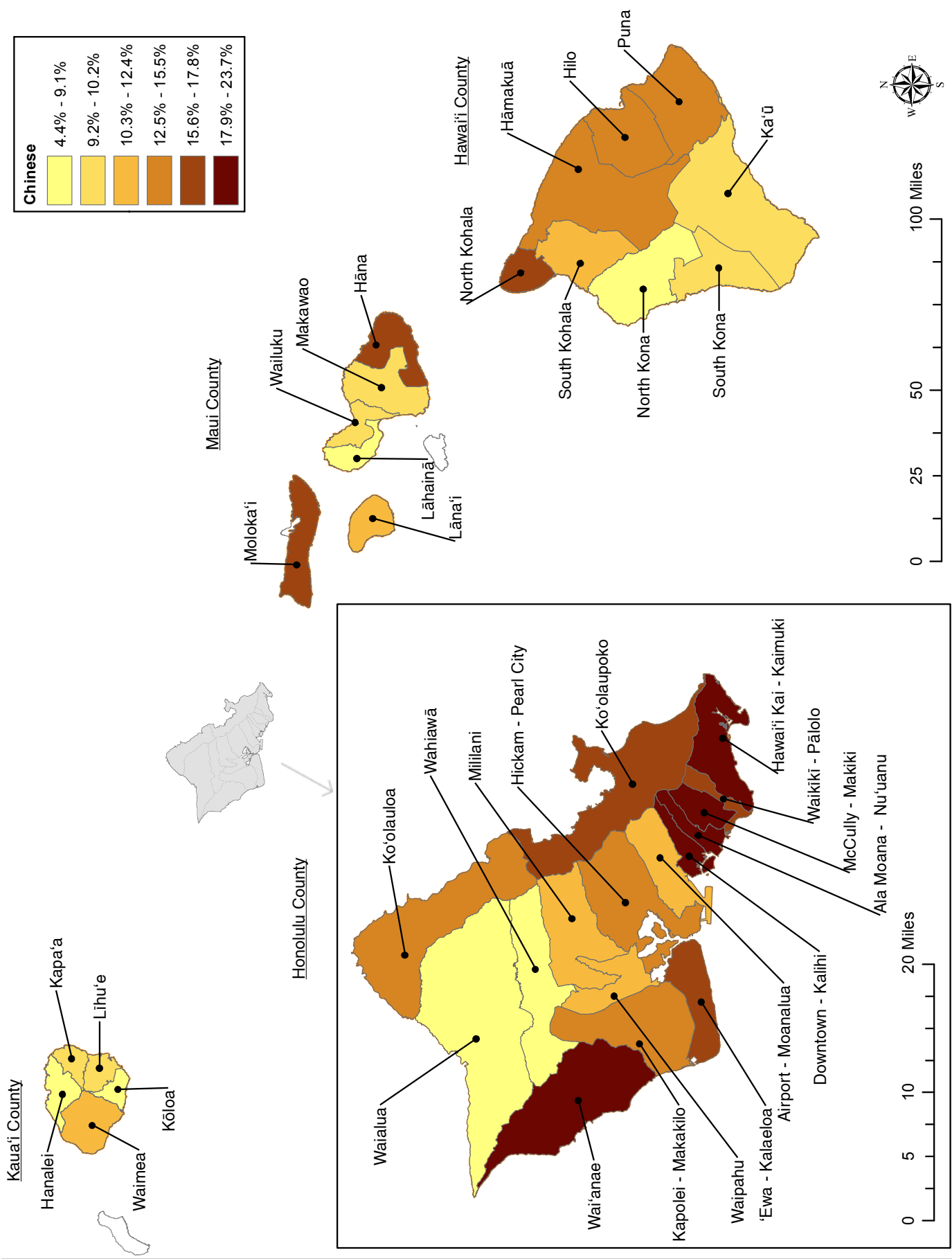


Map 3-7: Population of Japanese (alone or in any combination) by Primary Care Service Area

Table 3-7: Population of Chinese (alone or in any combination), 2010

Service Area	Annual Total Population (N)	Number Chinese (alone or in any combination) (n)	Percent Chinese (alone or in any combination) (%)
State of Hawai'i	1,360,301	198,711	14.6
Honolulu County	953,207	155,687	16.3
Hawai'i Kai - Kaimuki	70,638	15,902	22.5
Waikiki - Pālolo	52,489	8,628	16.4
McCully - Makiki	60,510	11,358	18.8
Ala Moana - Nu'uuanu	71,372	14,364	20.1
Downtown - Kalihi	69,010	16,351	23.7
Airport - Moanalua	66,070	8,191	12.4
Hickam - Pearl City	95,025	13,094	13.8
Waipahu	74,760	8,062	10.8
'Ewa - Kalaeloa	54,207	9,126	16.8
Kapolei - Makakilo	46,972	7,279	15.5
Mililani	52,803	6,491	12.3
Wahiawā	41,216	3,314	8.0
Wai'anae	48,519	9,044	18.6
Waialua	13,046	1,134	8.7
Ko'olauloa	21,406	2,855	13.3
Ko'olaupoko	115,164	20,494	17.8
Hawai'i County	185,079	22,578	12.2
Hilo	50,927	7,484	14.7
Puna	45,326	5,636	12.4
Ka'ū	8,451	802	9.5
South Kona	9,997	1,008	10.1
North Kona	37,875	3,448	9.1
South Kohala	17,627	2,020	11.5
North Kohala	6,322	1,032	16.3
Hāmakuā	8,554	1,148	13.4
Maui County	154,834	14,286	9.2
Hāna	2,291	385	16.8
Makawao	41,887	4,026	9.6
Wailuku	77,758	7,194	9.3
Lāhainā	22,508	1,123	5.0
Lāna'i	3,135	319	10.2
Moloka'i	7,255	1,239	17.1
Kaua'i County	67,091	6,154	9.2
Hanalei	7,828	345	4.4
Kapa'a	20,992	2,135	10.2
Līhu'e	14,683	1,432	9.8
Kōloa	14,086	1,208	8.6
Waimea	9,332	1,034	11.1

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

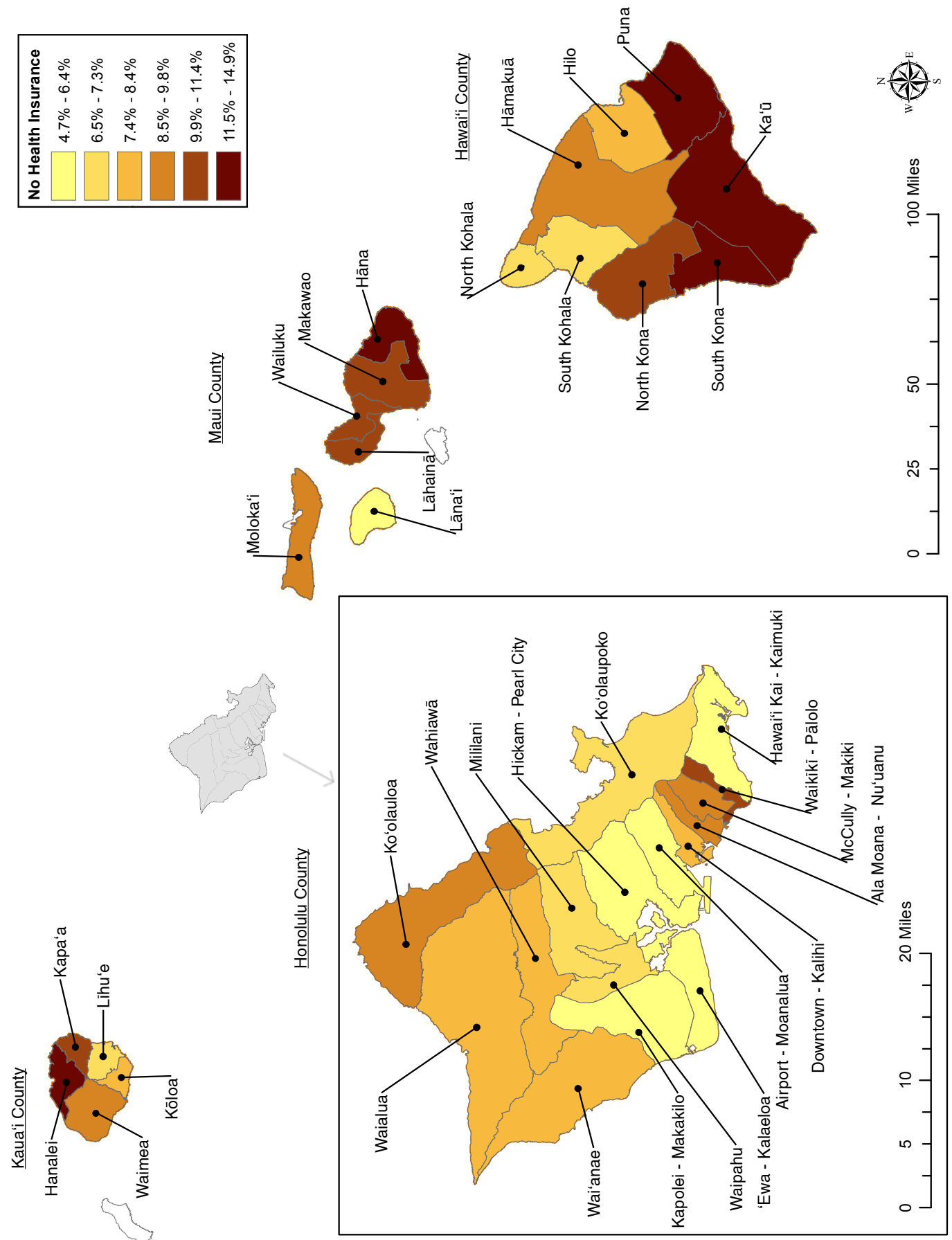


Map 3-8: Population of Chinese (alone or in any combination) by Primary Care Service Area

Table 3-8: Population with No Health Insurance, 2010-2014

Service Area	Total Population (N)	Number With No Health Insurance (n)	Percent With No Health Insurance (%)	95% Confidence Interval
State of Hawai'i	1,340,192	108,037	8.1	(7.9 - 8.2)
Honolulu County	926,787	66,706	7.2	(7.0 - 7.4)
Hawai'i Kai - Kaimuki	69,248	3,984	5.8	(5.1 - 6.4)
Waikiki - Pālolo	50,747	5,007	9.9	(8.9 - 10.8)
McCully - Makiki	61,318	5,209	8.5	(7.6 - 9.4)
Ala Moana - Nu'uuanu	69,539	6,787	9.8	(8.7 - 10.8)
Downtown - Kalihi	68,451	5,759	8.4	(7.7 - 9.1)
Airport - Moanalua	67,015	4,278	6.4	(5.8 - 7.0)
Hickam - Pearl City	85,320	5,231	6.1	(5.6 - 6.7)
Waipahu	75,130	5,181	6.9	(6.2 - 7.6)
'Ewa - Kalaeloa	52,638	2,484	4.7	(4.1 - 5.4)
Kapolei - Makakilo	50,983	2,622	5.1	(4.4 - 5.9)
Mililani	52,605	3,662	7.0	(6.1 - 7.8)
Wahiawā	36,273	2,807	7.7	(6.8 - 8.7)
Wai'anae	47,322	3,498	7.4	(6.5 - 8.3)
Wai'alua	11,831	916	7.7	(6.2 - 9.3)
Ko'olauloa	19,976	1,875	9.4	(7.9 - 10.9)
Ko'olaupoko	108,393	7,410	6.8	(6.3 - 7.4)
Hawai'i County	188,166	18,362	9.8	(9.2 - 10.4)
Hilo	50,895	3,843	7.6	(6.6 - 8.5)
Puna	44,328	5,316	12.0	(10.4 - 13.5)
Ka'ū	7,653	871	11.4	(9.0 - 13.8)
South Kona	10,724	1,309	12.2	(9.6 - 14.8)
North Kona	40,326	4,415	10.9	(9.5 - 12.4)
South Kohala	18,161	1,325	7.3	(5.7 - 8.9)
North Kohala	6,527	459	7.0	(5.2 - 8.8)
Hāmakuā	9,552	826	8.6	(7.0 - 10.3)
Maui County	157,312	16,312	10.4	(9.7 - 11.0)
Hāna	1,898	264	13.9	(11.7 - 16.1)
Makawao	42,112	4,500	10.7	(9.3 - 12.1)
Wailuku	80,722	8,340	10.3	(9.4 - 11.3)
Lāhainā	22,164	2,308	10.4	(9.0 - 11.8)
Lāna'i	3,526	218	6.2	(2.9 - 9.5)
Moloka'i	6,884	585	8.5	(6.5 - 10.5)
Kaua'i County	67,927	6,658	9.8	(8.9 - 10.7)
Hanalei	7,730	1,153	14.9	(12.4 - 17.5)
Kapa'a	21,196	2,409	11.4	(9.4 - 13.3)
Līhu'e	16,100	1,159	7.2	(5.3 - 9.1)
Kōloa	14,262	1,173	8.2	(6.4 - 10.0)
Waimea	8,639	765	8.9	(7.2 - 10.5)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

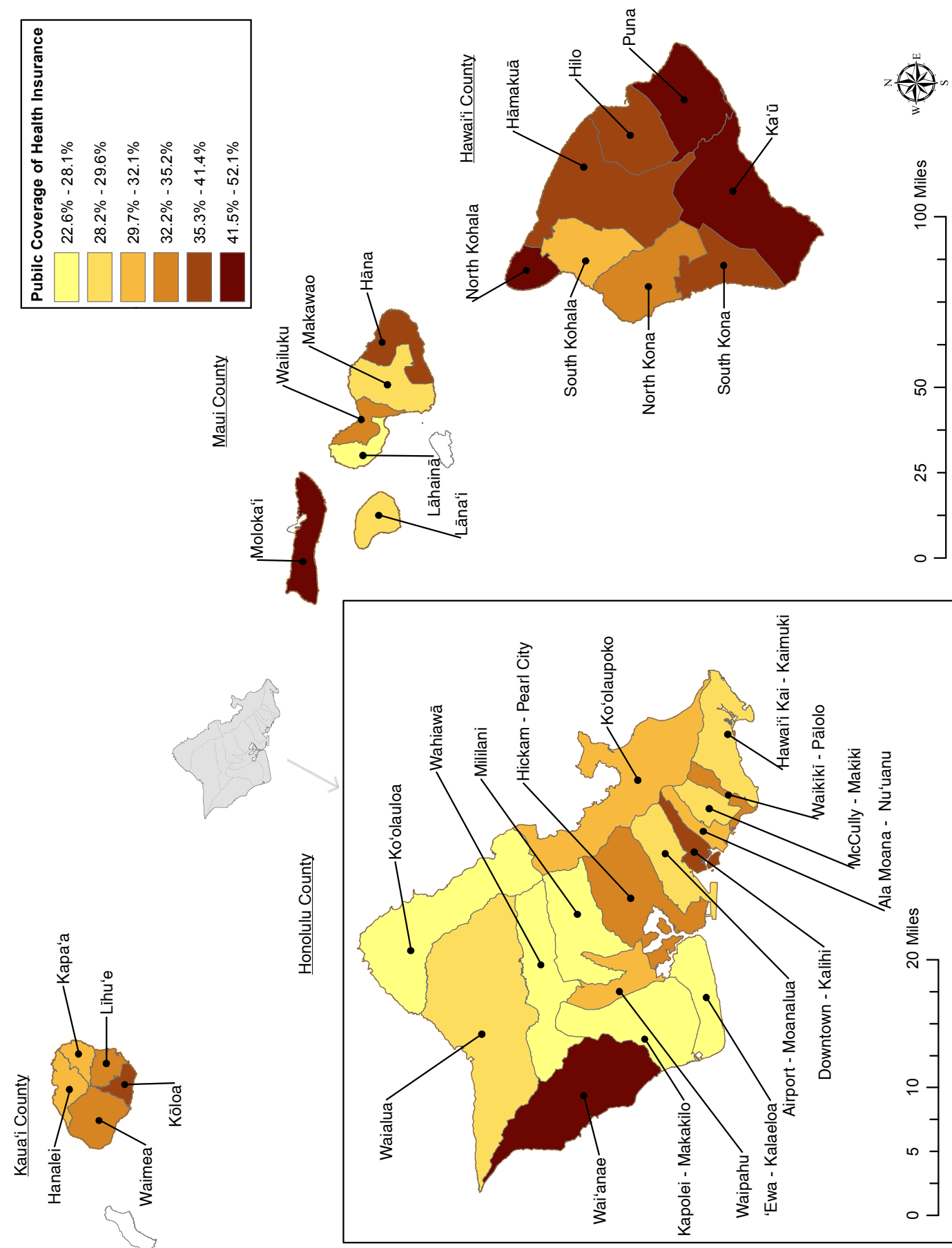


Map 3-9: Population with No Health Insurance by Primary Care Service Area

Table 3-9: Population with Public Coverage of Health Insurance, 2010-2014

Service Area	Total Population (N)	Number With Public Coverage (n)	Percent With Public Coverage (%)	95% Confidence Interval
State of Hawai'i	1,340,192	438,080	32.7	(32.3 - 33.0)
Honolulu County	926,787	290,250	31.3	(30.9 - 31.7)
Hawai'i Kai - Kaimuki	69,248	20,248	29.2	(28.1 - 30.4)
Waikiki - Pālolo	50,747	16,807	33.1	(31.8 - 34.5)
McCully - Makiki	61,318	18,169	29.6	(28.2 - 31.1)
Ala Moana - Nu'uaua	69,539	22,174	31.9	(30.4 - 33.3)
Downtown - Kalihi	68,451	28,350	41.4	(40.1 - 42.8)
Airport - Moanalua	67,015	19,465	29.0	(27.6 - 30.5)
Hickam - Pearl City	85,320	28,178	33.0	(31.8 - 34.3)
Waipahu	75,130	23,212	30.9	(29.5 - 32.3)
'Ewa - Kalaeloa	52,638	11,909	22.6	(21.2 - 24.1)
Kapolei - Makakilo	50,983	12,600	24.7	(22.9 - 26.6)
Mililani	52,605	14,772	28.1	(26.4 - 29.8)
Wahiawā	36,273	9,751	26.9	(25.0 - 28.8)
Wai'anae	47,322	22,910	48.4	(46.4 - 50.4)
Waialua	11,831	3,411	28.8	(26.5 - 31.2)
Ko'olauloa	19,976	5,600	28.0	(25.5 - 30.6)
Ko'olaupoko	108,393	32,697	30.2	(29.1 - 31.2)
Hawai'i County	188,166	75,146	39.9	(38.9 - 41.0)
Hilo	50,895	20,399	40.1	(38.5 - 41.7)
Puna	44,328	21,150	47.7	(44.9 - 50.6)
Ka'ū	7,653	3,987	52.1	(47.3 - 56.9)
South Kona	10,724	3,889	36.3	(32.4 - 40.1)
North Kona	40,326	13,236	32.8	(30.9 - 34.8)
South Kohala	18,161	5,828	32.1	(28.3 - 35.9)
North Kohala	6,527	2,878	44.1	(38.4 - 49.8)
Hāmakuā	9,552	3,781	39.6	(37.0 - 42.2)
Maui County	157,312	49,925	31.7	(30.7 - 32.8)
Hāna	1,898	747	39.4	(33.4 - 45.4)
Makawao	42,112	11,992	28.5	(26.6 - 30.3)
Wailuku	80,722	26,341	32.6	(31.1 - 34.2)
Lāhainā	22,164	6,163	27.8	(25.7 - 30.0)
Lāna'i	3,526	1,007	28.6	(22.4 - 34.7)
Moloka'i	6,884	3,538	51.4	(48.9 - 53.9)
Kaua'i County	67,927	22,760	33.5	(32.1 - 34.9)
Hanalei	7,730	2,480	32.1	(29.5 - 34.7)
Kapa'a	21,196	6,306	29.7	(27.3 - 32.2)
Līhu'e	16,100	5,662	35.2	(31.8 - 38.5)
Kōloa	14,262	5,289	37.1	(33.7 - 40.5)
Waimea	8,639	3,024	35.0	(31.9 - 38.1)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey



Map 3-10: Population with Public Coverage of Health Insurance by Primary Care Service Area

Table 3-10: Per Capita Income, 2010-2014

Service Area	Annual Total Population (N)	Average Per Capita Income (\$)	95% Confidence Interval
State of Hawai'i	1,392,675	29,500	(29,200 - 29,800)
Honolulu County	975,729	30,700	(30,400 - 31,000)
Hawai'i Kai - Kaimuki	69,878	46,700	(45,000 - 48,400)
Waikiki - Pālolo	51,351	33,300	(31,800 - 34,800)
McCully - Makiki	61,774	34,000	(32,500 - 35,500)
Ala Moana - Nu'uuanu	70,922	37,900	(36,000 - 39,800)
Downtown - Kalihi	71,230	22,300	(21,500 - 23,100)
Airport - Moanalua	72,844	25,300	(24,500 - 26,100)
Hickam - Pearl City	94,447	31,300	(30,400 - 32,200)
Waipahu	77,499	26,500	(25,300 - 27,700)
'Ewa - Kalaeloa	54,438	35,700	(34,300 - 37,100)
Kapolei - Makakilo	52,338	29,000	(27,700 - 30,300)
Mililani	55,359	27,900	(26,700 - 29,100)
Wahiawā	45,475	22,100	(20,800 - 23,400)
Wai'anae	47,774	17,800	(16,800 - 18,800)
Waialua	13,197	26,200	(24,400 - 28,000)
Ko'olauloa	20,340	25,700	(23,600 - 27,800)
Ko'olaupoko	116,864	34,700	(33,700 - 35,700)
Hawai'i County	189,382	24,400	(23,500 - 25,300)
Hilo	51,744	24,000	(22,900 - 25,100)
Puna	44,382	18,900	(17,300 - 20,500)
Ka'ū	7,669	20,700	(16,400 - 25,000)
South Kona	10,750	29,100	(22,000 - 36,200)
North Kona	40,480	28,500	(26,300 - 30,700)
South Kohala	18,189	30,600	(27,400 - 33,800)
North Kohala	6,550	22,700	(18,300 - 27,100)
Hāmakuā	9,618	21,700	(19,800 - 23,600)
Maui County	158,820	29,500	(28,500 - 30,500)
Hāna	1,898	20,600	(15,100 - 26,100)
Makawao	42,213	34,100	(31,800 - 36,400)
Wailuku	82,092	27,500	(26,100 - 28,900)
Lāhainā	22,200	31,900	(30,000 - 33,800)
Lāna'i	3,526	23,300	(20,000 - 26,600)
Moloka'i	6,885	23,000	(18,900 - 27,100)
Kaua'i County	68,745	27,100	(25,800 - 28,400)
Hanalei	7,754	26,700	(24,300 - 29,100)
Kapa'a	21,312	28,700	(26,100 - 31,300)
Lihu'e	16,550	24,900	(21,200 - 28,600)
Kōloa	14,418	28,200	(26,200 - 30,200)
Waimea	8,711	25,800	(23,500 - 28,100)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

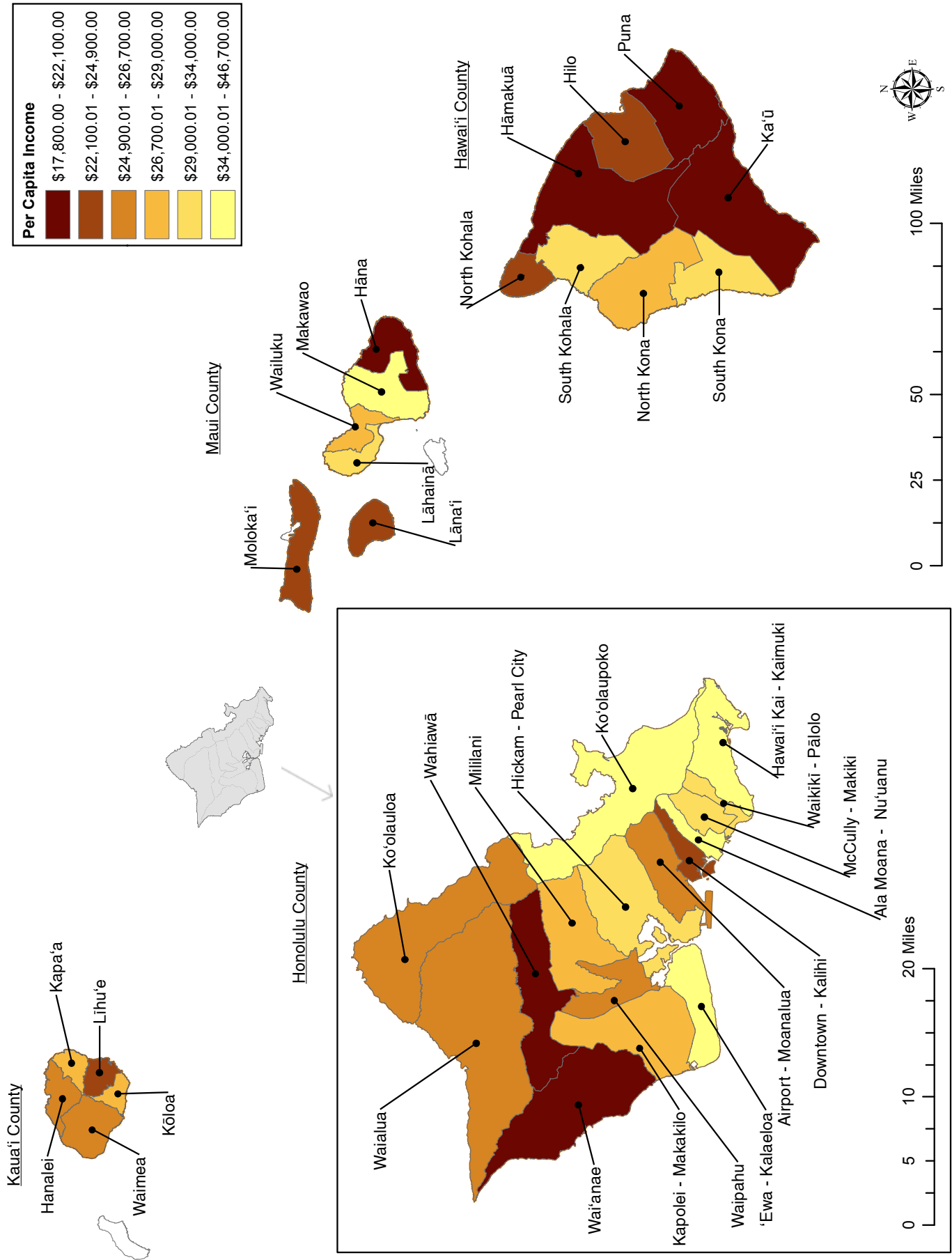
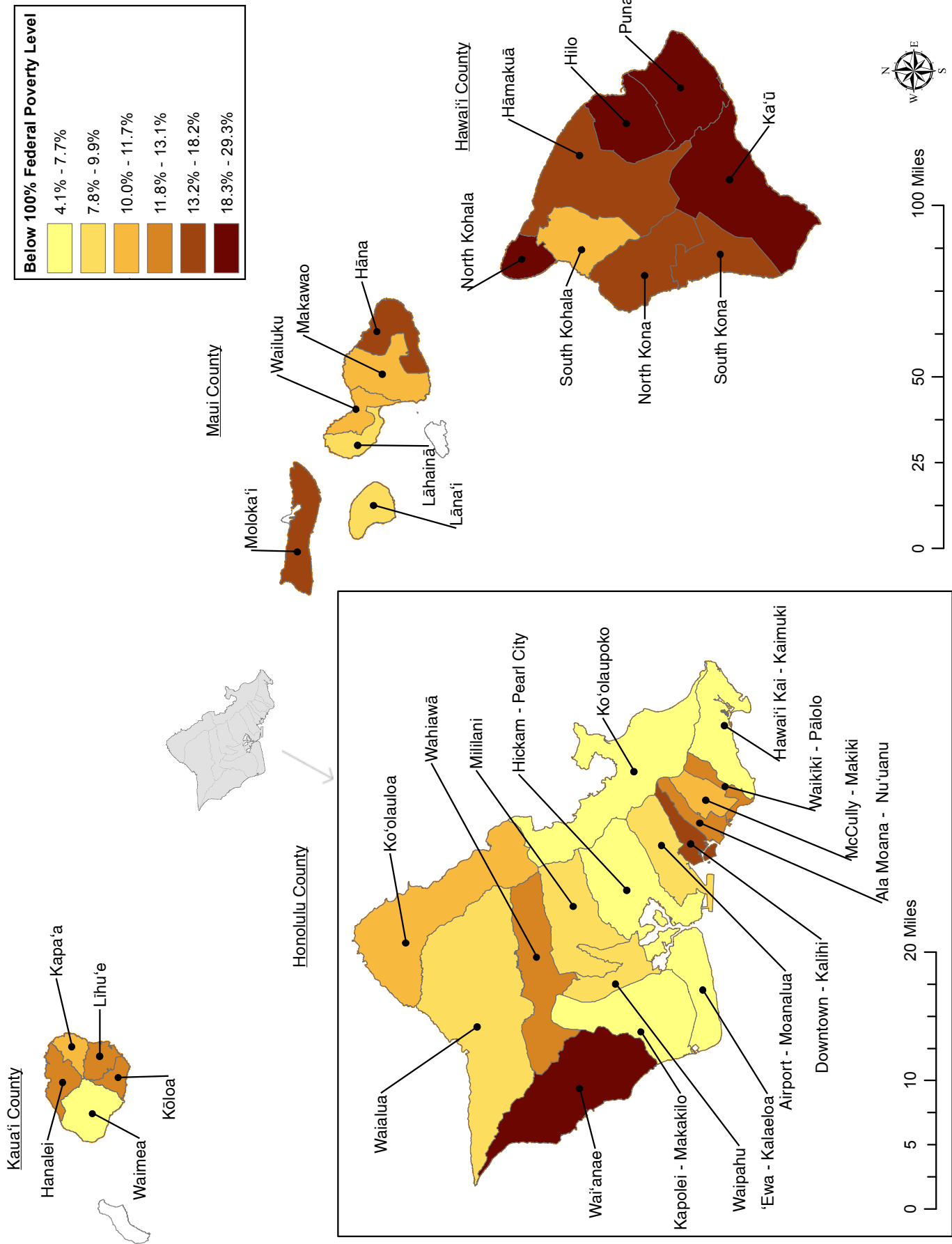


Table 3-11: Population Below 100% of Federal Poverty Level, 2010-2014

Service Area	Annual Total Population (N)	Number Below 100% of Poverty Level (n)	Percent Below 100% of Poverty Level (%)	95% Confidence Interval
State of Hawai'i	1,355,357	153,828	11.4	(10.9 - 11.8)
Honolulu County	944,594	92,212	9.8	(9.3 - 10.2)
Hawai'i Kai - Kaimuki	69,417	2,950	4.3	(3.4 - 5.1)
Waikiki - Pālolo	50,238	6,019	12.0	(10.4 - 13.5)
McCully - Makiki	57,153	6,650	11.6	(10.0 - 13.3)
Ala Moana - Nu'uuanu	70,256	8,348	11.9	(10.3 - 13.5)
Downtown - Kalihi	68,390	11,979	17.5	(15.7 - 19.4)
Airport - Moanalua	71,253	6,077	8.5	(6.9 - 10.1)
Hickam - Pearl City	88,918	6,169	6.9	(5.7 - 8.2)
Waipahu	76,423	6,791	8.9	(7.5 - 10.3)
'Ewa - Kalaeloa	53,988	2,367	4.4	(3.0 - 5.8)
Kapolei - Makakilo	52,084	2,111	4.1	(3.1 - 5.0)
Mililani	54,963	4,419	8.0	(6.3 - 9.8)
Wahiawā	40,863	4,876	11.9	(9.6 - 14.3)
Wai'anae	47,061	11,399	24.2	(20.4 - 28.1)
Waialua	12,869	1,277	9.9	(7.5 - 12.3)
Ko'olauloa	18,750	2,189	11.7	(8.5 - 14.9)
Ko'olaupoko	111,970	8,592	7.7	(6.4 - 8.9)
Hawai'i County	186,418	35,848	19.2	(17.6 - 20.8)
Hilo	50,137	9,143	18.2	(16.0 - 20.5)
Puna	44,081	12,933	29.3	(25.3 - 33.4)
Ka'ū	7,653	2,116	27.6	(17.3 - 38.0)
South Kona	10,701	1,478	13.8	(7.2 - 20.4)
North Kona	39,742	5,713	14.4	(11.5 - 17.3)
South Kohala	18,065	1,862	10.3	(6.5 - 14.2)
North Kohala	6,524	1,293	19.8	(4.1 - 35.6)
Hāmakuā	9,515	1,310	13.8	(8.4 - 19.2)
Maui County	156,676	17,849	11.4	(10.1 - 12.7)
Hāna	1,898	308	16.2	(3.4 - 29.1)
Makawao	41,859	4,801	11.5	(9.2 - 13.7)
Wailuku	80,393	9,314	11.6	(9.5 - 13.7)
Lāhainā	22,144	1,837	8.3	(5.8 - 10.7)
Lāna'i	3,508	336	9.6	(3.8 - 15.4)
Moloka'i	6,868	1,247	18.2	(14.1 - 22.2)
Kaua'i County	67,669	7,920	11.7	(10.0 - 13.4)
Hanalei	7,708	1,009	13.1	(9.2 - 17.0)
Kapa'a	20,978	2,387	11.4	(8.9 - 13.9)
Līhu'e	16,028	2,025	12.6	(7.5 - 17.8)
Kōloa	14,315	1,835	12.8	(9.2 - 16.5)
Waimea	8,640	664	7.7	(4.8 - 10.5)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

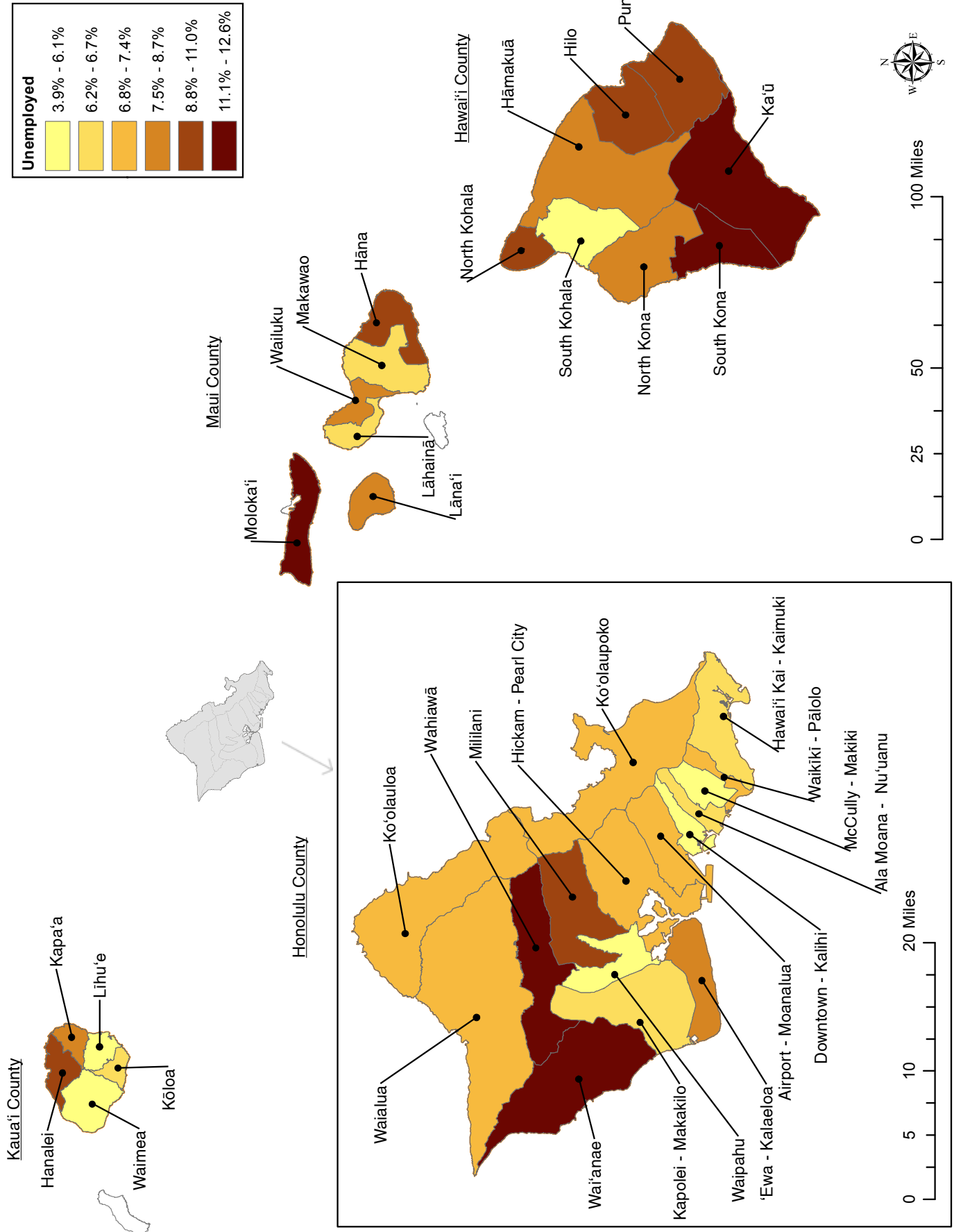


Map 3-12: Population Below 100% of Federal Poverty Level by Primary Care Service Area

Table 3-12: Civilian Labor Force Unemployed, 2010-2014

Service Area	Total Number in Civilian Labor Force (N)	Number Unemployed (n)	Percent Unemployed (%)	95% Confidence Interval
State of Hawai'i	564,623	42,881	7.6	(7.4 - 7.8)
Honolulu County	389,936	28,205	7.2	(7.0 - 7.5)
Hawai'i Kai - Kaimuki	30,363	1,865	6.1	(5.5 - 6.8)
Waikiki - Pālolo	23,426	1,708	7.3	(6.2 - 8.4)
McCully - Makiki	27,428	1,662	6.1	(5.3 - 6.9)
Ala Moana - Nu'uuanu	33,606	2,199	6.5	(5.6 - 7.5)
Downtown - Kalihi	28,135	1,620	5.8	(4.9 - 6.6)
Airport - Moanalua	25,670	1,839	7.2	(6.3 - 8.0)
Hickam - Pearl City	34,835	2,591	7.4	(6.7 - 8.2)
Waipahu	33,065	1,965	5.9	(5.2 - 6.7)
'Ewa - Kalaeloa	23,576	1,864	7.9	(6.9 - 8.9)
Kapolei - Makakilo	23,076	1,500	6.5	(5.3 - 7.7)
Mililani	21,943	1,929	8.8	(7.6 - 10.0)
Wahiawā	11,277	1,341	11.9	(10.2 - 13.5)
Wai'anae	15,908	1,871	11.8	(9.8 - 13.7)
Waialua	4,608	335	7.3	(4.8 - 9.8)
Ko'olauloa	7,691	549	7.1	(4.1 - 10.2)
Ko'olaupoko	45,331	3,371	7.4	(6.7 - 8.1)
Hawai'i County	73,903	7,033	9.5	(8.7 - 10.4)
Hilo	18,941	1,893	10.0	(8.7 - 11.3)
Puna	15,117	1,661	11.0	(8.5 - 13.4)
Ka'ū	2,671	302	11.3	(6.2 - 16.5)
South Kona	4,388	539	12.3	(8.6 - 15.9)
North Kona	18,444	1,577	8.5	(6.7 - 10.4)
South Kohala	7,805	438	5.6	(3.4 - 7.8)
North Kohala	2,796	297	10.6	(5.7 - 15.6)
Hāmakuā	3,741	327	8.7	(6.5 - 11.0)
Maui County	71,991	5,749	8.0	(7.2 - 8.8)
Hāna	696	70	10.1	(5.4 - 14.7)
Makawao	19,748	1,323	6.7	(5.4 - 8.0)
Wailuku	36,528	3,176	8.7	(7.4 - 10.0)
Lāhainā	11,002	724	6.6	(5.1 - 8.1)
Lāna'i	1,565	128	8.2	(2.8 - 13.5)
Moloka'i	2,430	307	12.6	(8.7 - 16.5)
Kaua'i County	28,793	1,894	6.6	(5.6 - 7.6)
Hanalei	3,154	302	9.6	(6.3 - 12.8)
Kapa'a	9,221	720	7.8	(5.6 - 10.0)
Lihu'e	6,563	255	3.9	(2.3 - 5.5)
Kōloa	6,053	396	6.5	(4.7 - 8.4)
Waimea	3,802	222	5.8	(3.7 - 8.0)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

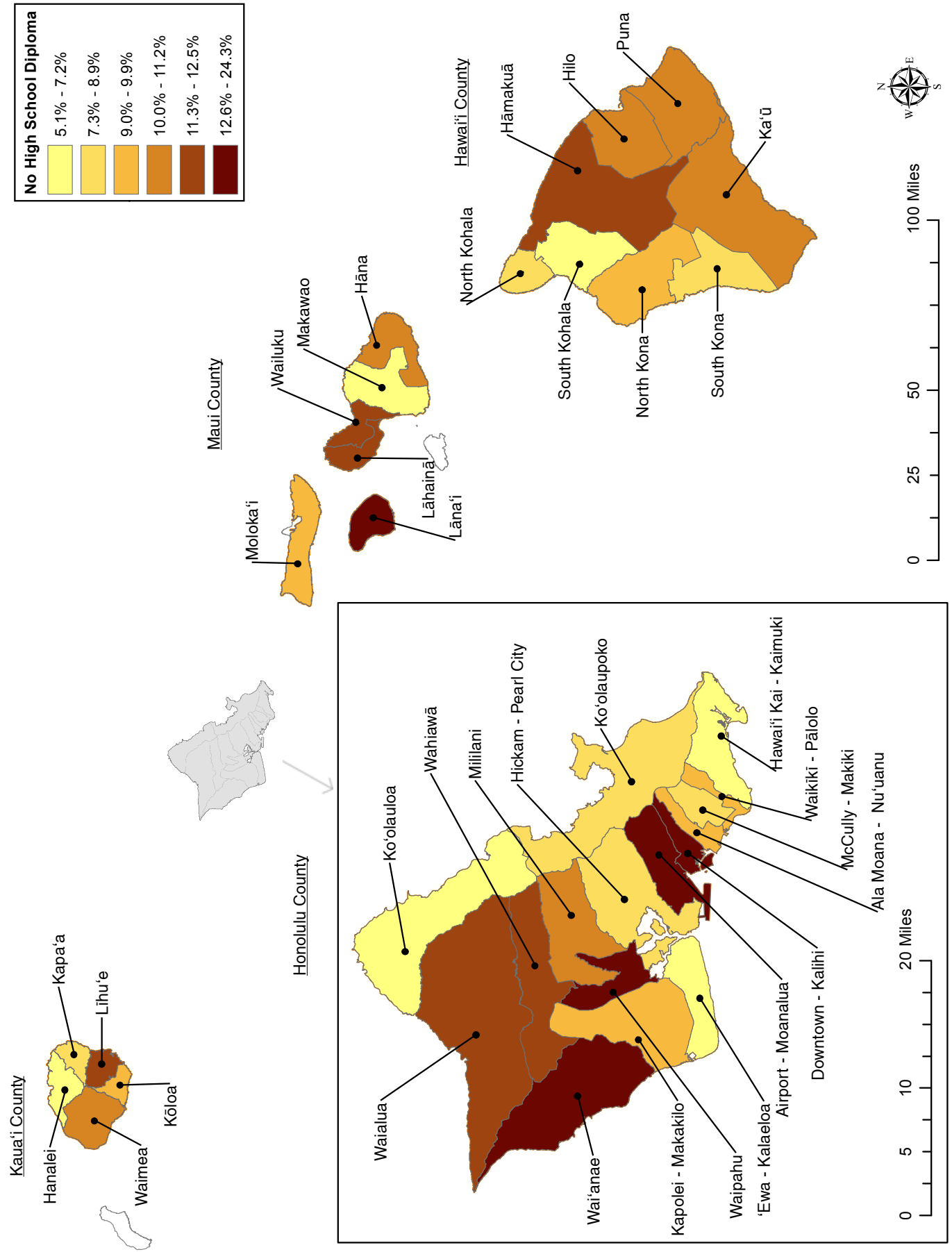


Map 3-13: Civilian Labor Force Unemployed by Primary Care Service Area

Table 3-13: Adults (25 Years of Age and Older) with No High School Diploma, 2010-2014

Service Area	Total Population 25 Years and Older (N)	Number With No High School Diploma (n)	Percent With No High School Diploma (%)	95% Confidence Interval
State of Hawai'i	950,840	100,515	10.6	(10.3 - 10.8)
Honolulu County	660,590	71,606	10.8	(10.6 - 11.1)
Hawai'i Kai - Kaimuki	52,746	3,103	5.9	(5.3 - 6.5)
Waikiki - Pālolo	39,695	3,753	9.5	(8.5 - 10.4)
McCully - Makiki	43,774	3,817	8.7	(7.8 - 9.6)
Ala Moana - Nu'uuanu	55,535	5,259	9.5	(8.5 - 10.4)
Downtown - Kalihi	49,681	12,086	24.3	(23.0 - 25.6)
Airport - Moanalua	47,093	6,804	14.4	(13.3 - 15.6)
Hickam - Pearl City	64,446	5,464	8.5	(7.8 - 9.2)
Waipahu	52,347	7,118	13.6	(12.4 - 14.8)
'Ewa - Kalaeloa	36,200	2,338	6.5	(5.6 - 7.3)
Kapolei - Makakilo	33,375	3,028	9.1	(7.8 - 10.3)
Mililani	34,672	3,889	11.2	(9.9 - 12.6)
Wahiawā	24,147	2,949	12.2	(10.8 - 13.6)
Wai'anae	27,591	4,364	15.8	(14.1 - 17.5)
Waialua	8,392	994	11.8	(9.7 - 14.0)
Ko'olauloa	12,108	759	6.3	(5.0 - 7.6)
Ko'olaupoko	78,789	5,884	7.5	(6.9 - 8.1)
Hawai'i County	131,247	12,794	9.8	(9.1 - 10.4)
Hilo	35,272	3,594	10.2	(9.0 - 11.4)
Puna	30,637	3,400	11.1	(9.5 - 12.7)
Ka'ū	5,663	616	10.9	(7.6 - 14.1)
South Kona	7,652	680	8.9	(6.2 - 11.5)
North Kona	29,216	2,792	9.6	(8.0 - 11.1)
South Kohala	11,875	602	5.1	(3.4 - 6.7)
North Kohala	4,589	366	8.0	(5.6 - 10.4)
Hāmakuā	6,343	746	11.8	(9.1 - 14.4)
Maui County	110,775	11,576	10.5	(9.8 - 11.1)
Hāna	1,151	119	10.3	(6.1 - 14.6)
Makawao	30,716	2,054	6.7	(5.7 - 7.7)
Wailuku	56,053	6,746	12.0	(10.9 - 13.1)
Lāhainā	15,876	1,786	11.3	(9.7 - 12.8)
Lāna'i	2,412	332	13.7	(9.2 - 18.3)
Moloka'i	4,561	453	9.9	(7.4 - 12.5)
Kaua'i County	48,229	4,540	9.4	(8.5 - 10.3)
Hanalei	5,511	397	7.2	(5.3 - 9.1)
Kapa'a	15,444	1,145	7.4	(5.9 - 9.0)
Līhu'e	10,951	1,368	12.5	(10.1 - 14.8)
Kōloa	10,122	1,000	9.9	(8.1 - 11.7)
Waimea	6,201	631	10.2	(8.3 - 12.0)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

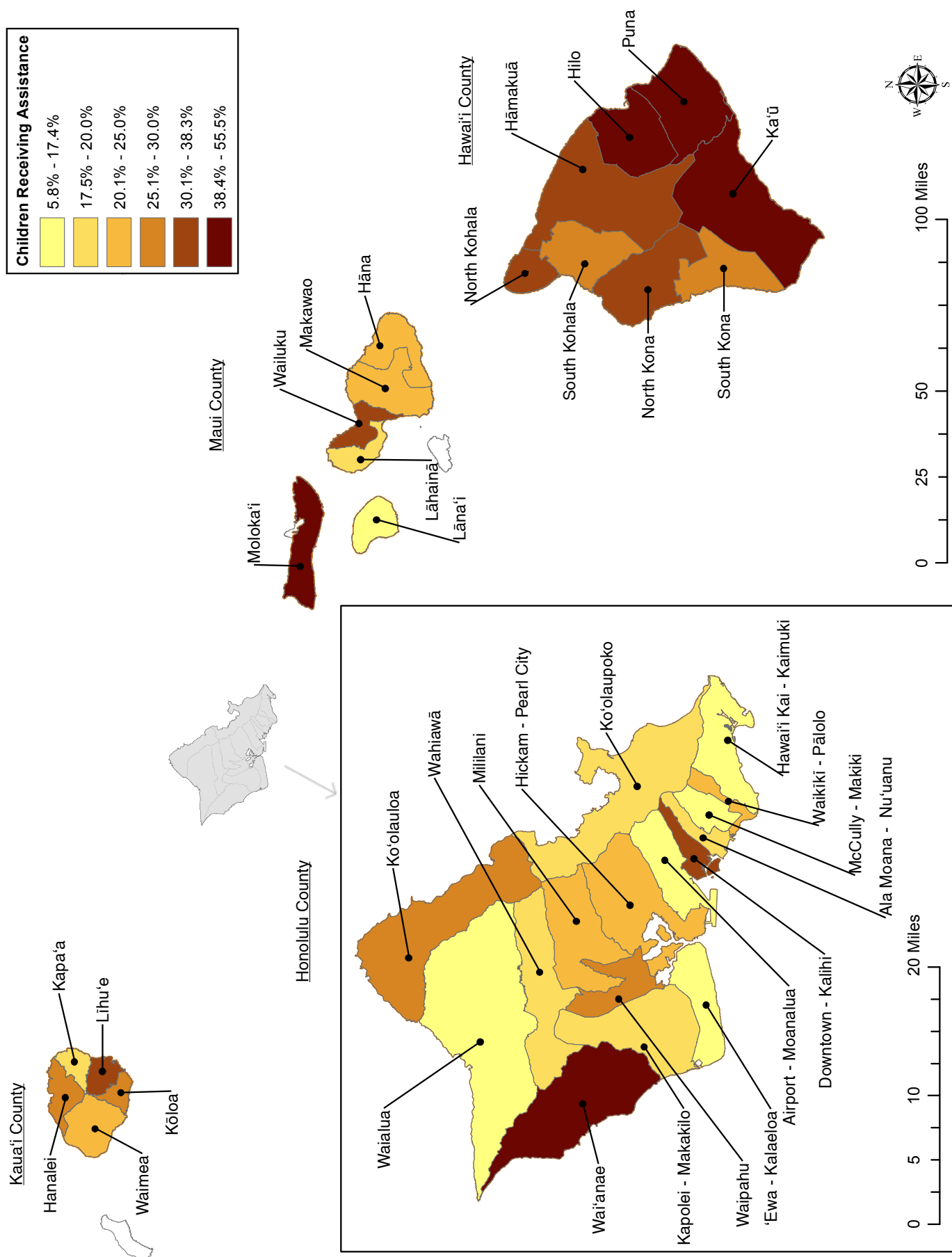
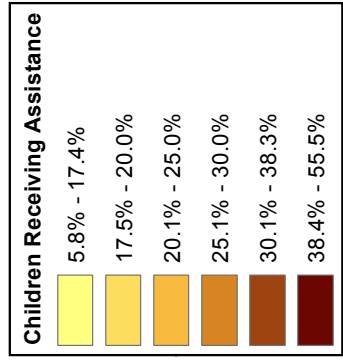


Map 3-14: Adults (25 Years of Age and Older) with No High School Diploma by Primary Care Service Area

Table 3-14: Children in Households Receiving Assistance, 2010-2014

Service Area	Total Number of Children Under 18 Years of Age (N)	Children Receiving Assistance (n)	Percent of Children Receiving Assistance (%)	95% Confidence Interval
State of Hawai'i	305,344	77,433	25.4	(24.2 - 26.5)
Honolulu County	211,806	47,088	22.2	(21.0 - 23.5)
Hawai'i Kai - Kaimuki	12,922	747	5.8	(3.5 - 8.1)
Waikiki - Pālolo	6,285	1,283	20.4	(14.7 - 26.2)
McCully - Makiki	8,904	1,550	17.4	(12.4 - 22.4)
Ala Moana - Nu'uuanu	9,762	1,745	17.9	(13.0 - 22.7)
Downtown - Kalihi	14,380	5,505	38.3	(33.4 - 43.2)
Airport - Moanalua	18,976	3,206	16.9	(13.6 - 20.1)
Hickam - Pearl City	20,300	4,077	20.1	(15.5 - 24.6)
Waipahu	17,422	4,885	28.0	(23.3 - 32.8)
'Ewa - Kalaeloa	13,548	1,514	11.2	(7.8 - 14.5)
Kapolei - Makakilo	14,283	2,596	18.2	(13.0 - 23.4)
Mililani	14,590	3,172	21.7	(16.7 - 26.8)
Wahiawā	12,984	2,268	17.5	(13.5 - 21.5)
Wai'anae	14,371	7,976	55.5	(49.2 - 61.8)
Wai'alua	2,979	516	17.3	(10.1 - 24.5)
Ko'olauloa	5,136	1,293	25.2	(16.2 - 34.2)
Ko'olaupoko	24,966	4,757	19.1	(15.7 - 22.4)
Hawai'i County	42,261	16,066	38.0	(34.0 - 42.0)
Hilo	10,806	4,214	39.0	(32.2 - 45.7)
Puna	10,116	5,275	52.1	(42.6 - 61.7)
Ka'ū	1,488	734	49.3	(14.7 - 84.0)
South Kona	2,372	595	25.1	(8.5 - 41.6)
North Kona	8,392	2,586	30.8	(22.9 - 38.8)
South Kohala	5,019	1,277	25.4	(14.4 - 36.5)
North Kohala	1,717	655	38.1	(17.4 - 58.9)
Hāmakuā	2,351	730	31.1	(21.9 - 40.2)
Maui County	35,849	10,250	28.6	(25.0 - 32.1)
Hāna	541	116	21.4	(8.4 - 34.5)
Makawao	9,148	2,172	23.7	(17.4 - 30.1)
Wailuku	19,020	6,113	32.1	(26.6 - 37.7)
Lāhainā	4,378	875	20.0	(11.6 - 28.3)
Lāna'i	947	134	14.2	(2.7 - 25.6)
Moloka'i	1,809	835	46.2	(38.1 - 54.2)
Kaua'i County	15,429	4,030	26.1	(21.9 - 30.3)
Hanalei	1,770	531	30.0	(18.8 - 41.2)
Kapa'a	4,273	831	19.4	(12.9 - 26.0)
Līhu'e	4,267	1,326	31.1	(20.5 - 41.7)
Kōloa	3,286	884	26.9	(19.1 - 34.7)
Waimea	1,833	458	25.0	(15.3 - 34.7)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey



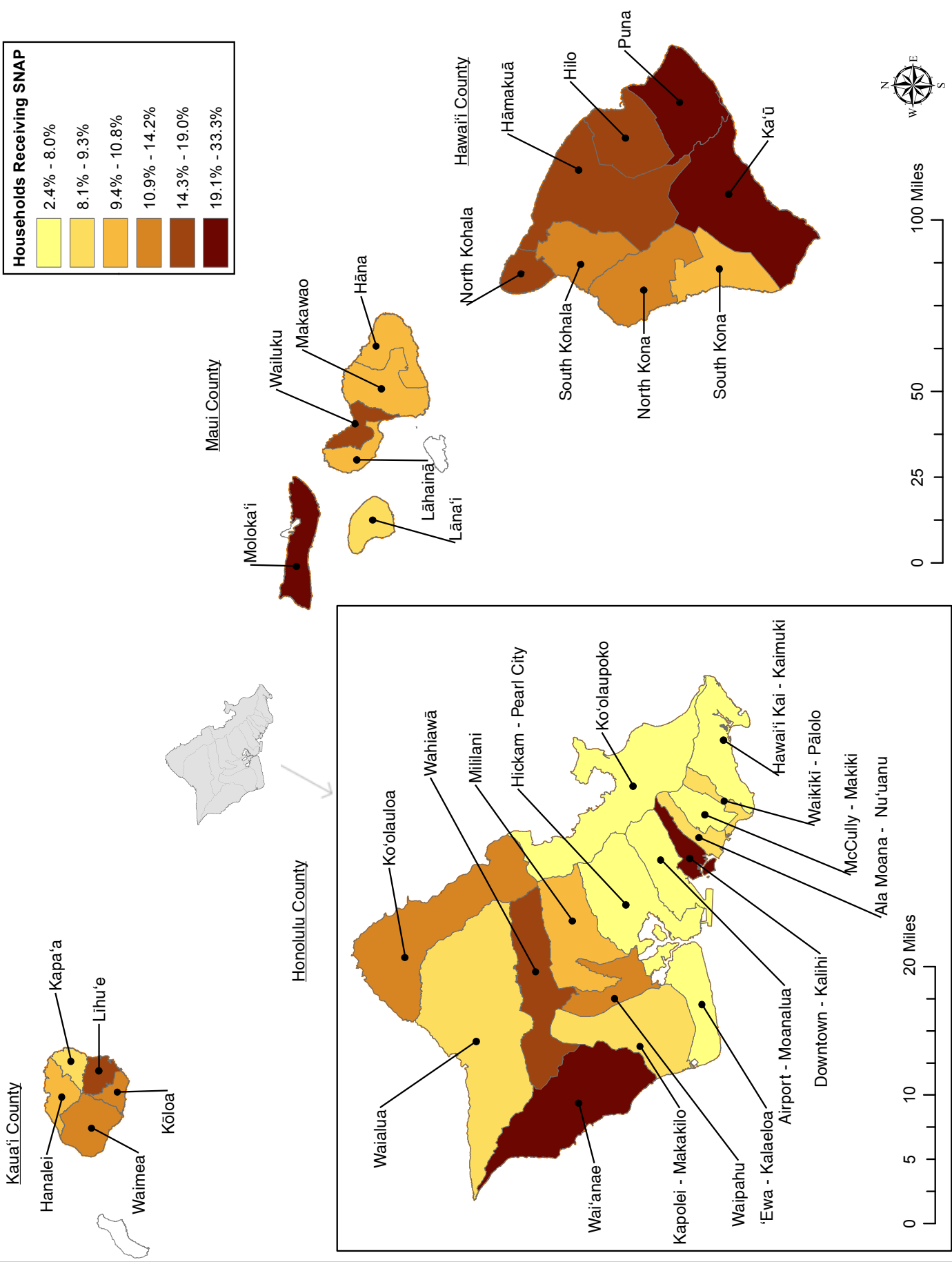
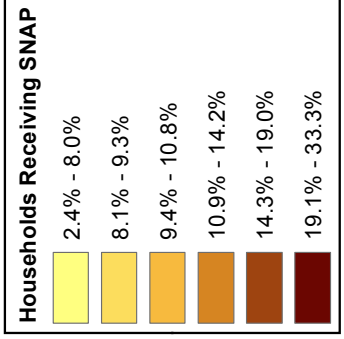
Map 3-15: Children in Households Receiving Assistance by Primary Care Service Area

Table 3-15: Households receiving SNAP or Cash Public Assistance, 2010-2014

Service Area	Total Number of Households (N)	Number Receiving SNAP (n)	Percent Receiving SNAP (%)	95% Confidence Interval
State of Hawai'i	450,308	53,270	11.8	(11.5 - 12.2)
Honolulu County	310,191	31,236	10.1	(9.7 - 10.5)
Hawai'i Kai - Kaimuki	24,384	585	2.4	(1.6 - 3.2)
Waikiki - Pālolo	22,184	1,818	8.2	(6.8 - 9.6)
McCully - Makiki	24,076	1,841	7.6	(6.3 - 9.0)
Ala Moana - Nu'uuanu	34,535	3,172	9.2	(7.9 - 10.4)
Downtown - Kalihi	20,140	4,619	22.9	(21.1 - 24.8)
Airport - Moanalua	20,752	1,669	8.0	(6.8 - 9.3)
Hickam - Pearl City	28,571	2,103	7.4	(6.2 - 8.5)
Waipahu	19,981	2,513	12.6	(11.0 - 14.1)
'Ewa - Kalaeloa	17,933	786	4.4	(3.3 - 5.4)
Kapolei - Makakilo	14,054	1,302	9.3	(7.1 - 11.4)
Mililani	15,152	1,583	10.4	(8.6 - 12.3)
Wahiawā	12,137	1,744	14.4	(12.2 - 16.6)
Wai'anae	11,397	3,790	33.3	(30.0 - 36.5)
Waialua	4,305	393	9.1	(6.1 - 12.1)
Ko'olauloa	5,172	607	11.7	(9.2 - 14.3)
Ko'olaupoko	35,419	2,712	7.7	(6.7 - 8.6)
Hawai'i County	64,586	12,210	18.9	(17.5 - 20.3)
Hilo	17,417	3,304	19.0	(16.6 - 21.3)
Puna	15,948	4,203	26.4	(22.7 - 30.0)
Ka'ū	2,847	687	24.1	(17.7 - 30.6)
South Kona	3,553	383	10.8	(7.0 - 14.5)
North Kona	13,967	1,984	14.2	(11.2 - 17.2)
South Kohala	6,139	832	13.6	(9.4 - 17.7)
North Kohala	1,964	363	18.5	(10.8 - 26.2)
Hāmakuā	2,751	454	16.5	(11.7 - 21.3)
Maui County	53,137	7,215	13.6	(12.3 - 14.9)
Hāna	562	53	9.4	(2.7 - 16.2)
Makawao	15,517	1,508	9.7	(7.6 - 11.8)
Wailuku	25,649	4,193	16.3	(14.3 - 18.4)
Lāhainā	7,829	754	9.6	(6.9 - 12.3)
Lāna'i	1,142	100	8.8	(2.7 - 14.9)
Moloka'i	2,432	601	24.7	(19.5 - 29.9)
Kaua'i County	22,395	2,610	11.7	(10.1 - 13.2)
Hanalei	2,696	280	10.4	(7.3 - 13.5)
Kapa'a	7,259	664	9.1	(6.6 - 11.7)
Līhu'e	4,725	717	15.2	(10.8 - 19.6)
Kōloa	4,949	618	12.5	(9.4 - 15.6)
Waimea	2,766	331	12.0	(8.2 - 15.7)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

Note: Supplemental Nutrition Assistance Program (SNAP)

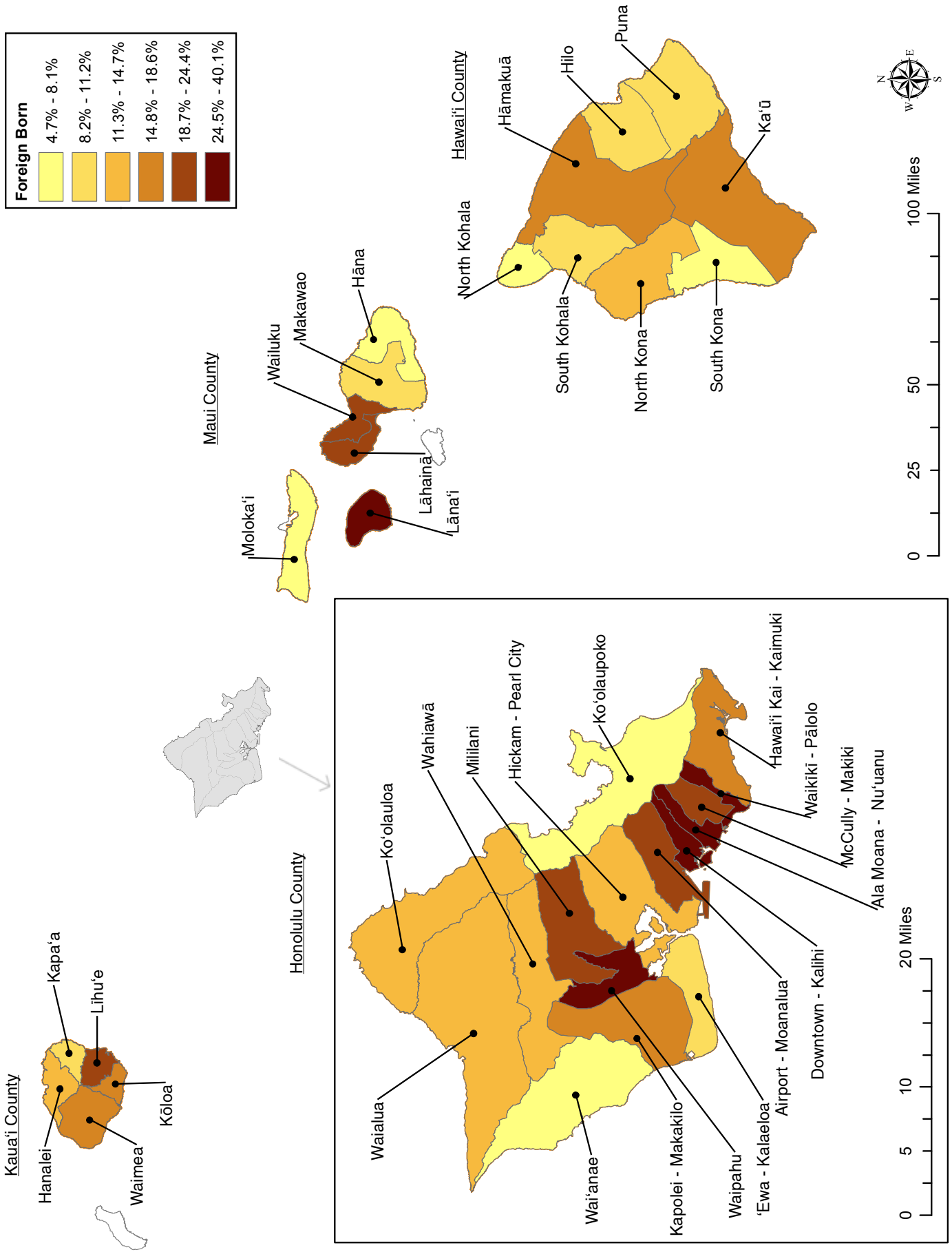


Map 3-16: Households receiving SNAP or Cash Public Assistance by Primary Care Service Area

Table 3-16: Population that were Foreign Born, 2010-2014

Service Area	Annual Total Population (N)	Number Foreign Born (n)	Percent Foreign Born (%)	95% Confidence Interval
State of Hawai'i	1,392,675	249,322	17.9	(17.5 - 18.3)
Honolulu County	975,729	189,102	19.4	(18.9 - 19.9)
Hawai'i Kai - Kaimuki	69,878	10,321	14.8	(13.6 - 16.0)
Waikiki - Pālolo	51,351	12,788	24.9	(23.0 - 26.8)
McCully - Makiki	61,774	13,327	21.6	(19.9 - 23.3)
Ala Moana - Nu'uuanu	70,922	19,424	27.4	(25.6 - 29.2)
Downtown - Kalihi	71,230	28,556	40.1	(37.9 - 42.3)
Airport - Moanalua	72,844	17,791	24.4	(22.5 - 26.3)
Hickam - Pearl City	94,447	13,390	14.2	(12.9 - 15.5)
Waipahu	77,499	23,435	30.2	(27.7 - 32.8)
'Ewa - Kalaeloa	54,438	6,011	11.0	(9.7 - 12.4)
Kapolei - Makakilo	52,338	9,678	18.5	(16.1 - 20.9)
Mililani	55,359	11,279	20.4	(17.6 - 23.1)
Wahiawā	45,475	6,405	14.1	(12.1 - 16.1)
Wai'anae	47,774	3,864	8.1	(6.3 - 9.9)
Waialua	13,197	1,701	12.9	(9.4 - 16.3)
Ko'olauloa	20,340	2,463	12.1	(9.9 - 14.3)
Ko'olaupoko	116,864	8,670	7.4	(6.7 - 8.2)
Hawai'i County	189,382	21,213	11.2	(10.1 - 12.3)
Hilo	51,744	4,231	8.2	(6.9 - 9.5)
Puna	44,382	4,967	11.2	(8.6 - 13.8)
Ka'ū	7,669	1,429	18.6	(10.0 - 27.3)
South Kona	10,750	715	6.7	(4.0 - 9.3)
North Kona	40,480	5,939	14.7	(11.7 - 17.6)
South Kohala	18,189	1,757	9.7	(6.7 - 12.6)
North Kohala	6,550	464	7.1	(3.8 - 10.4)
Hāmakuā	9,618	1,711	17.8	(12.4 - 23.2)
Maui County	158,820	28,174	17.7	(16.5 - 18.9)
Hāna	1,898	90	4.7	(1.1 - 8.3)
Makawao	42,213	3,958	9.4	(8.0 - 10.8)
Wailuku	82,092	18,059	22.0	(20.0 - 24.0)
Lāhainā	22,200	4,791	21.6	(18.8 - 24.4)
Lāna'i	3,526	904	25.6	(17.7 - 33.5)
Moloka'i	6,885	366	5.3	(2.8 - 7.9)
Kaua'i County	68,745	10,834	15.8	(14.1 - 17.4)
Hanalei	7,754	1,051	13.6	(9.6 - 17.5)
Kapa'a	21,312	2,164	10.2	(7.8 - 12.5)
Līhu'e	16,550	3,779	22.8	(18.3 - 27.4)
Kōloa	14,418	2,428	16.8	(13.2 - 20.5)
Waimea	8,711	1,412	16.2	(11.9 - 20.6)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey

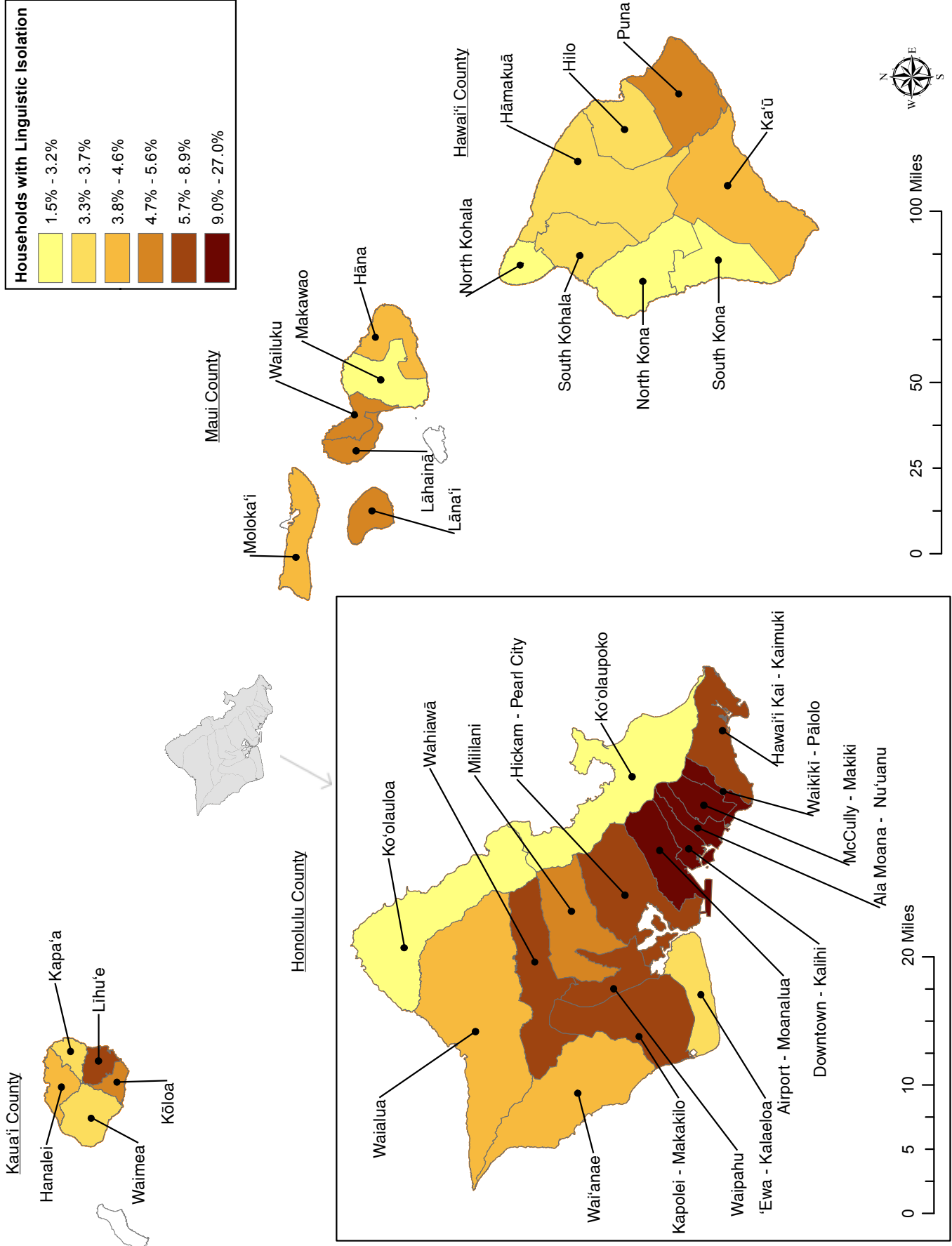
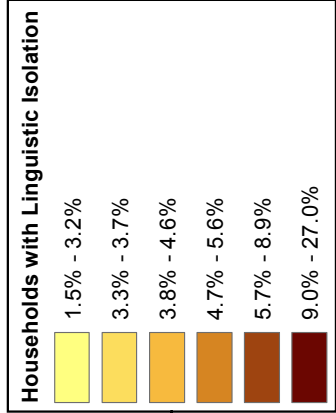


Map 3-17: Population that were Foreign Born by Primary Care Service Area

Table 3-17: Households with Linguistic Isolation, 2010-2014

Service Area	Total Number of Households (N)	Number with Linguistic Isolation (n)	Percent with Linguistic Isolation (%)	95% Confidence Interval
State of Hawai'i	450,308	33,975	7.5	(7.3 - 7.8)
Honolulu County	310,191	28,440	9.2	(8.8 - 9.5)
Hawai'i Kai - Kaimuki	24,384	1,392	5.7	(4.8 - 6.6)
Waikiki - Pālolo	22,184	2,474	11.2	(9.7 - 12.6)
McCully - Makiki	24,076	2,380	9.9	(8.5 - 11.2)
Ala Moana - Nu'uuanu	34,535	5,328	15.4	(13.9 - 16.9)
Downtown - Kalihi	20,140	5,438	27.0	(25.2 - 28.8)
Airport - Moanalua	20,752	2,521	12.1	(10.5 - 13.8)
Hickam - Pearl City	28,571	2,191	7.7	(6.5 - 8.8)
Waipahu	19,981	1,783	8.9	(7.6 - 10.3)
'Ewa - Kalaeloa	17,933	591	3.3	(2.4 - 4.1)
Kapolei - Makakilo	14,054	886	6.3	(4.7 - 7.9)
Mililani	15,152	847	5.6	(4.3 - 6.9)
Wahiawā	12,137	713	5.9	(4.6 - 7.2)
Wai'anae	11,397	473	4.2	(2.9 - 5.4)
Waialua	4,305	198	4.6	(2.7 - 6.5)
Ko'olauloa	5,172	116	2.2	(1.2 - 3.3)
Ko'olaupoko	35,419	1,115	3.1	(2.6 - 3.7)
Hawai'i County	64,586	2,360	3.7	(3.0 - 4.3)
Hilo	17,417	646	3.7	(2.8 - 4.6)
Puna	15,948	742	4.7	(2.8 - 6.5)
Ka'ū	2,847	107	3.7	(2.0 - 5.5)
South Kona	3,553	90	2.5	(1.1 - 4.0)
North Kona	13,967	445	3.2	(2.0 - 4.4)
South Kohala	6,139	204	3.3	(1.3 - 5.3)
North Kohala	1,964	29	1.5	(0.0 - 2.9)
Hāmakuā	2,751	98	3.6	(1.9 - 5.3)
Maui County	53,137	2,189	4.1	(3.5 - 4.7)
Hāna	562	22	3.9	(0.0 - 8.1)
Makawao	15,517	315	2.0	(1.3 - 2.7)
Wailuku	25,649	1,297	5.1	(4.1 - 6.0)
Lāhainā	7,829	369	4.7	(3.4 - 6.0)
Lāna'i	1,142	55	4.8	(1.2 - 8.3)
Moloka'i	2,432	111	4.5	(2.3 - 6.8)
Kaua'i County	22,395	987	4.4	(3.5 - 5.3)
Hanalei	2,696	115	4.3	(2.0 - 6.5)
Kapa'a	7,259	236	3.3	(1.6 - 4.9)
Lihu'e	4,725	266	5.6	(3.5 - 7.7)
Kōloa	4,949	278	5.6	(3.2 - 8.0)
Waimea	2,766	92	3.3	(1.7 - 4.9)

Source: U.S. Department of Commerce, U.S. Census Bureau, American Community Survey



Map 3-18: Households with Linguistic Isolation by Primary Care Service Area

CHAPTER 4: MATERNAL AND INFANT HEALTH

Maternal and infant health status indicators are often used as a measure of overall community health. This chapter was developed to highlight many of the key maternal and infant health status indicators that relate to the health disparities observed between populations. The maternal and infant health status indicators based on the aggregated 2008-2013 unless noted vital statistics data are defined below.

MATERNAL AND INFANT HEALTH INDICATORS

$$\text{Crude Birth Rate}^* = \frac{\text{Number of births} * 1,000}{\text{Total population}}$$

$$\text{Infant Mortality Rate (IMR)} = \frac{\text{Number of infant deaths} * 1,000}{\text{Total number of live births}}$$

$$\text{Percent of Births with Less Than Adequate Prenatal Care Utilization} = \frac{\text{Number of births to mothers who received less than adequate prenatal care}}{\text{Total number of live births}}$$

$$\text{Percent of Births with Low Birth Weight} = \frac{\text{Number of births with weight less than 2,500 grams}}{\text{Total number of live births}}$$

$$\text{Percent of Births Under 18 Years of Age} = \frac{\text{Number of births to mothers under 18 years of age}}{\text{Total number of live births}}$$

$$\text{Percent of Births to Mothers with Pre-Existing Medical Conditions} = \frac{\text{Number of births with pre-existing medical conditions}}{\text{Total number of live births}}$$

* Total Population for Crude Birth Rates was based on 2010 Census Data.

Percent of Births with less than Adequate Prenatal Care Utilization

In 1994, Milton Kotelchuck proposed the Adequacy of Prenatal Utilization Index (APNCU), more commonly referred to as the “Kotelchuck Index.”¹ The APNCU combines two separate indices: the “adequacy of initiation of prenatal care,” (month prenatal care began) and the “adequacy of received services” (number of visits based on gestational age of the child) to characterize adequacy of pregnancy-related health services provided to an expectant mother between conception and delivery. Rates are classified as “adequate plus,” “adequate,” “intermediate,” or “inadequate.”

The Adequacy of Prenatal Utilization Index offers a more accurate and comprehensive set of measures of prenatal care use than just the trimester of prenatal care initiation. The APNCU is the prenatal care utilization index now being actively supported by the Maternal and Child Health Bureau (MCHB), Department of Health and Human Services (DHHS). Consequently, it is the index which the Family Health Services Division (FHSD) and other agencies are now required to use in their reporting. In this Data Book, the percentage of births with less than adequate prenatal care as defined in the APNCU is shown by primary care service area.

Percent of Births with Mothers with Pre-Existing Medical Conditions

Births to mothers with pre-existing medical conditions may be associated with worse outcomes than those born to mothers without these conditions. In general women are delaying child birth to later years and this is coinciding with increases in chronic conditions (e.g., diabetes, high blood pressure) and their related risk factors (e.g., obesity, physical inactivity) among women of reproductive age. This combination stresses the importance of obtaining and providing appropriate care before pregnancy, termed preconception and interconception care, to try and optimize the health of both the mother and the infant resulting from the pregnancy.²

This particular indicator was determined with the presence of the notation for any of the following pre-existing medical conditions collected in vital statistics data: anemia, cardiac disease, acute or chronic lung disease, diabetes, genital herpes, hydramnios/oligohydramnios, hemoglobinopathy, chronic hypertension, pregnancy-associated hypertension, eclampsia, incompetent cervix, previous infant 4000+ grams, previous pre-term or small-for-gestational-age infant, renal disease, Rh sensitization, uterine bleeding, or infectious disease.

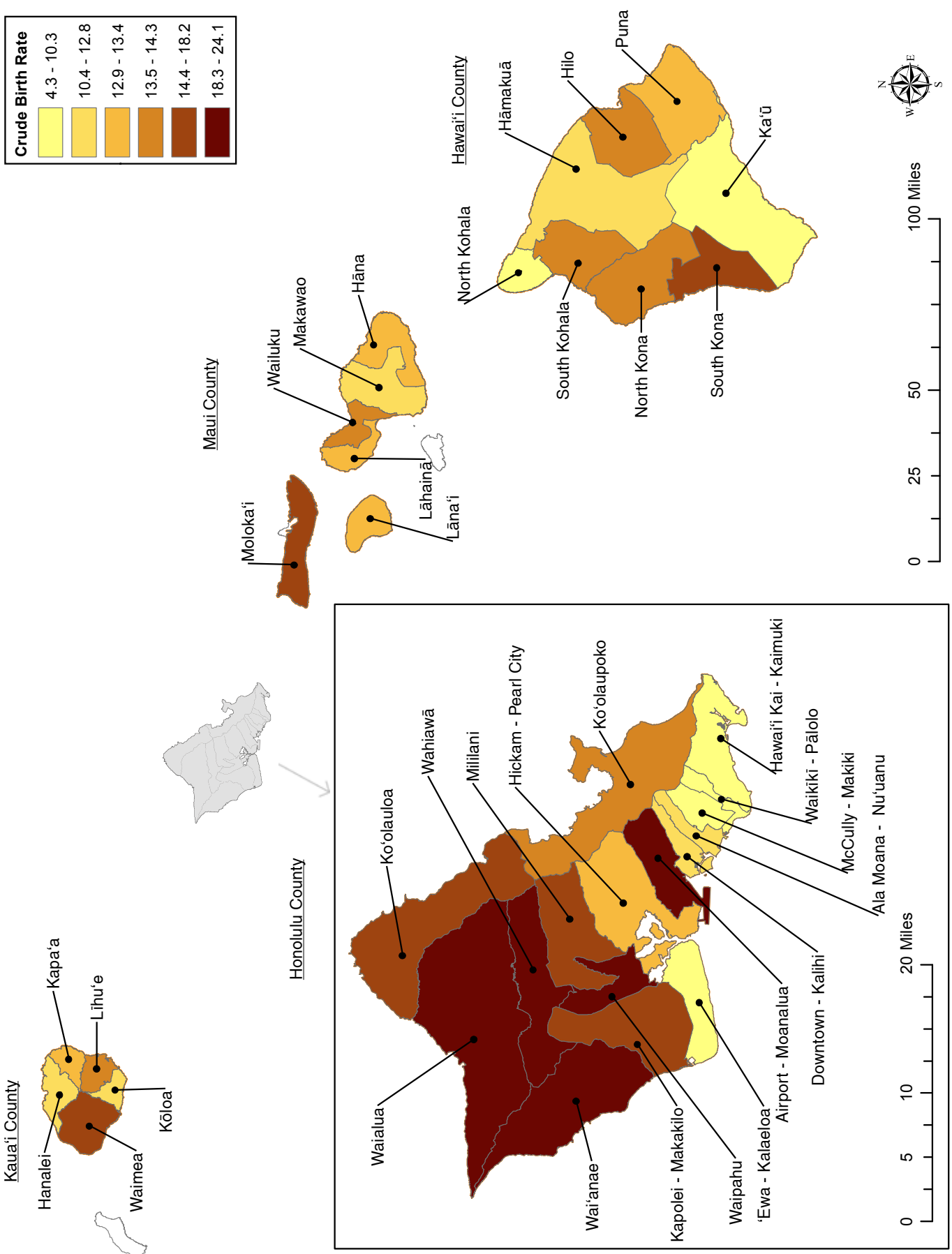
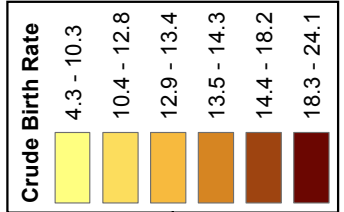
1 Kotelchuck, M. 1994. *An Evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index*. American Journal of Public Health. 84 (9): 1414-1420.

2 D'Angelo D, Williams L, Morrow B, Cox S, Harris N, Harrison L, Posner SF, Hood JR, Zapata L. 2007. *Preconception and interconception health status of women who recently gave birth to a live-born infant--Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 26 reporting areas, 2004*. MMWR Surveillance Summary. 56(10):1-35.

Table 4-1: Crude Birth Rate, 2008-2013

Service Area	Annual Total Population (N)	All Births (n)	Crude Birth Rate (per 1,000)	95% Confidence Interval
State of Hawai'i	1,360,301	113,928	14.0	(13.9 - 14.1)
Honolulu County	953,207	81,486	14.2	(14.1 - 14.3)
Hawai'i Kai - Kaimuki	70,638	3,397	8.0	(7.7 - 8.3)
Waikiki - Pālolo	52,489	3,116	9.9	(9.6 - 10.2)
McCully - Makiki	60,510	3,107	8.6	(8.3 - 8.9)
Ala Moana - Nu'uuanu	71,372	4,694	11.0	(10.7 - 11.3)
Downtown - Kalihi	69,010	5,316	12.8	(12.5 - 13.1)
Airport - Moanalua	66,070	7,384	18.6	(18.2 - 19.0)
Hickam - Pearl City	95,025	7,559	13.3	(13.0 - 13.6)
Waipahu	74,760	9,987	22.3	(21.9 - 22.7)
'Ewa - Kalaeloa	54,207	5,680	17.5	(17.0 - 18.0)
Kapolei - Makakilo	46,972	4,376	15.5	(15.0 - 16.0)
Mililani	52,803	1,351	4.3	(4.1 - 4.5)
Wahiawā	41,216	5,958	24.1	(23.5 - 24.7)
Wai'anae	48,519	5,580	19.2	(18.7 - 19.7)
Waialua	13,046	1,641	21.0	(20.0 - 22.0)
Ko'olauloa	21,406	2,336	18.2	(17.5 - 18.9)
Ko'olaupoko	115,164	9,831	14.2	(13.9 - 14.5)
Hawai'i County	185,079	14,766	13.3	(13.1 - 13.5)
Hilo	50,927	4,154	13.6	(13.2 - 14.0)
Puna	45,326	3,615	13.3	(12.9 - 13.7)
Ka'ū	8,451	524	10.3	(9.4 - 11.2)
South Kona	9,997	942	15.7	(14.7 - 16.7)
North Kona	37,875	3,096	13.6	(13.1 - 14.1)
South Kohala	17,627	1,488	14.1	(13.4 - 14.8)
North Kohala	6,322	330	8.7	(7.8 - 9.6)
Hāmakuā	8,554	612	11.9	(11.0 - 12.8)
Maui County	154,834	12,390	13.3	(13.1 - 13.5)
Hāna	2,291	179	13.0	(11.1 - 14.9)
Makawao	41,887	2,854	11.4	(11.0 - 11.8)
Wailuku	77,758	6,673	14.3	(14.0 - 14.6)
Lāhainā	22,508	1,811	13.4	(12.8 - 14.0)
Lāna'i	3,135	243	12.9	(11.3 - 14.5)
Moloka'i	7,255	628	14.4	(13.3 - 15.5)
Kaua'i County	67,091	5,285	13.1	(12.7 - 13.5)
Hanalei	7,828	536	11.4	(10.4 - 12.4)
Kapa'a	20,992	1,662	13.2	(12.6 - 13.8)
Līhu'e	14,683	1,190	13.5	(12.7 - 14.3)
Kōloa	14,086	1,085	12.8	(12.0 - 13.6)
Waimea	9,332	803	14.3	(13.3 - 15.3)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring;
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates



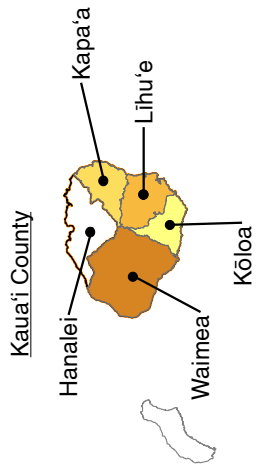
Map 4-1: Crude Birth Rate (per 1,000 population) by Primary Care Service Area

Table 4-2: Infant Mortality Rate, 2004-2013

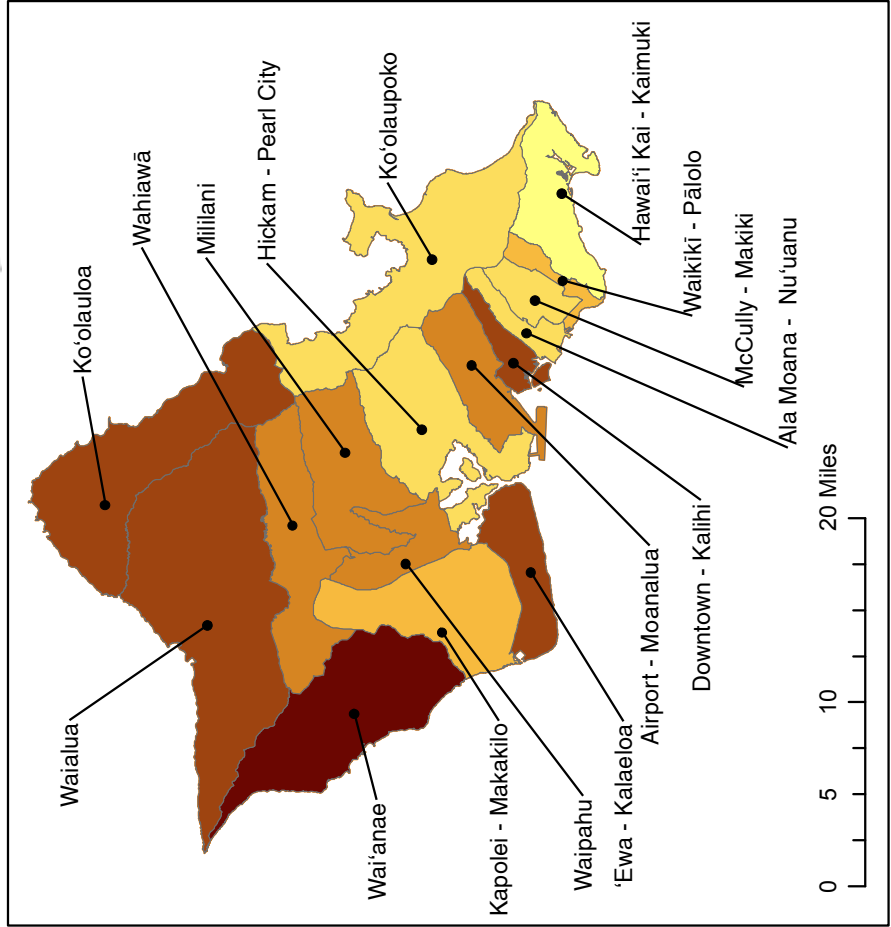
Service Area	Number of Live Births (N)	Number of Infant Deaths (n)	Infant Mortality Rate (per 1,000)	95% Confidence Interval
State of Hawai'i	188,064	1,051	5.6	(5.3 - 5.9)
Honolulu County	134,940	795	5.9	(5.5 - 6.3)
Hawai'i Kai - Kaimuki	5,773	24	4.1	(2.5 - 5.9)
Waikiki - Pālolo	5,181	27	5.2	(3.2 - 7.2)
McCully - Makiki	5,226	26	5.0	(3.1 - 6.9)
Ala Moana - Nu'uaua	7,583	35	4.6	(3.1 - 6.1)
Downtown - Kalihi	8,944	63	7.0	(5.3 - 8.7)
Airport - Moanalua	12,320	78	6.3	(4.9 - 7.7)
Hickam - Pearl City	12,463	58	4.6	(3.5 - 5.9)
Waipahu	17,043	110	6.4	(5.3 - 7.7)
'Ewa - Kalaeloa	9,175	59	6.4	(4.8 - 8.0)
Kapolei - Makakilo	6,981	38	5.4	(3.7 - 7.1)
Mililani	2,285	13	5.7	
Wahiawā	9,140	52	5.7	(4.2 - 7.2)
Wai'anae	9,441	85	8.8	(7.1 - 10.9)
Waialua	2,765	19	6.8	
Ko'olauloa	3,870	27	6.9	(4.4 - 9.6)
Ko'olaupoko	16,438	78	4.7	(3.7 - 5.7)
Hawai'i County	24,201	129	5.3	(4.4 - 6.2)
Hilo	6,853	26	3.8	(2.3 - 5.3)
Puna	5,690	29	5.1	(3.2 - 7.0)
Ka'ū	897	5	5.5	
South Kona	1,556	11	7.0	
North Kona	5,031	33	6.5	(4.3 - 8.9)
South Kohala	2,533	9	3.5	
North Kohala	610	6	9.7	
Hāmakuā	1,018	10	9.7	
Maui County	20,376	90	4.4	(3.5 - 5.3)
Hāna	309	<5	NR	
Makawao	4,744	21	4.4	(2.5 - 6.3)
Wailuku	10,866	40	3.7	(2.6 - 4.8)
Lāhainā	3,013	17	5.6	
Lāna'i	405	<5	NR	
Moloka'i	1,034	8	7.7	
Kaua'i County	8,547	37	4.3	(2.9 - 5.7)
Hanalei	815	<5	NR	
Kapa'a	2,695	12	4.4	
Līhu'e	1,949	10	5.1	
Kōloa	1,746	6	3.4	
Waimea	1,330	8	6.0	

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring

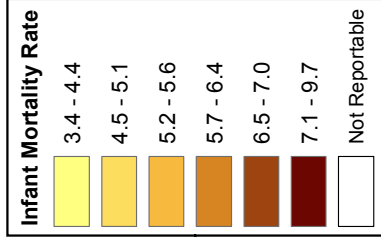
Notes: Rates were not reportable (NR) for areas with less than 5 events. No confidence intervals were computed when the number of events were less than 20. Standardized ratios less than 200 implies that the rates were not significantly higher than those for the State of Hawai'i. See Family Health Outcomes Project (FHOP), *Guidelines for Using Federal Data Templates with Small Numbers* (1997).



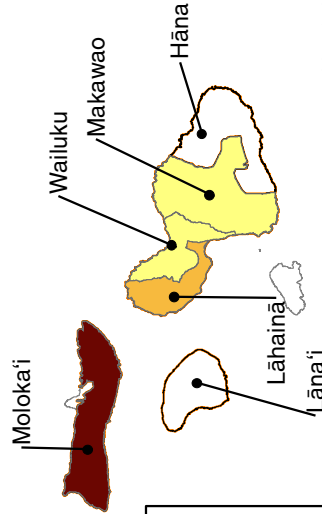
Honolulu County



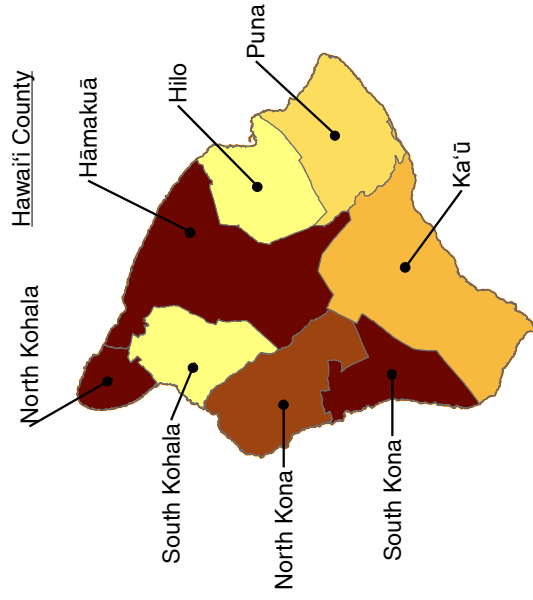
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Maui County



Hawaii'i County



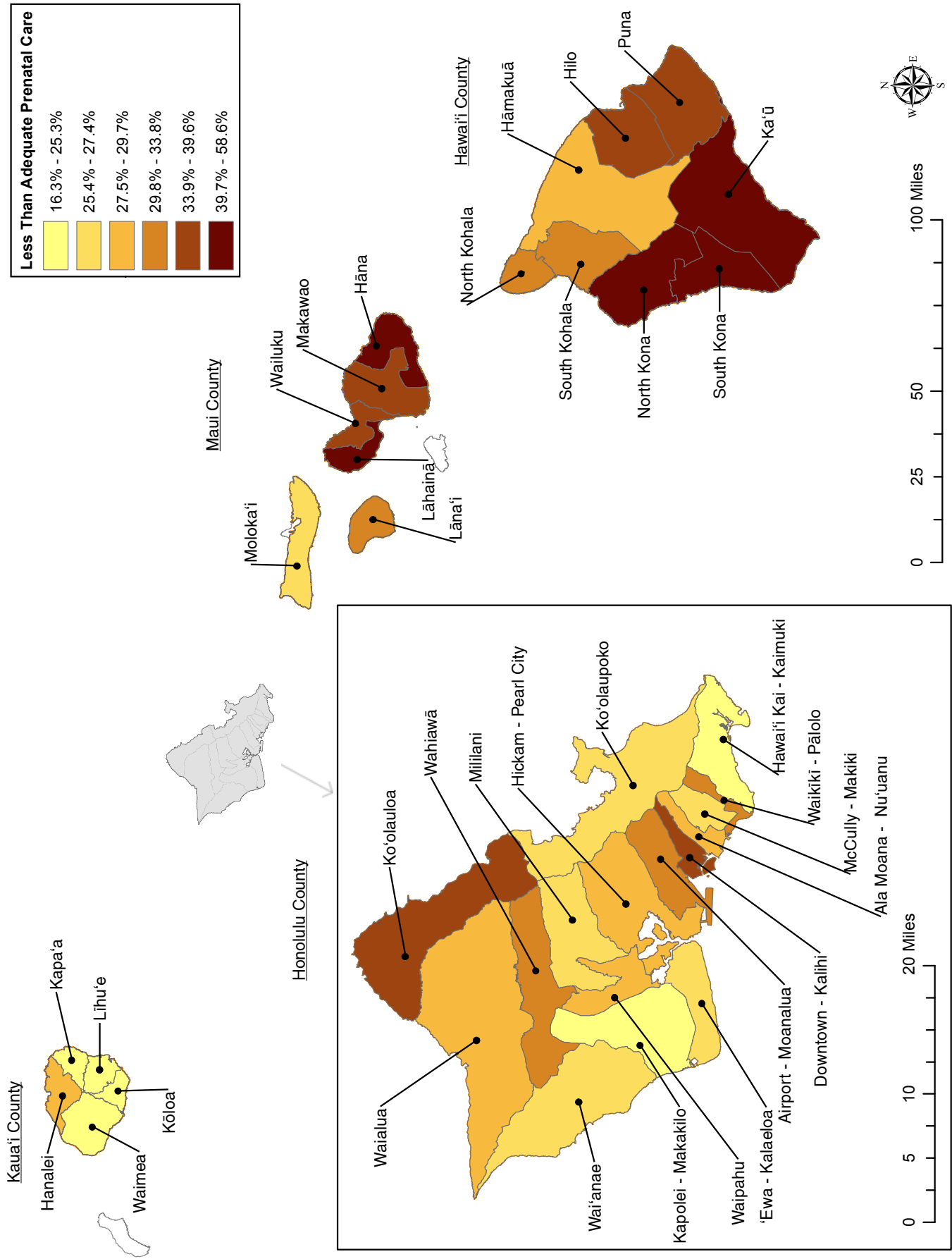
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Map 4-2: Infant Mortality Rate (per 1,000 live births) by Primary Care Service Area

Table 4-3: Births with Less Than Adequate Prenatal Care Utilization, 2008-2013

Service Area	Number of Live Births	Number with Less Than Adequate Prenatal Care Utilization	Percent with Less Than Adequate Prenatal Care Utilization	95% Confidence Interval
	(N)	(n)	(%)	
State of Hawai'i	108,849	33,695	31.0	(30.7 - 31.3)
Honolulu County	78,453	22,764	29.0	(28.6 - 29.4)
Hawai'i Kai - Kaimuki	3,264	787	24.1	(22.4 - 25.8)
Waikiki - Pālolo	2,944	910	30.9	(28.9 - 32.9)
McCully - Makiki	2,955	809	27.4	(25.5 - 29.3)
Ala Moana - Nu'uuanu	4,448	1,284	28.9	(27.3 - 30.5)
Downtown - Kalihi	4,976	1,796	36.1	(34.4 - 37.8)
Airport - Moanalua	7,153	2,234	31.2	(29.9 - 32.5)
Hickam - Pearl City	7,348	2,126	28.9	(27.7 - 30.1)
Waipahu	9,604	2,726	28.4	(27.3 - 29.5)
'Ewa - Kalaeloa	5,517	1,403	25.4	(24.1 - 26.7)
Kapolei - Makakilo	4,255	1,076	25.3	(23.8 - 26.8)
Mililani	1,300	332	25.5	(22.8 - 28.2)
Wahiawā	5,808	1,938	33.4	(31.9 - 34.9)
Wai'anae	5,375	1,470	27.3	(25.9 - 28.7)
Waialua	1,588	471	29.7	(27.0 - 32.4)
Ko'olauloa	2,233	762	34.1	(31.7 - 36.5)
Ko'olaupoko	9,528	2,586	27.1	(26.1 - 28.1)
Hawai'i County	13,057	5,167	39.6	(38.5 - 40.7)
Hilo	3,554	1,234	34.7	(32.8 - 36.6)
Puna	3,053	1,091	35.7	(33.6 - 37.8)
Ka'ū	486	259	53.3	(46.8 - 59.8)
South Kona	912	534	58.6	(53.6 - 63.6)
North Kona	2,945	1,392	47.3	(44.8 - 49.8)
South Kohala	1,288	417	32.4	(29.3 - 35.5)
North Kohala	284	87	30.6	(24.2 - 37.0)
Hāmakuā	531	151	28.4	(23.9 - 32.9)
Maui County	12,277	4,744	38.6	(37.5 - 39.7)
Hāna	177	81	45.8	(35.8 - 55.8)
Makawao	2,836	1,123	39.6	(37.3 - 41.9)
Wailuku	6,657	2,552	38.3	(36.8 - 39.8)
Lāhainā	1,801	762	42.3	(39.3 - 45.3)
Lāna'i	237	80	33.8	(26.4 - 41.2)
Moloka'i	568	146	25.7	(21.5 - 29.9)
Kaua'i County	5,061	1,019	20.1	(18.9 - 21.3)
Hanalei	511	143	28.0	(23.4 - 32.6)
Kapa'a	1,588	317	20.0	(17.8 - 22.2)
Līhu'e	1,129	184	16.3	(13.9 - 18.7)
Kōloa	1,045	185	17.7	(15.1 - 20.3)
Waimea	781	187	23.9	(20.5 - 27.3)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring



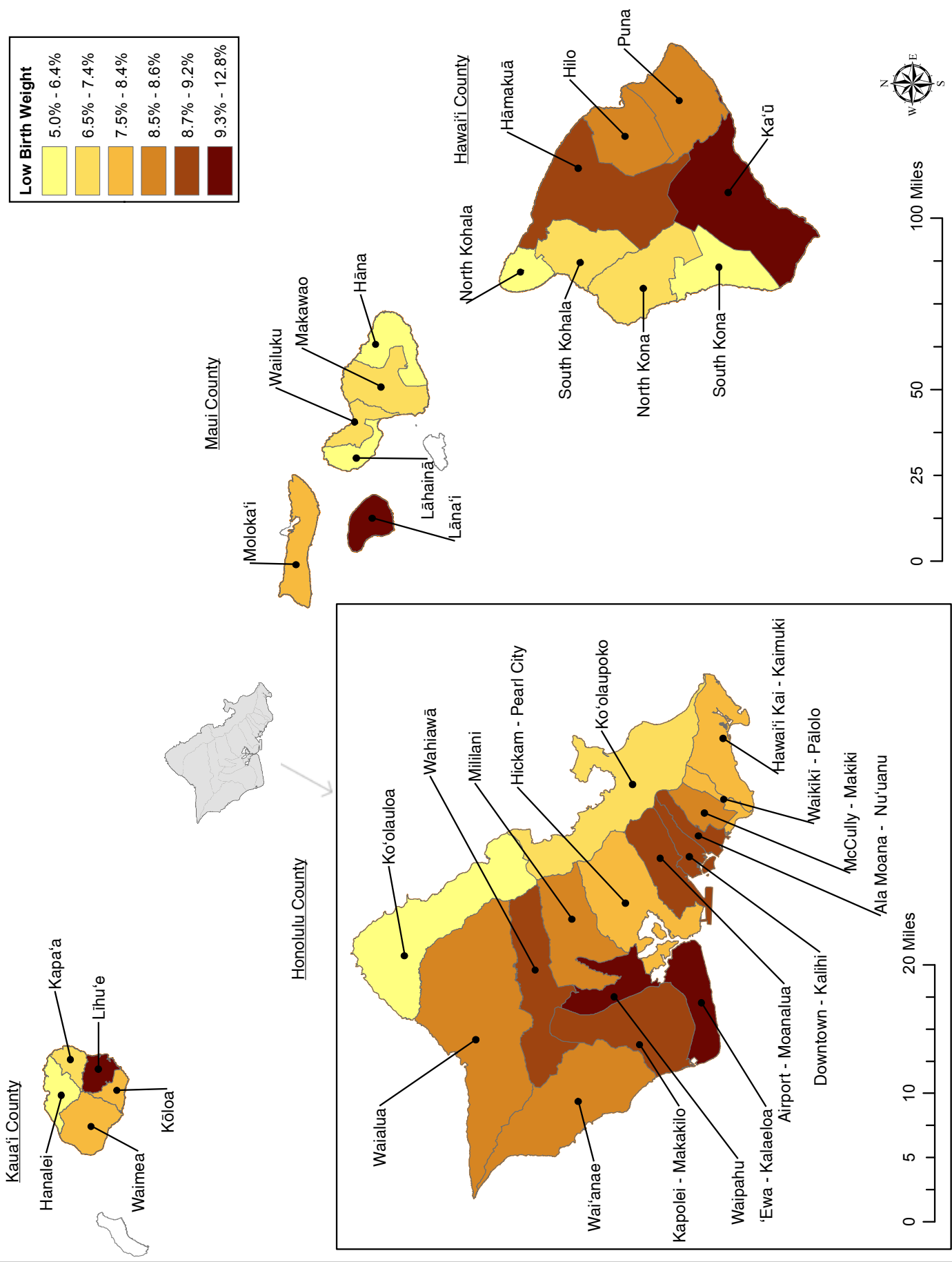
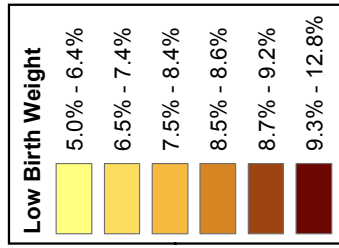
Map 4-3: Births with Less Than Adequate Prenatal Care Utilization by Primary Care Service Area

Table 4-4: Low Birth Weight, 2008-2013

Service Area	Number of Live Births (N)	Number with Low Birth Weight (n)	Percent with Low Birth Weight (%)	95% Confidence Interval
State of Hawai'i	113,856	9,361	8.2	(8.0 - 8.4)
Honolulu County	81,428	6,895	8.5	(8.3 - 8.7)
Hawai'i Kai - Kaimuki	3,397	285	8.4	(7.4 - 9.4)
Waikiki - Pālolo	3,113	239	7.7	(6.7 - 8.7)
McCully - Makiki	3,104	264	8.5	(7.5 - 9.5)
Ala Moana - Nu'uuanu	4,692	405	8.6	(7.8 - 9.4)
Downtown - Kalihi	5,313	478	9.0	(8.2 - 9.8)
Airport - Moanalua	7,375	681	9.2	(8.5 - 9.9)
Hickam - Pearl City	7,554	571	7.6	(7.0 - 8.2)
Waipahu	9,976	944	9.5	(8.9 - 10.1)
'Ewa - Kalaeloa	5,675	540	9.5	(8.7 - 10.3)
Kapolei - Makakilo	4,374	380	8.7	(7.8 - 9.6)
Mililani	1,350	114	8.4	(6.9 - 9.9)
Wahiawā	5,955	522	8.8	(8.0 - 9.6)
Wai'anae	5,577	478	8.6	(7.8 - 9.4)
Waialua	1,639	140	8.5	(7.1 - 9.9)
Ko'olauloa	2,335	135	5.8	(4.8 - 6.8)
Ko'olaupoko	9,827	694	7.1	(6.6 - 7.6)
Hawai'i County	14,761	1,160	7.9	(7.4 - 8.4)
Hilo	4,153	353	8.5	(7.6 - 9.4)
Puna	3,612	302	8.4	(7.5 - 9.3)
Ka'ū	524	50	9.5	(6.9 - 12.1)
South Kona	942	60	6.4	(4.8 - 8.0)
North Kona	3,096	221	7.1	(6.2 - 8.0)
South Kohala	1,488	103	6.9	(5.6 - 8.2)
North Kohala	329	17	5.2	
Hāmakuā	612	54	8.8	(6.5 - 11.1)
Maui County	12,386	881	7.1	(6.6 - 7.6)
Hāna	179	9	5.0	
Makawao	2,854	193	6.8	(5.8 - 7.8)
Wailuku	6,670	490	7.3	(6.7 - 7.9)
Lāhainā	1,810	111	6.1	(5.0 - 7.2)
Lāna'i	243	31	12.8	(8.3 - 17.3)
Moloka'i	628	47	7.5	(5.4 - 9.6)
Kaua'i County	5,280	425	8.0	(7.2 - 8.8)
Hanalei	536	29	5.4	(3.4 - 7.4)
Kapa'a	1,661	123	7.4	(6.1 - 8.7)
Līhu'e	1,188	124	10.4	(8.6 - 12.2)
Kōloa	1,085	85	7.8	(6.1 - 9.5)
Waimea	801	64	8.0	(6.0 - 10.0)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring;
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

Notes: No confidence intervals were computed for number of events less than 20. Standardized ratios less than 200 implies that the rates were not significantly higher than those for the State of Hawai'i. See Family Health Outcomes Project (FHOP), *Guidelines for Using Federal Data Templates with Small Numbers* (1997).



Map 4-4: Low Birth Weight by Primary Care Service Area

Table 4-5: Births to Mothers Under 18 Years of Age, 2008-2013

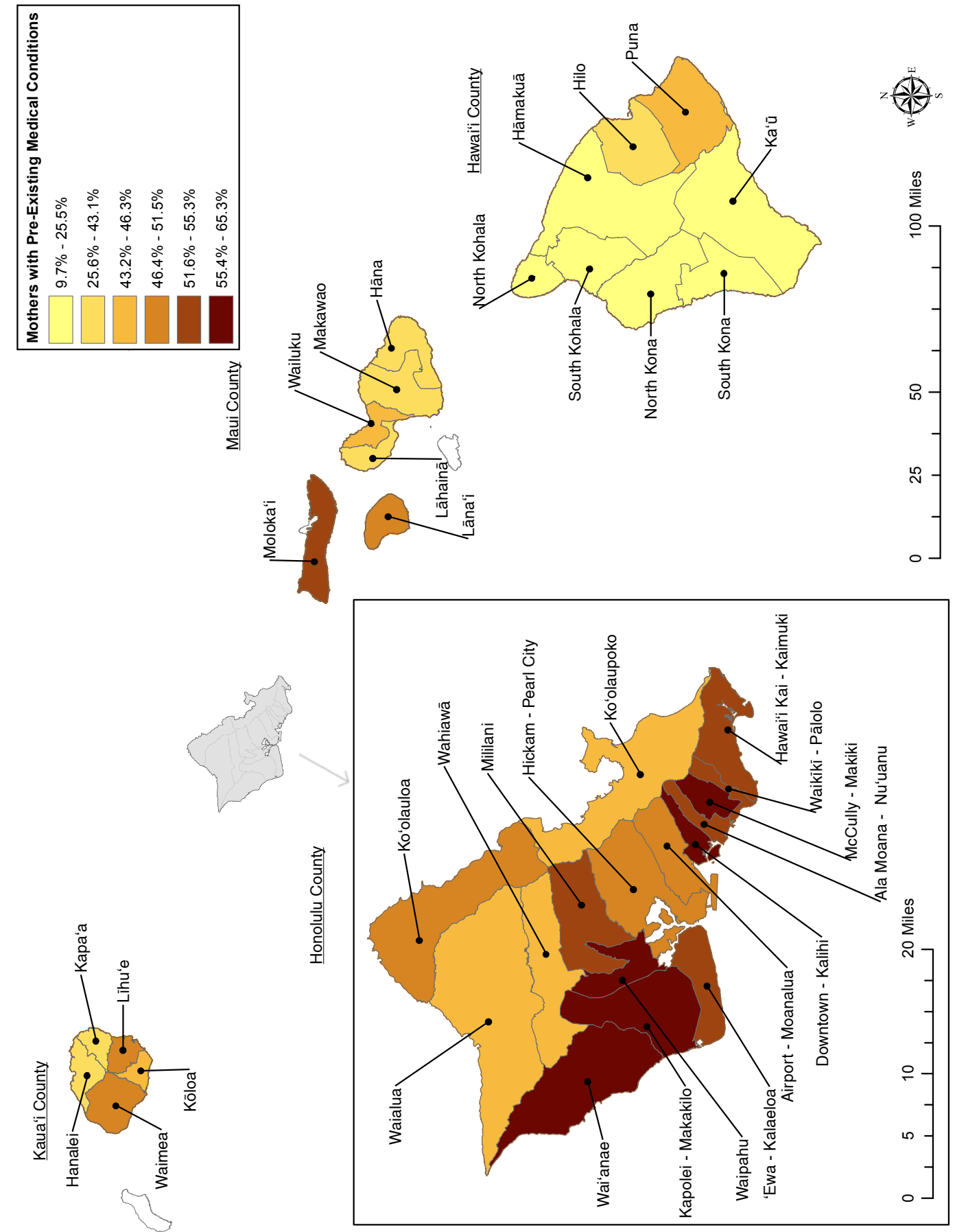
Service Area	Number of Live Births (N)	Number of Births Under 18 Years of Age (n)	Percent of Births Under 18 Years of Age (%)	95% Confidence Interval
State of Hawai'i	113,927	2,068	1.8	(1.7 - 1.9)
Honolulu County	81,485	1,261	1.5	(1.4 - 1.6)
Hawai'i Kai - Kaimuki	3,397	11	0.3	
Waikiki - Pālolo	3,116	20	0.6	(0.3 - 0.9)
McCully - Makiki	3,107	29	0.9	(0.6 - 1.2)
Ala Moana - Nu'uuanu	4,694	49	1.0	(0.7 - 1.3)
Downtown - Kalihi	5,316	107	2.0	(1.6 - 2.4)
Airport - Moanalua	7,384	92	1.2	(1.0 - 1.4)
Hickam - Pearl City	7,559	93	1.2	(1.0 - 1.4)
Waipahu	9,987	163	1.6	(1.4 - 1.8)
'Ewa - Kalaeloa	5,680	98	1.7	(1.4 - 2.0)
Kapolei - Makakilo	4,376	93	2.1	(1.7 - 2.5)
Mililani	1,351	16	1.2	
Wahiawā	5,958	80	1.3	(1.0 - 1.6)
Wai'anae	5,580	256	4.6	(4.0 - 5.2)
Waialua	1,641	19	1.2	
Ko'olauloa	2,336	33	1.4	(0.9 - 1.9)
Ko'olaupoko	9,830	102	1.0	(0.8 - 1.2)
Hawai'i County	14,766	398	2.7	(2.4 - 3.0)
Hilo	4,154	95	2.3	(1.8 - 2.8)
Puna	3,615	107	3.0	(2.4 - 3.6)
Ka'ū	524	25	4.8	(2.9 - 6.7)
South Kona	942	29	3.1	(2.0 - 4.2)
North Kona	3,096	92	3.0	(2.4 - 3.6)
South Kohala	1,488	32	2.2	(1.4 - 3.0)
North Kohala	330	<5	NR	
Hāmakuā	612	13	2.1	
Maui County	12,390	277	2.2	(1.9 - 2.5)
Hāna	179	6	3.4	
Makawao	2,854	45	1.6	(1.1 - 2.1)
Wailuku	6,673	163	2.4	(2.0 - 2.8)
Lāhainā	1,811	33	1.8	(1.2 - 2.4)
Lāna'i	243	5	2.1	
Moloka'i	628	25	4.0	(2.4 - 5.6)
Kaua'i County	5,285	132	2.5	(2.1 - 2.9)
Hanalei	536	8	1.5	
Kapa'a	1,662	38	2.3	(1.6 - 3.0)
Līhu'e	1,190	36	3.0	(2.0 - 4.0)
Kōloa	1,085	22	2.0	(1.2 - 2.8)
Waimea	803	28	3.5	(2.2 - 4.8)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring

Table 4-6: Births to Mothers with Pre-Existing Medical Conditions, 2008-2013

Service Area	Number of Live Births (N)	Number of Mothers with Pre-Existing Medical Conditions (n)	Percent of Mothers with Pre-Existing Medical Conditions (%)	95% Confidence Interval
State of Hawai'i	113,876	55,165	48.4	(48.0 - 48.8)
Honolulu County	81,456	43,078	52.9	(52.4 - 53.4)
Hawai'i Kai - Kaimuki	3,395	1,796	52.9	(50.5 - 55.3)
Waikiki - Pālolo	3,115	1,673	53.7	(51.1 - 56.3)
McCully - Makiki	3,107	1,738	55.9	(53.3 - 58.5)
Ala Moana - Nu'uuanu	4,693	2,594	55.3	(53.2 - 57.4)
Downtown - Kalihi	5,315	3,190	60.0	(57.9 - 62.1)
Airport - Moanalua	7,383	3,595	48.7	(47.1 - 50.3)
Hickam - Pearl City	7,558	3,858	51.0	(49.4 - 52.6)
Waipahu	9,981	5,579	55.9	(54.4 - 57.4)
'Ewa - Kalaeloa	5,678	3,046	53.6	(51.7 - 55.5)
Kapolei - Makakilo	4,373	2,424	55.4	(53.2 - 57.6)
Mililani	1,351	738	54.6	(50.7 - 58.5)
Wahiawā	5,955	2,646	44.4	(42.7 - 46.1)
Wai'anae	5,578	3,641	65.3	(63.2 - 67.4)
Waialua	1,641	715	43.6	(40.4 - 46.8)
Ko'olauloa	2,333	1,201	51.5	(48.6 - 54.4)
Ko'olaupoko	9,827	4,552	46.3	(45.0 - 47.6)
Hawai'i County	14,759	4,492	30.4	(29.5 - 31.3)
Hilo	4,153	1,789	43.1	(41.1 - 45.1)
Puna	3,615	1,593	44.1	(41.9 - 46.3)
Ka'ū	524	131	25.0	(20.7 - 29.3)
South Kona	940	91	9.7	(7.7 - 11.7)
North Kona	3,095	360	11.6	(10.4 - 12.8)
South Kohala	1,485	308	20.7	(18.4 - 23.0)
North Kohala	330	62	18.8	(14.1 - 23.5)
Hāmakuā	612	156	25.5	(21.5 - 29.5)
Maui County	12,382	5,342	43.1	(41.9 - 44.3)
Hāna	179	61	34.1	(25.5 - 42.7)
Makawao	2,853	1,153	40.4	(38.1 - 42.7)
Wailuku	6,667	2,908	43.6	(42.0 - 45.2)
Lāhainā	1,811	756	41.7	(38.7 - 44.7)
Lāna'i	243	118	48.6	(39.8 - 57.4)
Moloka'i	627	345	55.0	(49.2 - 60.8)
Kaua'i County	5,278	2,252	42.7	(40.9 - 44.5)
Hanalei	534	185	34.6	(29.6 - 39.6)
Kapa'a	1,661	630	37.9	(34.9 - 40.9)
Līhu'e	1,189	560	47.1	(43.2 - 51.0)
Kōloa	1,084	487	44.9	(40.9 - 48.9)
Waimea	801	385	48.1	(43.3 - 52.9)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring



Map 4-6: Births to Mothers with Pre-Existing Medical Conditions by Primary Care Service Area

CHAPTER 5: MORBIDITY

This section of the Data Book builds on the success of the developmental indicators used in previous editions. To impact population level changes in rates of chronic disease and the leading causes of death, the primary prevention of chronic disease should start early in life. Morbidity refers to the state of having disease or being unhealthful and can refer to risk factors such as obesity and smoking which are associated with long term disability and chronic disease. Regular physical exams and health screening tests are an important part of preventive health care where co-morbidities can be addressed through lifestyle and medical interventions. Preventive health care can help ensure that common, serious diseases and conditions are detected and treated early. The prevention of risk factors and their early identification and control can contribute to improved long term health and decrease the impact of chronic disease. The morbidity indicators based on adult risk factors, using aggregated data from the 2011-2014 Behavioral Risk Factor Surveillance System (BRFSS) unless noted, are defined on the next page.

MORBIDITY INDICATORS

Adults Who Are Obese = Self-reported height and weight measurements consistent with a calculated Body Mass Index (BMI) of 30.0 or greater.

Adults Who Smoke = Self-reported intake of current smoking and at least 100 cigarettes in a lifetime

Adults Who Are Heavy Drinkers = Self-reported intake of greater than one drink per day on average in the past 30 days

Adults with No Physical Activity = Self-report of not participating in any physical activity or exercises during the past month outside of those occurring in activities at work

Adults with Diabetes = Ever told had diabetes by a health care provider

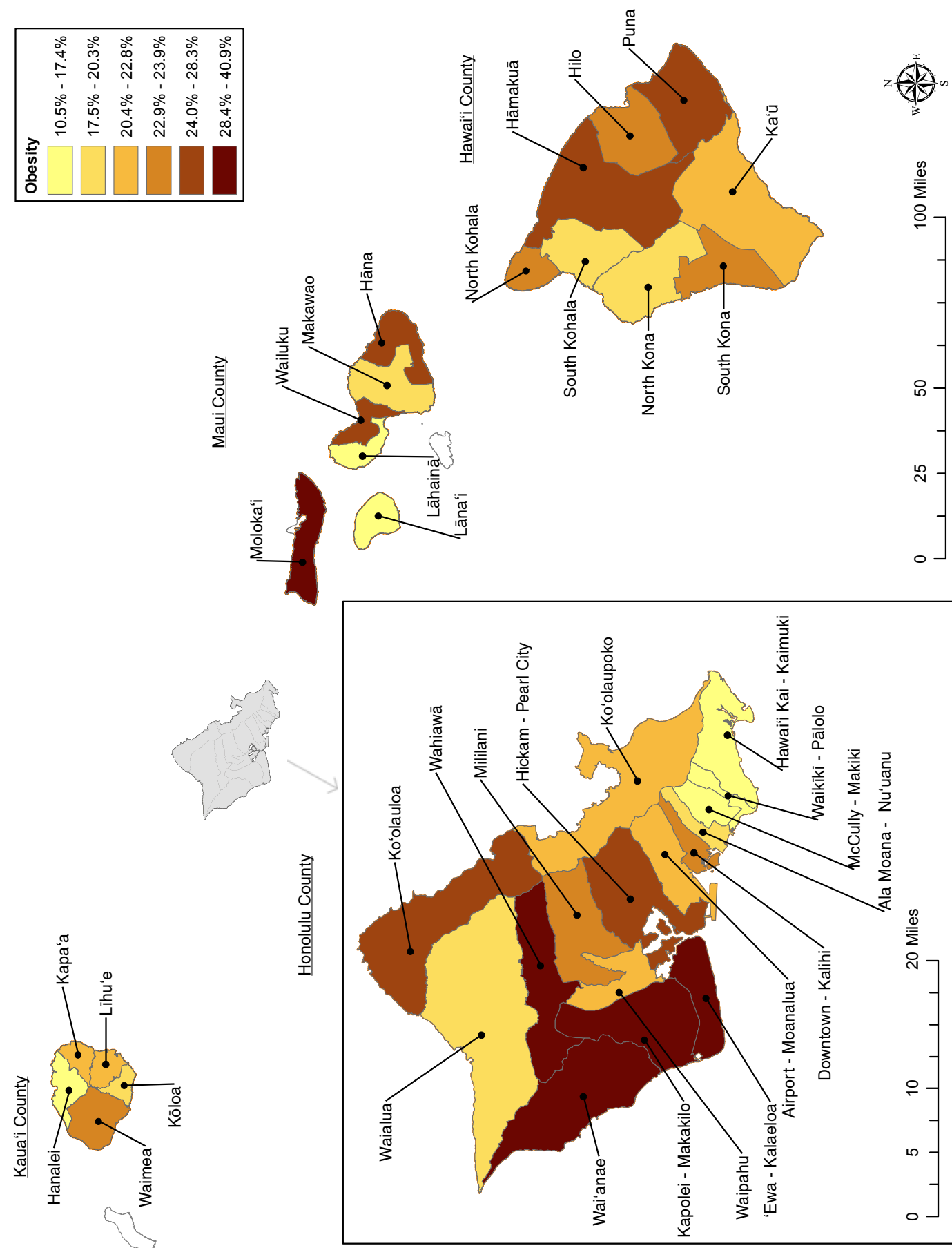
Adults with High Blood Pressure* = Ever told had high blood pressure by a health care provider

* Data from 2011, 2013

Table 5-1: Adults Who Are Obese, 2011-2014

Service Area	Annual Adult Population (N)	Number who are Obese (n)	Percent who are Obese (%)	95% Confidence Interval
State of Hawai'i	1,042,600	233,000	22.4	(21.6 - 23.1)
Honolulu County	728,500	162,700	22.3	(21.4 - 23.3)
Hawai'i Kai - Kaimuki	63,000	7,900	12.6	(10.4 - 15.1)
Waikiki - Pālolo	30,900	4,500	14.4	(11.3 - 18.2)
McCully - Makiki	45,400	6,400	14.2	(11.7 - 17.1)
Ala Moana - Nu'uuanu	49,400	8,900	18.1	(15.4 - 21.1)
Downtown - Kalihi	43,400	9,900	22.9	(19.0 - 27.2)
Airport - Moanalua	42,000	8,600	20.4	(16.9 - 24.4)
Hickam - Pearl City	74,600	18,500	24.8	(21.9 - 28.0)
Waipahu	53,900	11,900	22.0	(18.4 - 26.0)
'Ewa - Kalaeloa	41,100	11,900	29.0	(24.5 - 33.9)
Kapolei - Makakilo	38,500	11,900	30.9	(26.1 - 36.2)
Mililani	44,300	10,400	23.6	(19.8 - 27.9)
Wahiawā	23,000	6,600	28.7	(22.4 - 36.0)
Wai'anae	37,000	15,100	40.9	(35.8 - 46.1)
Waialua	10,100	1,800	18.2	(12.3 - 26.1)
Ko'olauloa	14,700	4,000	27.1	(21.2 - 34.1)
Ko'olaupoko	103,700	21,900	21.1	(18.9 - 23.6)
Hawai'i County	144,200	33,000	22.9	(21.4 - 24.5)
Hilo	43,100	10,300	23.9	(21.2 - 26.9)
Puna	24,900	6,600	26.3	(22.0 - 31.1)
Ka'ū	15,800	3,400	21.7	(17.3 - 26.7)
South Kona	10,500	2,500	23.9	(18.7 - 30.1)
North Kona	24,700	4,800	19.3	(16.1 - 23.1)
South Kohala	11,300	2,200	19.7	(15.7 - 24.5)
North Kohala	5,000	1,200	23.6	(16.2 - 33.1)
Hāmakuā	7,700	1,900	24.6	(18.6 - 31.8)
Maui County	118,100	27,100	22.9	(21.3 - 24.6)
Hāna	1,800	500	28.3	(14.9 - 47.0)
Makawao	34,700	7,000	20.3	(17.6 - 23.3)
Wailuku	57,100	14,200	25.0	(22.5 - 27.6)
Lāhainā	13,400	2,300	17.4	(13.5 - 22.1)
Lāna'i	2,700	500	16.7	(12.2 - 22.4)
Moloka'i	7,100	2,000	28.5	(23.3 - 34.4)
Kaua'i County	51,800	10,300	19.8	(17.9 - 21.9)
Hanalei	7,100	700	10.5	(7.4 - 14.8)
Kapa'a	14,700	3,100	21.2	(17.6 - 25.4)
Līhu'e	10,800	2,400	22.8	(18.3 - 27.9)
Kōloa	11,600	2,300	19.6	(15.8 - 24.2)
Waimea	6,800	1,600	23.0	(12.1 - 22.5)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)



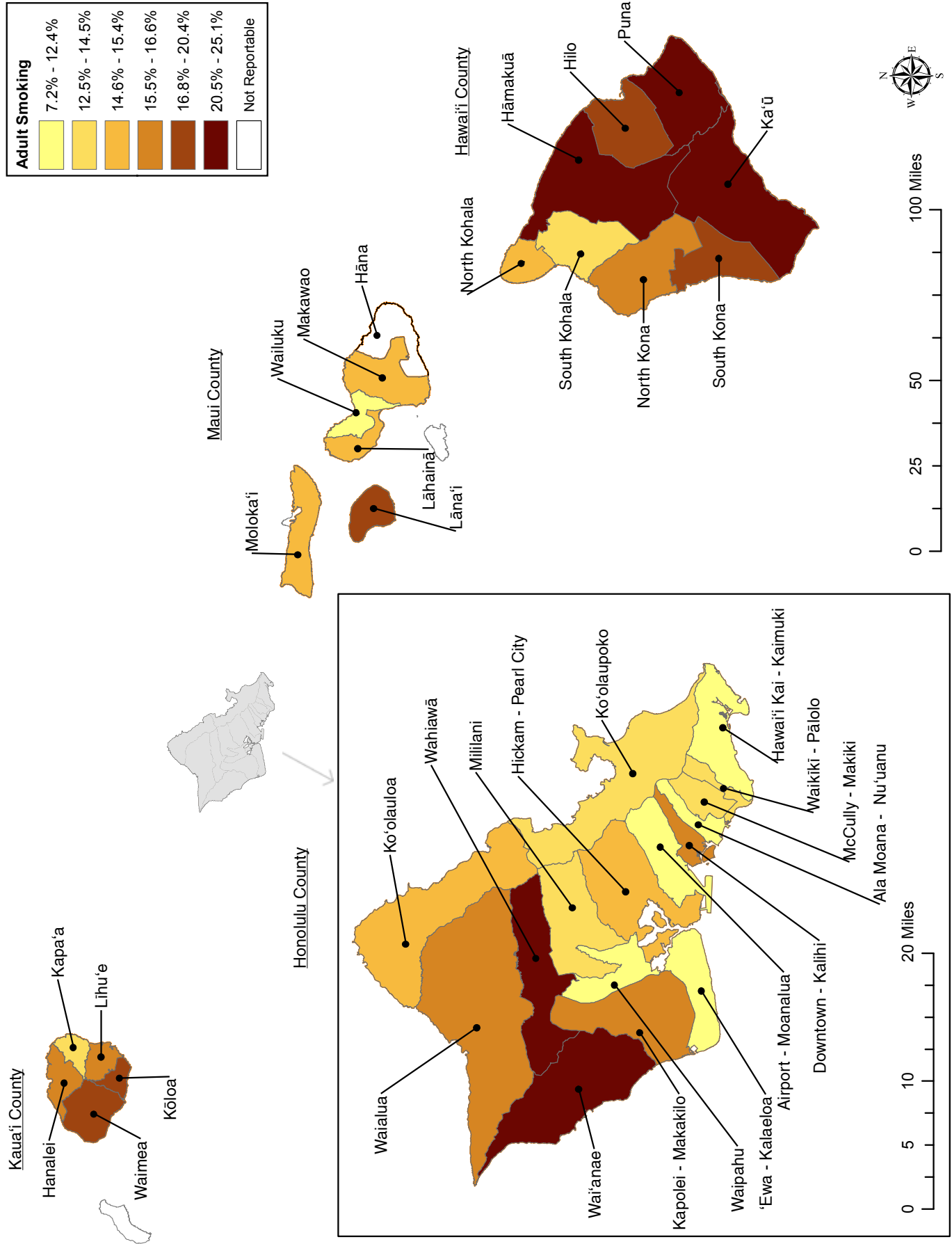
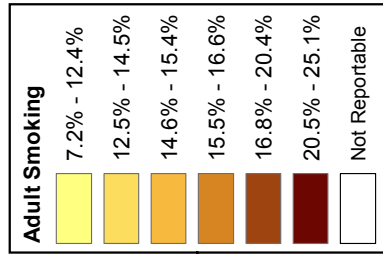
Map 5-1: Adults Who Are Obese by Primary Care Service Area

Table 5-2: Adults Who Smoke, 2011-2014

Service Area	Annual Adult Population (N)	Number who Smoke (n)	Percent who Smoke (%)	95% Confidence Interval
State of Hawai'i	1,056,000	155,300	14.7	(14.1 - 15.4)
Honolulu County	738,800	103,500	14.0	(13.2 - 14.8)
Hawai'i Kai - Kaimuki	64,400	4,700	7.2	(5.6 - 9.3)
Waikiki - Pālolo	31,200	4,200	13.4	(10.2 - 17.3)
McCully - Makiki	47,100	6,800	14.4	(11.8 - 17.4)
Ala Moana - Nu'uuanu	50,100	6,200	12.4	(10.1 - 15.2)
Downtown - Kalihi	43,300	7,000	16.0	(12.9 - 19.8)
Airport - Moanalua	42,900	4,700	11.0	(8.3 - 14.4)
Hickam - Pearl City	75,600	11,300	14.9	(12.4 - 17.8)
Waipahu	54,400	5,600	10.2	(8.0 - 13.0)
'Ewa - Kalaeloa	42,600	5,000	11.6	(8.7 - 15.4)
Kapolei - Makakilo	39,300	6,500	16.7	(13.0 - 21.1)
Mililani	43,900	6,000	13.7	(10.6 - 17.6)
Wahiawā	23,300	5,500	23.6	(18.4 - 29.8)
Wai'anae	37,400	9,400	25.2	(20.9 - 29.9)
Waialua	10,200	1,700	16.6	(10.5 - 25.3)
Ko'olauloa	15,200	2,300	15.3	(10.0 - 22.8)
Ko'olaupoko	104,600	14,300	13.7	(11.7 - 15.9)
Hawai'i County	145,700	26,700	18.3	(16.9 - 19.9)
Hilo	43,900	7,600	17.4	(15.1 - 20.0)
Puna	25,200	5,600	22.3	(18.0 - 27.2)
Ka'ū	15,800	3,400	21.7	(17.3 - 26.8)
South Kona	10,600	2,100	20.1	(15.1 - 26.2)
North Kona	24,800	3,900	15.6	(12.6 - 19.2)
South Kohala	11,600	1,500	12.7	(9.4 - 16.9)
North Kohala	5,000	700	14.8	(9.3 - 22.6)
Hāmakuā	7,500	1,600	21.8	(15.5 - 29.8)
Maui County	119,500	16,700	14.0	(12.6 - 15.5)
Hāna	1,800	NR	NR	
Makawao	35,100	5,400	15.4	(12.8 - 18.6)
Wailuku	57,700	7,200	12.5	(10.7 - 14.4)
Lāhainā	13,800	2,100	15.4	(11.2 - 20.8)
Lāna'i	2,700	600	20.4	(11.9 - 32.5)
Moloka'i	7,100	1,100	15.4	(10.8 - 21.4)
Kaua'i County	52,100	8,400	16.1	(13.9 - 18.6)
Hanalei	7,100	1,200	16.4	(9.2 - 27.7)
Kapa'a	15,000	2,200	14.5	(11.5 - 18.1)
Līhu'e	10,700	1,700	15.6	(11.7 - 20.6)
Kōloa	11,700	2,100	18.1	(13.2 - 24.4)
Waimea	6,900	1,200	16.7	(12.1 - 22.5)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



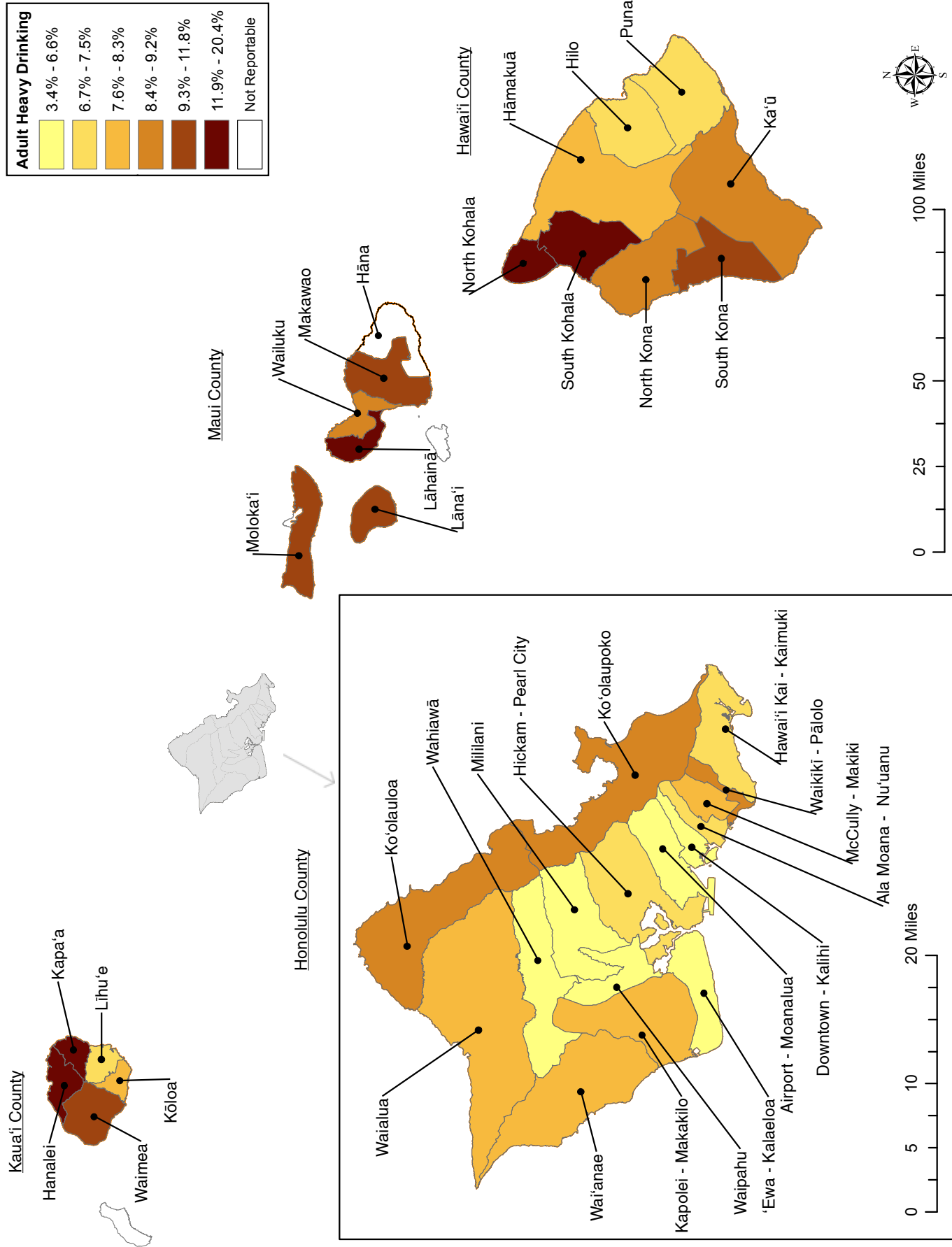
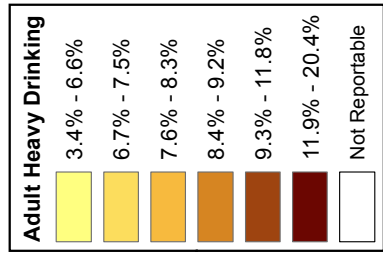
Map 5-2: Adults Who Smoke by Primary Care Service Area

Table 5-3: Adults Who are Heavy Drinkers, 2011-2014

Service Area	Annual Adult Population (N)	Number who are Heavy Drinkers (n)	Percent who are Heavy Drinkers (%)	95% Confidence Interval
State of Hawai'i	1,033,100	77,900	7.5	(7.1 - 8.0)
Honolulu County	722,900	48,200	6.7	(6.1 - 7.2)
Hawai'i Kai - Kaimuki	63,400	4,700	7.5	(5.8 - 9.5)
Waikiki - Pālolo	29,700	2,700	9.1	(6.8 - 12.1)
McCully - Makiki	45,600	3,600	7.9	(6.1 - 10.3)
Ala Moana - Nu'uuanu	49,300	3,400	7.0	(5.1 - 9.4)
Downtown - Kalihi	42,800	1,500	3.4	(2.4 - 4.9)
Airport - Moanalua	41,800	1,800	4.4	(2.8 - 6.6)
Hickam - Pearl City	73,700	5,000	6.8	(5.2 - 8.8)
Waipahu	53,000	2,400	4.6	(3.2 - 6.4)
'Ewa - Kalaeloa	41,900	2,800	6.6	(4.5 - 9.6)
Kapolei - Makakilo	38,800	3,100	8.1	(5.3 - 12.0)
Mililani	43,400	1,500	3.4	(2.3 - 5.0)
Wahiawā	22,800	900	4.0	(2.2 - 7.4)
Wai'anāe	36,200	3,000	8.2	(5.5 - 12.1)
Waiālua	10,000	800	8.2	(4.5 - 14.5)
Ko'olauloa	14,800	1,400	9.2	(5.4 - 15.1)
Ko'olaupoko	103,500	8,700	8.4	(7.0 - 10.1)
Hawai'i County	142,600	12,800	9.0	(8.0 - 10.1)
Hilo	43,100	3,100	7.3	(5.9 - 9.0)
Puna	24,700	1,700	7.0	(4.9 - 9.9)
Ka'ū	15,300	1,300	8.8	(6.0 - 12.6)
South Kona	10,400	1,100	10.5	(7.2 - 15.0)
North Kona	24,200	2,200	9.0	(7.1 - 11.3)
South Kohala	11,300	1,600	14.2	(10.6 - 18.7)
North Kohala	4,900	1,000	20.4	(12.4 - 31.6)
Hāmakuā	7,500	600	8.3	(4.4 - 15.0)
Maui County	117,300	11,800	10.1	(9.0 - 11.3)
Hāna	1,800	NR	NR	
Makawao	34,800	3,500	10.0	(8.1 - 12.3)
Wailuku	56,600	5,100	9.0	(7.4 - 10.8)
Lāhainā	13,400	1,700	12.8	(10.0 - 16.2)
Lāna'i	2,700	300	10.7	(6.4 - 17.4)
Moloka'i	6,800	800	11.8	(8.1 - 16.7)
Kaua'i County	50,300	5,100	10.1	(8.4 - 12.1)
Hanalei	6,700	1,000	15.5	(8.6 - 26.3)
Kapa'a	14,400	1,700	11.9	(9.2 - 15.1)
Līhu'e	10,500	800	7.4	(4.7 - 11.5)
Kōloa	11,300	900	8.2	(6.1 - 10.9)
Waimea	6,700	600	9.4	(7.5 - 14.8)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



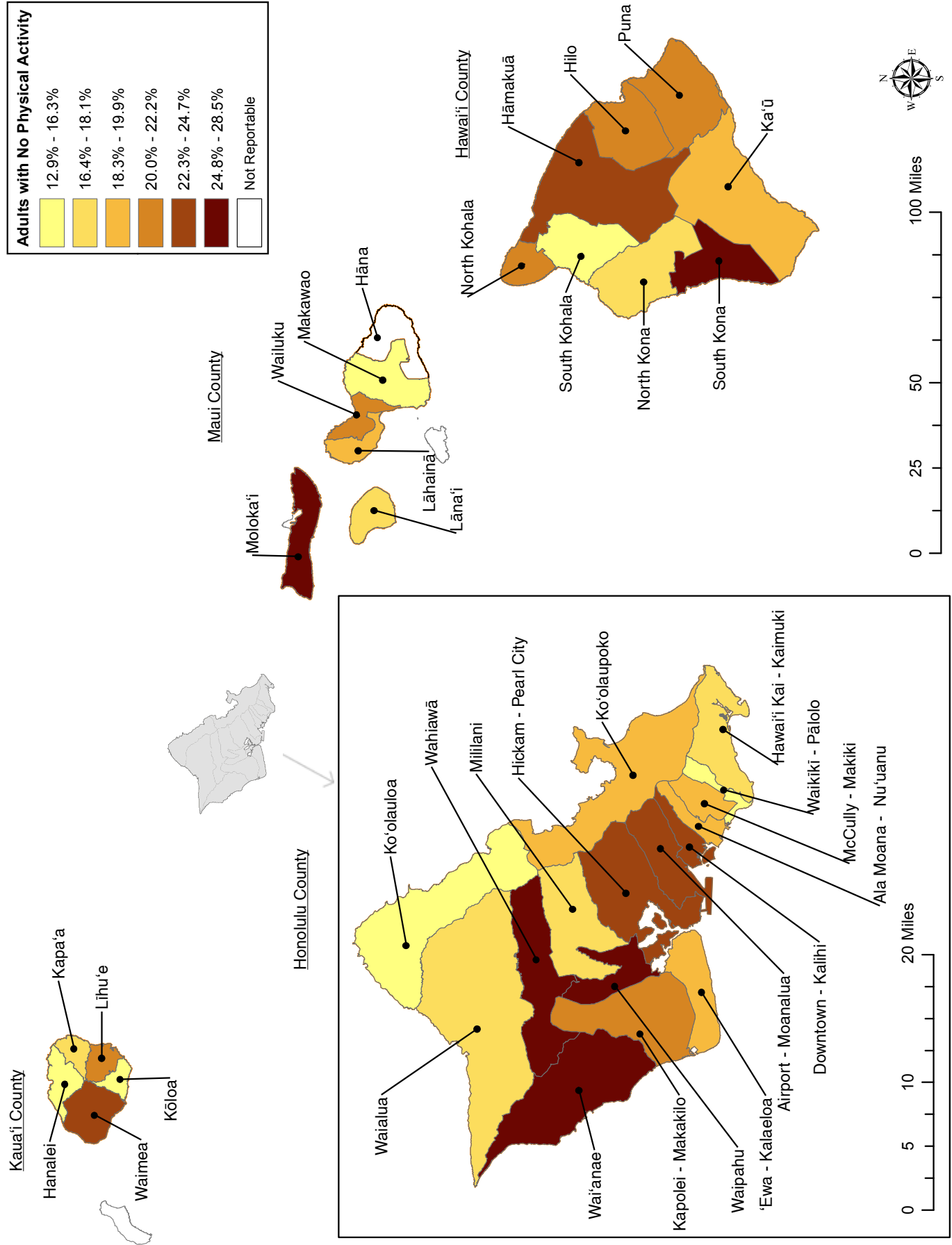
Map 5-3: Adults Who are Heavy Drinkers by Primary Care Service Area

Table 5-4: Adults with No Physical Activity, 2011-2014

Service Area	Annual Adult Population (N)	Number with No Physical Activity (n)	Percent with No Physical Activity (%)	95% Confidence Interval
State of Hawai'i	1,056,800	215,800	20.4	(19.7 - 21.1)
Honolulu County	740,000	153,200	20.7	(19.8 - 21.6)
Hawai'i Kai - Kaimuki	64,000	10,900	17.1	(14.5 - 19.9)
Waikiki - Pālolo	30,500	4,800	15.7	(12.3 - 19.8)
McCully - Makiki	46,400	8,600	18.6	(16.0 - 21.6)
Ala Moana - Nu'uuanu	49,900	9,700	19.3	(16.6 - 22.4)
Downtown - Kalihi	43,500	10,700	24.7	(21.0 - 28.8)
Airport - Moanalua	42,600	9,800	23.0	(19.2 - 27.3)
Hickam - Pearl City	76,100	17,300	22.8	(19.9 - 26.0)
Waipahu	54,000	15,400	28.5	(24.4 - 33.0)
'Ewa - Kalaeloa	42,300	8,200	19.3	(15.5 - 23.8)
Kapolei - Makakilo	38,600	8,500	22.2	(17.8 - 27.3)
Mililani	44,400	7,500	16.8	(13.6 - 20.7)
Wahiawā	23,300	5,900	25.1	(20.0 - 31.1)
Wai'anae	37,300	9,300	24.8	(20.9 - 29.3)
Waialua	10,300	1,800	17.5	(10.6 - 27.6)
Ko'olauloa	15,100	2,500	16.3	(11.3 - 22.9)
Ko'olaupoko	103,600	18,900	18.2	(15.9 - 20.8)
Hawai'i County	145,700	29,900	20.5	(19.1 - 22.1)
Hilo	43,500	9,600	22.0	(19.5 - 24.7)
Puna	25,100	5,400	21.6	(17.7 - 26.0)
Ka'ū	15,800	3,100	19.9	(15.4 - 25.3)
South Kona	10,500	2,600	25.2	(19.9 - 31.4)
North Kona	24,800	4,300	17.5	(14.5 - 21.1)
South Kohala	11,400	1,800	16.0	(11.7 - 21.5)
North Kohala	5,000	1,000	20.3	(13.8 - 29.0)
Hāmakuā	7,700	1,700	22.5	(16.8 - 29.5)
Maui County	119,300	23,100	19.3	(17.8 - 21.0)
Hāna	1,800	NR	NR	
Makawao	34,700	5,400	15.6	(13.2 - 18.4)
Wailuku	57,400	11,800	20.6	(18.2 - 23.2)
Lāhainā	13,700	2,600	19.2	(15.3 - 24.0)
Lāna'i	2,700	500	17.3	(12.8 - 23.1)
Moloka'i	6,900	1,900	27.3	(21.5 - 34.1)
Kaua'i County	51,800	9,600	18.6	(16.7 - 20.6)
Hanalei	7,000	900	12.9	(8.6 - 18.8)
Kapa'a	14,700	2,700	18.2	(14.9 - 22.0)
Līhu'e	10,700	2,300	21.7	(17.5 - 26.6)
Kōloa	11,500	1,700	15.1	(11.7 - 19.3)
Waimea	6,900	1,700	24.7	(12.1 - 22.5)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



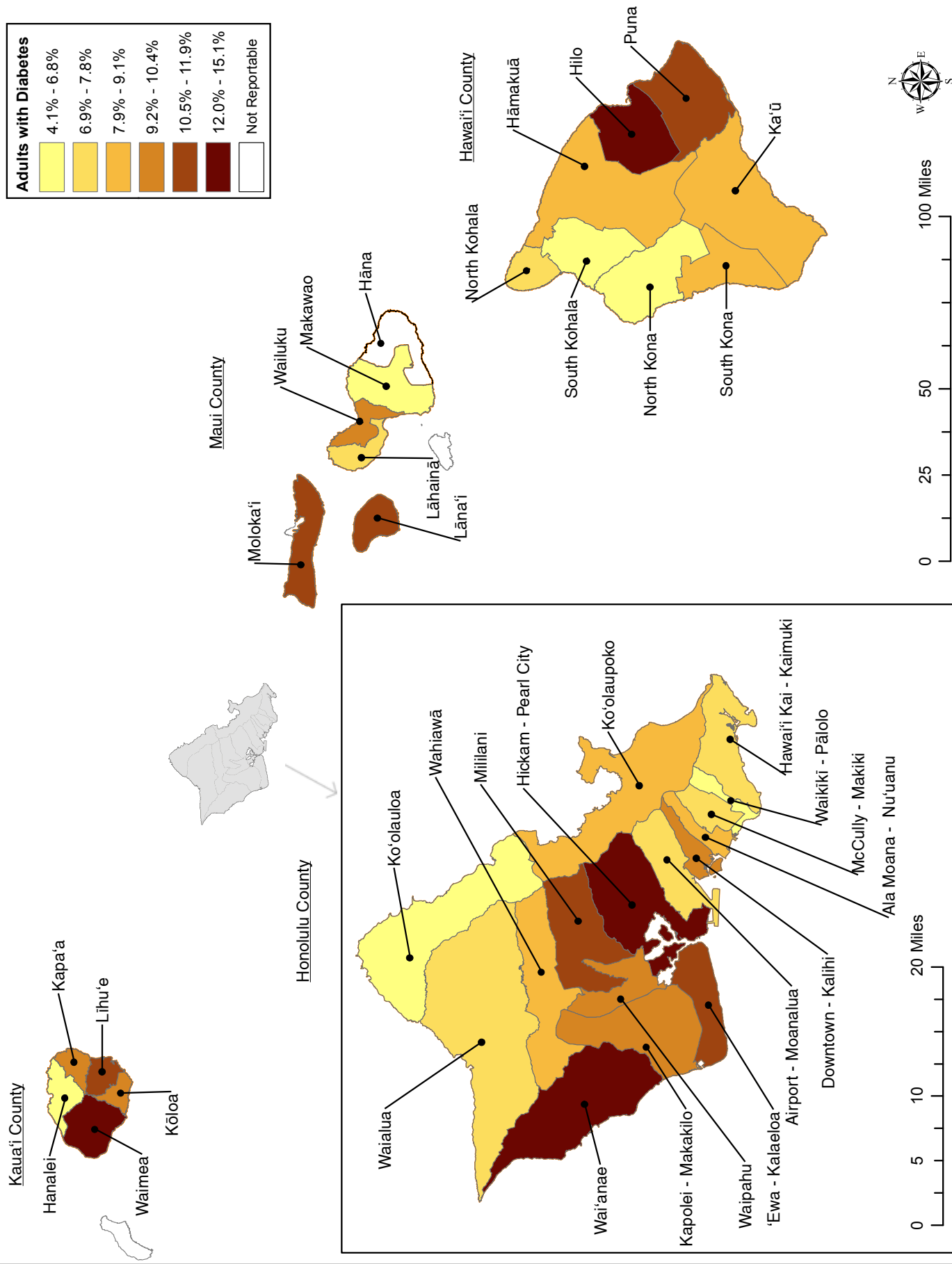
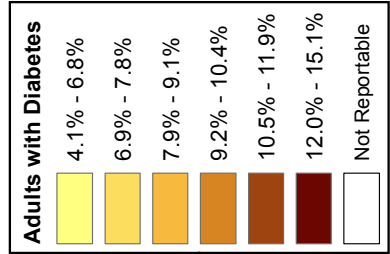
Map 5-4: Adults with No Physical Activity by Primary Care Service Area

Table 5-5: Adults with Diabetes, 2011-2014

Service Area	Annual Adult Population (N)	Number with Diabetes (n)	Percent with Diabetes (%)	95% Confidence Interval
State of Hawai'i	1,081,500	102,500	9.5	(9.0 - 10.0)
Honolulu County	757,900	72,800	9.6	(9.0 - 10.3)
Hawai'i Kai - Kaimuki	65,300	5,100	7.8	(6.3 - 9.6)
Waikiki - Pālolo	31,600	1,800	5.8	(4.2 - 8.1)
McCully - Makiki	47,800	3,600	7.6	(5.9 - 9.6)
Ala Moana - Nu'uuanu	51,100	4,100	8.0	(6.5 - 9.8)
Downtown - Kalihi	44,500	4,500	10.0	(7.9 - 12.6)
Airport - Moanalua	43,700	3,400	7.7	(5.7 - 10.4)
Hickam - Pearl City	77,800	9,600	12.3	(10.2 - 14.7)
Waipahu	55,000	5,700	10.3	(7.8 - 13.4)
'Ewa - Kalaeloa	43,200	5,000	11.5	(8.6 - 15.3)
Kapolei - Makakilo	39,600	4,100	10.4	(7.8 - 13.7)
Mililani	45,300	5,400	11.9	(9.2 - 15.2)
Wahiawā	24,100	2,200	9.0	(5.8 - 13.6)
Wai'anae	38,000	5,700	15.1	(11.7 - 19.1)
Waialua	10,400	700	6.9	(2.5 - 17.7)
Ko'olauloa	15,600	1,000	6.3	(3.8 - 10.2)
Ko'olaupoko	105,900	9,700	9.1	(7.7 - 10.8)
Hawai'i County	148,300	14,100	9.5	(8.5 - 10.6)
Hilo	44,300	5,600	12.6	(10.6 - 15.0)
Puna	25,500	2,700	10.5	(7.6 - 14.3)
Ka'ū	16,100	1,500	9.0	(6.6 - 12.2)
South Kona	10,700	900	8.0	(5.3 - 11.9)
North Kona	25,200	1,600	6.2	(4.6 - 8.2)
South Kohala	11,700	800	6.8	(4.7 - 9.8)
North Kohala	5,000	400	7.5	(4.4 - 12.3)
Hāmakuā	7,800	700	9.0	(5.3 - 14.9)
Maui County	122,100	10,600	8.6	(7.6 - 9.8)
Hāna	1,800	NR	NR	
Makawao	35,500	2,300	6.5	(5.1 - 8.4)
Wailuku	58,800	5,500	9.4	(7.9 - 11.3)
Lāhainā	14,000	1,100	7.6	(5.1 - 11.1)
Lāna'i	2,700	300	10.9	(7.8 - 14.9)
Moloka'i	7,200	900	11.9	(8.5 - 16.5)
Kaua'i County	53,100	5,100	9.5	(8.2 - 11.0)
Hanalei	7,200	300	4.1	(2.2 - 7.4)
Kapa'a	15,200	1,400	9.4	(7.1 - 12.4)
Līhu'e	10,900	1,300	11.6	(8.9 - 14.9)
Kōloa	11,800	1,100	9.3	(6.8 - 12.7)
Waimea	7,000	900	12.6	(8.6 - 18.1)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



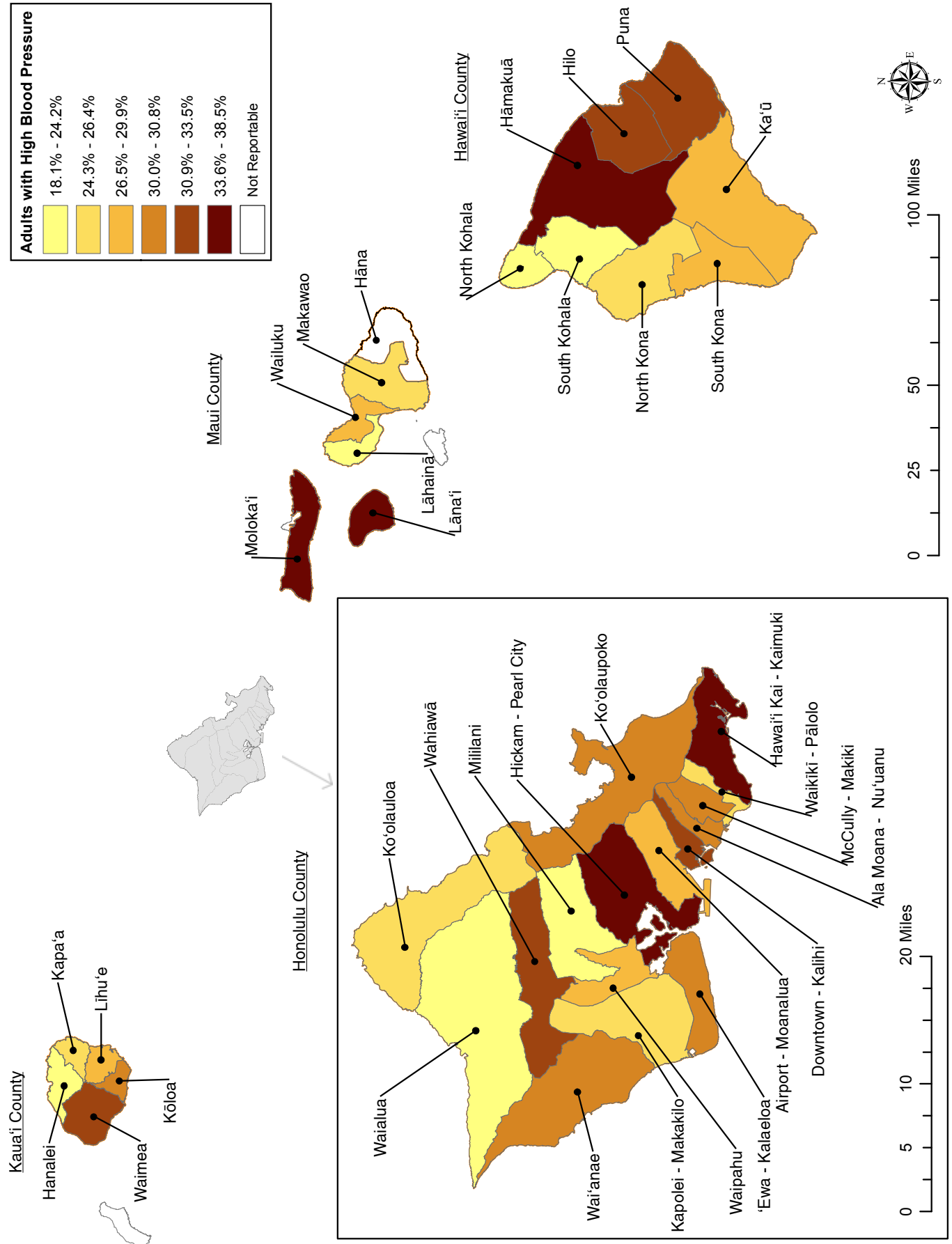
Map 5-5: Adults with Diabetes by Primary Care Service Area

Table 5-6: Adults with High Blood Pressure, 2011 and 2013

Service Area	Annual Adult Population (N)	Number with High Blood Pressure (n)	Percent with High Blood Pressure (%)	95% Confidence Interval
State of Hawai'i	1,070,500	313,900	29.3	(28.3 - 30.4)
Honolulu County	749,900	223,100	29.8	(28.4 - 31.1)
Hawai'i Kai - Kaimuki	63,200	21,700	34.3	(30.1 - 38.9)
Waikiki - Pālolo	32,500	8,600	26.4	(21.2 - 32.4)
McCully - Makiki	49,200	14,700	30.0	(25.6 - 34.7)
Ala Moana - Nu'uuanu	48,400	14,800	30.6	(26.4 - 35.1)
Downtown - Kalihi	43,800	13,700	31.3	(26.1 - 37.0)
Airport - Moanalua	47,300	13,500	28.6	(23.5 - 34.4)
Hickam - Pearl City	76,800	26,900	35.0	(30.6 - 39.7)
Waipahu	58,000	17,300	29.9	(24.6 - 35.8)
'Ewa - Kalaeloa	40,900	12,500	30.6	(24.4 - 37.5)
Kapolei - Makakilo	42,100	10,300	24.5	(19.1 - 30.8)
Mililani	45,600	10,500	22.9	(18.5 - 28.1)
Wahiawā	24,200	8,100	33.5	(25.7 - 42.4)
Wai'anae	34,200	10,300	30.2	(24.3 - 36.7)
Waialua	9,900	1,800	18.1	(10.7 - 28.8)
Ko'olauloa	15,200	4,000	26.4	(17.5 - 37.8)
Ko'olaupoko	107,900	32,700	30.3	(26.7 - 34.1)
Hawai'i County	148,500	44,100	29.7	(27.5 - 32.0)
Hilo	44,900	14,600	32.5	(28.7 - 36.5)
Puna	25,500	8,400	32.8	(26.4 - 40.0)
Ka'ū	16,600	4,900	29.4	(23.3 - 36.2)
South Kona	10,400	3,100	29.9	(22.4 - 38.6)
North Kona	25,600	6,500	25.5	(20.8 - 30.7)
South Kohala	12,400	2,900	23.3	(17.7 - 30.0)
North Kohala	5,100	1,200	24.2	(14.7 - 37.2)
Hāmakuā	7,000	2,400	33.7	(23.6 - 45.6)
Maui County	120,000	32,800	27.3	(25.2 - 29.6)
Hāna	1,700	NR	NR	
Makawao	36,000	9,400	26.2	(22.4 - 30.4)
Wailuku	57,700	16,100	27.8	(24.6 - 31.3)
Lāhainā	13,200	2,800	21.4	(15.9 - 28.2)
Lāna'i	3,000	1,000	33.6	(26.5 - 41.5)
Moloka'i	7,400	2,900	38.6	(31.0 - 46.7)
Kaua'i County	52,100	13,900	26.7	(23.9 - 29.8)
Hanalei	7,400	1,300	18.3	(10.8 - 29.2)
Kapa'a	14,900	3,700	24.6	(20.1 - 29.7)
Līhu'e	10,500	3,000	28.9	(22.9 - 35.8)
Kōloa	12,000	3,700	30.8	(24.7 - 37.7)
Waimea	6,900	2,100	31.2	(22.7 - 41.2)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



Map 5-6: Adults with High Blood Pressure by Primary Care Service Area

CHAPTER 6: MORTALITY

This section of the Data Book focuses on the distribution of the overall death rate and the four leading causes of death (mortality) in the population. This revision of the Data Book has added the overall mortality rate. The International Statistical Classification of Diseases and Related Health Problems (most commonly known by the abbreviation ICD) provides codes to classify disease and a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury. Almost every health condition is assigned a unique category and given a code. The tenth version, or ICD 10, codes are used systematically in reporting statistics related to mortality by the National Centers for Health Statistics, the World Health Organization, and other entities. This Data Book highlights the four leading causes of death based on the underlying cause of death listed on the death certificate reported by the Office of Health Status and Monitoring of the Hawai'i Department of Health. The total population for each primary care service area and county, based on the 2010 census, and all rates were adjusted to the reference 2000 U.S. standard population. The mortality indicators, using aggregated vital statistics data from 2008-2013, and population estimates from the U.S. Census Bureau are defined on the next page.

MORTALITY INDICATORS

$$\text{Overall Mortality Rate} = \frac{\text{Number of deaths} * 100,000}{\text{Total population}}$$

$$\text{Diseases of the Heart Mortality Rate} = \frac{\text{Number of persons (ICD 10 code in the range of I00-I09, I11, I13, I20-I51 for the underlying cause of death)} * 100,000}{\text{Total Population}}$$

$$\text{Stroke (Cerebrovascular Disease) Mortality Rate} = \frac{\text{Number of persons (ICD 10 code in the range of I60-I69 for the underlying cause of death)} * 100,000}{\text{Total Population}}$$

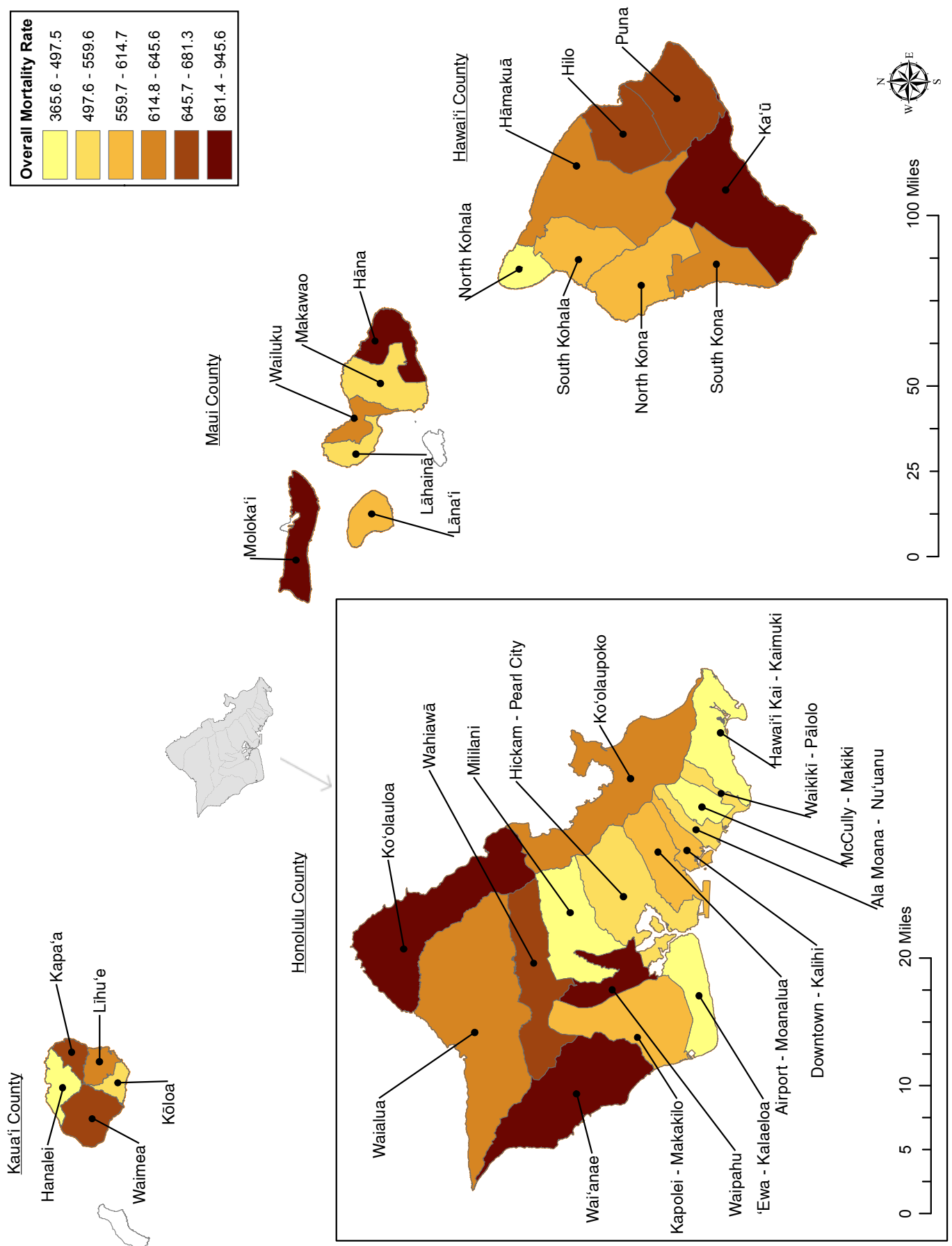
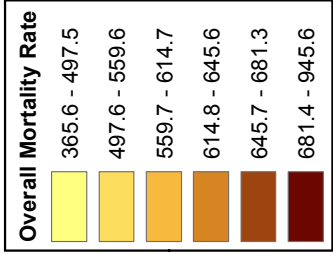
$$\text{Cancer (Malignant Neoplasm) Mortality Rate} = \frac{\text{Number of persons (ICD 10 code in the range of C00-C97 for the underlying cause of death)} * 100,000}{\text{Total Population}}$$

$$\text{Unintentional Injury Mortality Rate} = \frac{\text{Number of persons (ICD 10 code in the range of V01-X59, Y85-Y86 for the underlying cause of death)} * 100,000}{\text{Total Population}}$$

Table 6-1: Overall Mortality Rate, 2008-2013

Service Area	Annual Total Population (N)	All Deaths (n)	Age Adjusted Death Rate (per 100,000)	95% Confidence Interval
State of Hawai'i	1,360,301	58,278	592.0	(587.1 - 596.8)
Honolulu County	953,207	40,973	576.2	(576.2 - 587.4)
Hawai'i Kai - Kaimuki	70,638	3,814	448.2	(433.9 - 462.4)
Waikiki - Pālolo	52,489	2,876	558.9	(538.5 - 579.3)
McCully - Makiki	60,510	2,809	491.5	(473.4 - 509.7)
Ala Moana - Nu'uuanu	71,372	3,838	537.9	(520.9 - 554.9)
Downtown - Kalihi	69,010	3,702	591.0	(572.0 - 610.1)
Airport - Moanalua	66,070	2,588	567.8	(545.9 - 589.6)
Hickam - Pearl City	95,025	4,142	551.0	(534.2 - 567.7)
Waipahu	74,760	3,758	791.7	(766.4 - 817.0)
'Ewa - Kalaeloa	54,207	1,412	497.5	(471.6 - 523.5)
Kapolei - Makakilo	46,972	1,274	605.8	(572.5 - 639.0)
Mililani	52,803	676	365.6	(338.0 - 393.1)
Wahiawā	41,216	1,351	661.4	(626.1 - 696.7)
Wa'anae	48,519	2,205	945.6	(906.1 - 985.1)
Waialua	13,046	523	645.6	(590.3 - 700.9)
Ko'olauloa	21,406	713	685.5	(635.2 - 735.8)
Ko'olaupoko	115,164	5,258	617.8	(601.1 - 634.5)
Hawai'i County	185,079	8,314	638.1	(624.4 - 651.8)
Hilo	50,927	3,136	681.3	(657.4 - 705.1)
Puna	45,326	1,622	648.5	(616.9 - 680.0)
Ka'ū	8,451	451	723.1	(656.4 - 789.9)
South Kona	9,997	500	620.7	(566.3 - 675.1)
North Kona	37,875	1,496	586.8	(557.1 - 616.5)
South Kohala	17,627	660	614.7	(567.8 - 661.6)
North Kohala	6,322	275	494.7	(436.2 - 553.1)
Hāmakuā	8,554	486	629.1	(573.2 - 685.1)
Maui County	154,834	5,922	596.1	(581.0 - 611.3)
Hāna	2,291	144	708.5	(592.7 - 824.2)
Makawao	41,887	1,422	538.3	(510.4 - 566.3)
Wailuku	77,848	3,287	623.1	(601.8 - 644.4)
Lāhainā	22,508	764	536.0	(498.0 - 574.0)
Lāna'i	3,135	193	595.2	(511.2 - 679.1)
Moloka'i	7,255	411	689.9	(623.2 - 756.6)
Kaua'i County	67,091	3,069	606.9	(585.4 - 628.4)
Hanalei	7,828	291	459.8	(407.0 - 512.7)
Kapa'a	20,992	956	662.0	(620.1 - 704.0)
Līhu'e	14,683	857	623.8	(582.0 - 665.5)
Kōloa	14,086	717	559.6	(518.6 - 600.5)
Waimea	9,332	558	656.4	(601.9 - 710.9)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring;
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

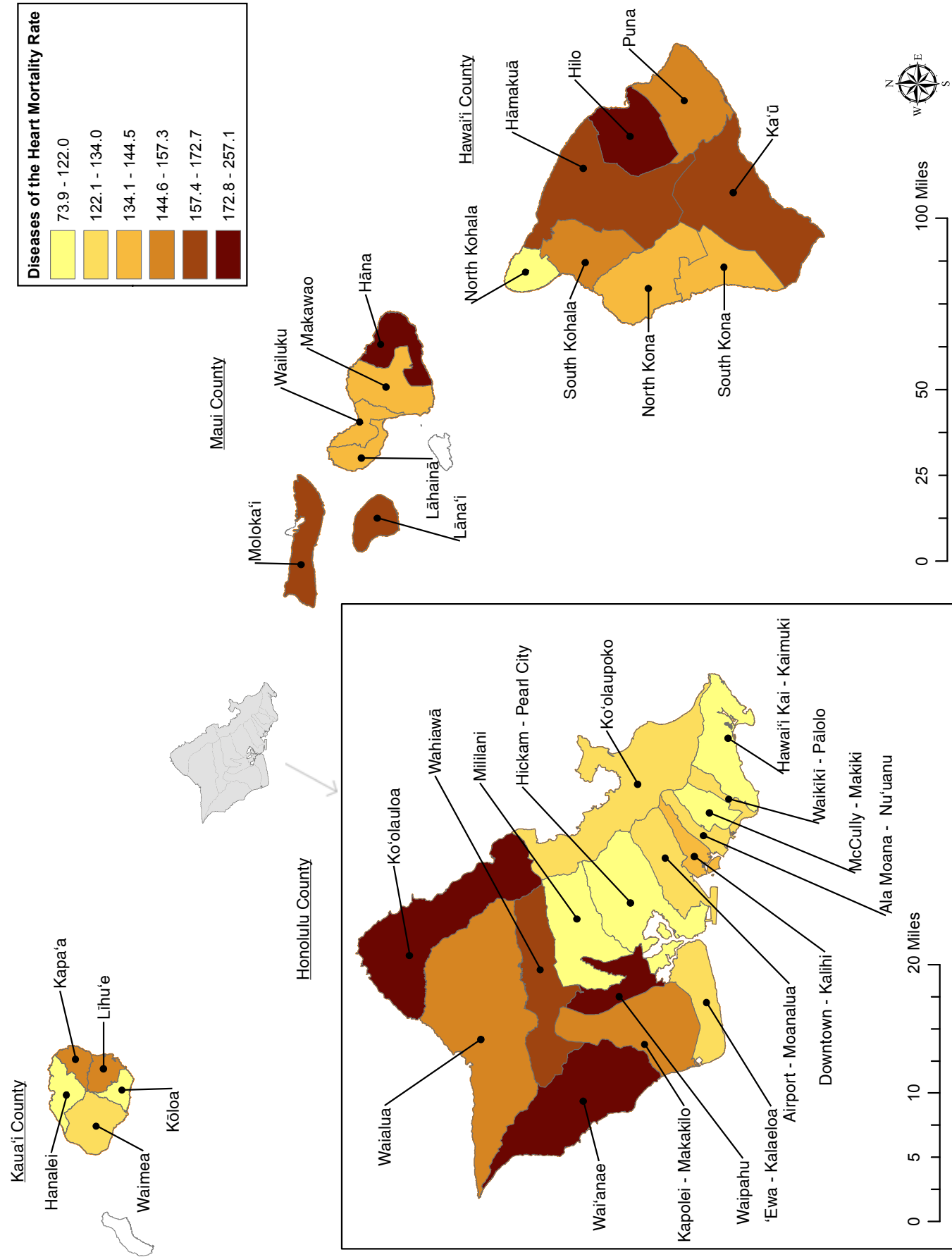


Map 6-1: Crude Death Rate (per 1,000 population) by Primary Care Service Area

Table 6-2: Diseases of the Heart Mortality Rate, 2008-2013

Service Area	Annual Total Population (N)	Number of Deaths Due to Diseases of the Heart (n)	Age Adjusted Death Rate (per 100,000)	95% Confidence Interval
State of Hawai'i	1,360,301	13,828	138.1	(135.8 - 140.4)
Honolulu County	953,207	9,622	134.1	(131.4 - 136.8)
Hawai'i Kai - Kaimuki	70,638	856	94.4	(88.1 - 100.8)
Waikiki - Pālolo	52,489	680	125.7	(116.2 - 135.1)
McCully - Makiki	60,510	644	108.8	(100.4 - 117.2)
Ala Moana - Nu'uaniu	71,372	915	124.2	(116.2 - 132.3)
Downtown - Kalihi	69,010	934	141.7	(132.6 - 150.8)
Airport - Moanalua	66,070	597	127.8	(117.6 - 138.1)
Hickam - Pearl City	95,025	928	122.0	(114.1 - 129.8)
Waipahu	74,760	915	193.2	(180.7 - 205.7)
'Ewa - Kalaeloa	54,207	343	126.0	(112.6 - 139.3)
Kapolei - Makakilo	46,972	316	154.1	(137.1 - 171.0)
Mililani	52,803	130	73.9	(61.2 - 86.6)
Wahiawā	41,216	310	158.2	(140.6 - 175.9)
Wai'anae	48,519	545	239.2	(219.1 - 259.3)
Waialua	13,046	123	156.2	(128.6 - 183.8)
Ko'olaupoko	21,406	171	181.5	(154.3 - 208.8)
Ko'olaupoko	115,164	1,153	134.0	(126.3 - 141.8)
Hawai'i County	185,079	2,083	157.0	(150.3 - 163.8)
Hilo	50,927	838	176.2	(164.3 - 188.1)
Puna	45,326	371	154.6	(138.8 - 170.3)
Ka'ū	8,451	98	169.0	(135.5 - 202.5)
South Kona	9,997	111	144.5	(117.6 - 171.4)
North Kona	37,875	353	139.9	(125.3 - 154.5)
South Kohala	17,627	144	145.7	(121.9 - 169.5)
North Kohala	6,322	44	93.6	(65.9 - 121.1)
Hāmakuā	8,554	122	170.5	(140.3 - 200.8)
Maui County	154,834	1,422	144.2	(136.7 - 151.7)
Hāna	2,291	36	257.1	(173.1 - 341.1)
Makawao	41,887	330	136.1	(121.4 - 150.8)
Wailuku	77,848	753	143.9	(133.6 - 154.2)
Lāhainā	22,508	174	136.2	(115.9 - 156.4)
Lāna'i	3,135	37	159.9	(108.4 - 211.4)
Moloka'i	7,255	86	172.7	(136.2 - 209.2)
Kaua'i County	67,091	701	136.1	(126.0 - 146.1)
Hanalei	7,828	50	98.4	(71.1 - 125.7)
Kapa'a	20,992	212	157.3	(136.1 - 178.4)
Līhu'e	14,683	195	151.3	(130.0 - 172.5)
Kōloa	14,086	148	122.0	(102.4 - 141.7)
Waimea	9,332	91	122.3	(97.2 - 147.4)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring;
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates



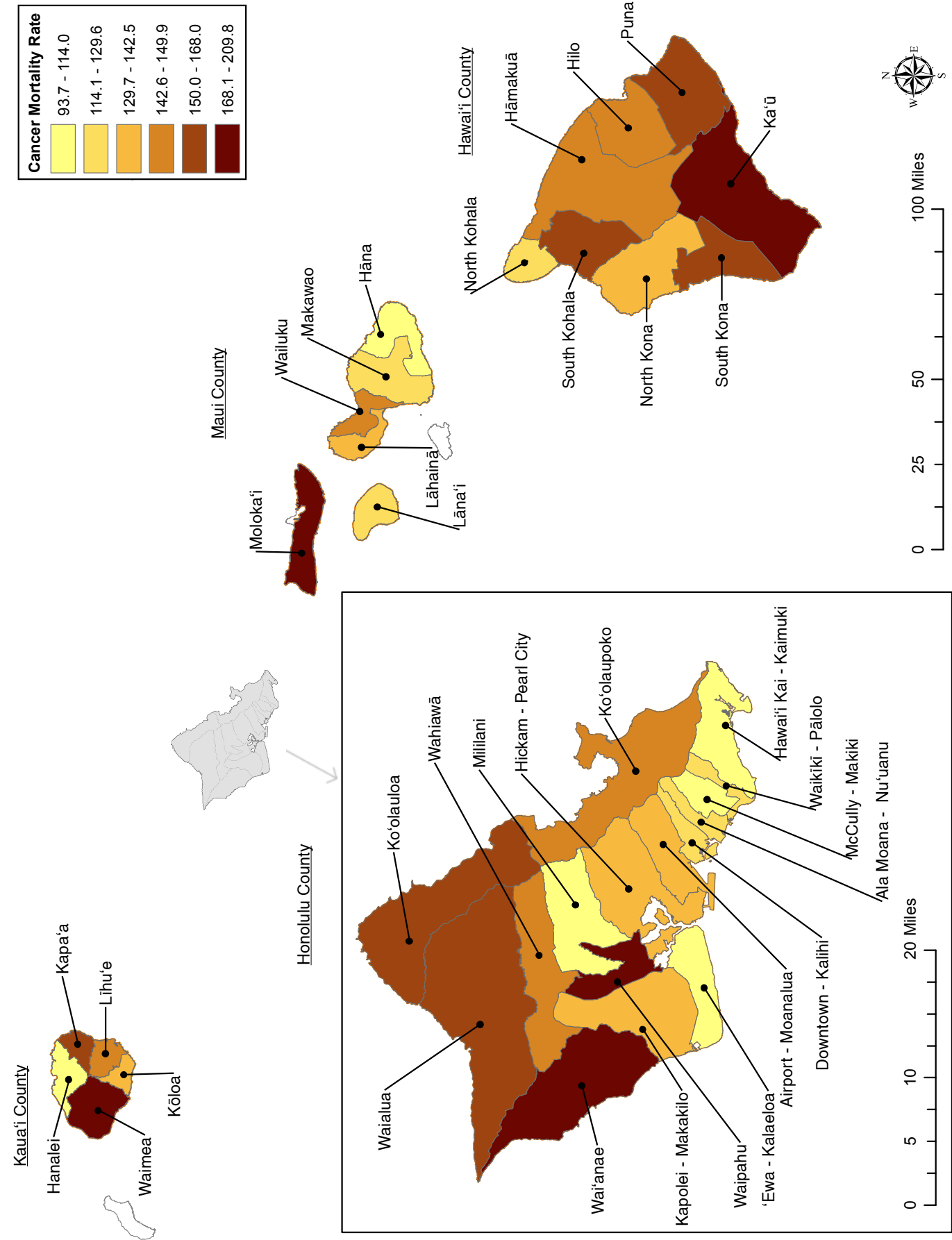
Map 6-2: Diseases of the Heart Mortality Rate (per 100,000) by Primary Care Service Area

Table 6-3: Cancer (Malignant Neoplasm) Mortality Rate, 2008-2013

Service Area	Annual Total Population (N)	Number of Cancer Deaths (n)	Age Adjusted Death Rate (per 100,000)	95% Confidence Interval
State of Hawai'i	1,360,301	13,309	137.5	(135.2 - 139.9)
Honolulu County	953,207	9,157	134.6	(131.9 - 137.4)
Hawai'i Kai - Kaimuki	70,638	861	114.0	(106.3 - 121.6)
Waikiki - Pālolo	52,489	591	126.8	(116.6 - 137.0)
McCully - Makiki	60,510	554	108.4	(99.4 - 117.4)
Ala Moana - Nu'uuanu	71,372	861	128.2	(119.6 - 136.7)
Downtown - Kalihi	69,010	749	129.6	(120.3 - 138.8)
Airport - Moanalua	66,070	611	142.5	(131.2 - 153.8)
Hickam - Pearl City	95,025	958	131.2	(122.9 - 139.5)
Waipahu	74,760	825	173.8	(162.0 - 185.7)
'Ewa - Kalaeloa	54,207	335	110.9	(99.0 - 122.7)
Kapolei - Makakilo	46,972	309	141.7	(125.9 - 157.5)
Mililani	52,803	189	93.7	(80.3 - 107.0)
Wahiawā	41,216	267	142.7	(125.6 - 159.8)
Wai'anae	48,519	500	209.8	(191.4 - 228.1)
Waialua	13,046	113	156.2	(127.4 - 185.0)
Ko'olauloa	21,406	165	160.1	(135.7 - 184.5)
Ko'olaupoko	115,164	1,236	146.8	(138.6 - 154.9)
Hawai'i County	185,079	1,997	148.5	(142.0 - 155.0)
Hilo	50,927	635	146.8	(135.4 - 158.2)
Puna	45,326	406	151.6	(136.8 - 166.3)
Ka'ū	8,451	108	179.6	(145.7 - 213.4)
South Kona	9,997	127	163.9	(135.4 - 192.4)
North Kona	37,875	370	141.0	(126.6 - 155.4)
South Kohala	17,627	176	168.0	(143.2 - 192.8)
North Kohala	6,322	62	123.3	(92.6 - 153.9)
Hāmakuā	8,554	106	149.9	(121.4 - 178.4)
Maui County	154,834	1,430	139.6	(132.4 - 146.9)
Hāna	2,291	15	101.1	
Makawao	41,887	341	121.1	(108.2 - 133.9)
Wailuku	77,848	762	149.0	(138.4 - 159.5)
Lāhainā	22,508	180	132.9	(113.5 - 152.3)
Lāna'i	3,135	27	116.7	(72.7 - 160.8)
Moloka'i	7,255	94	174.0	(138.9 - 209.2)
Kaua'i County	67,091	745	146.2	(135.7 - 156.7)
Hanalei	7,828	56	105.6	(77.9 - 133.2)
Kapa'a	20,992	215	156.0	(135.1 - 176.8)
Līhu'e	14,683	173	142.7	(121.4 - 163.9)
Kōloa	14,086	158	138.7	(117.1 - 160.4)
Waimea	9,332	132	180.8	(150.0 - 211.7)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring; U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

Notes: No confidence intervals were computed for number of events less than 20. Standardized ratios less than 200 implies that the rates were not significantly higher than those for the State of Hawai'i. See Family Health Outcomes Project (FHOP), *Guidelines for Using Federal Data Templates with Small Numbers* (1997).



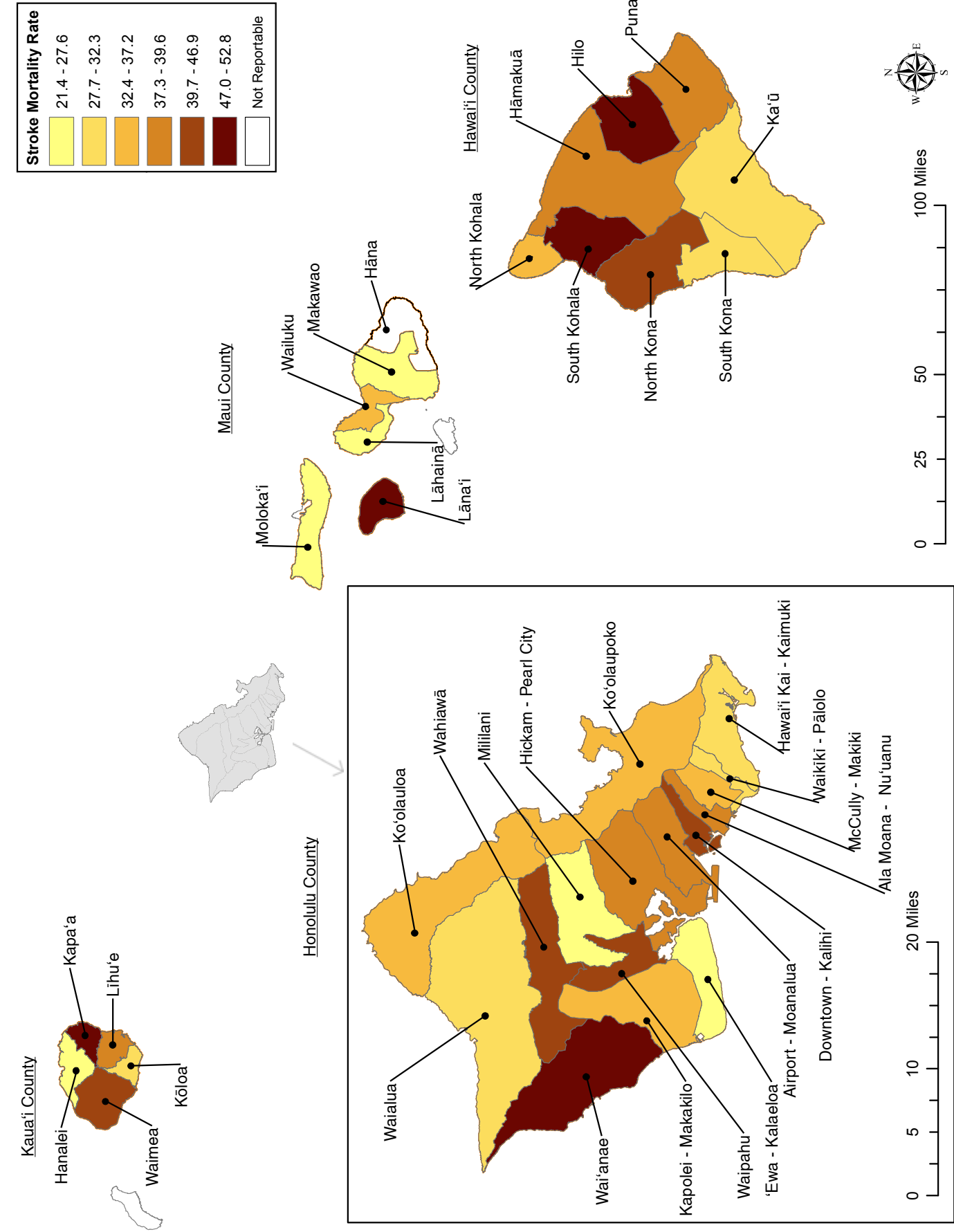
Map 6-3: Cancer (Malignant Neoplasm) Mortality Rate (per 100,000) by Primary Care Service Area

Table 6-4: Stroke (Cerebrovascular Disease) Mortality Rate, 2008-2013

Service Area	Annual Total Population (N)	Number of Stroke Deaths (n)	Age Adjusted Death Rate (per 100,000)	95% Confidence Interval
State of Hawai'i	1,360,301	3,713	36.8	(35.6 - 37.9)
Honolulu County	953,207	2,660	36.6	(35.2 - 38.0)
Hawai'i Kai - Kaimuki	70,638	276	30.8	(27.2 - 34.5)
Waikiki - Pālolo	52,489	167	28.6	(24.3 - 33.0)
McCully - Makiki	60,510	204	34.1	(29.4 - 38.8)
Ala Moana - Nu'uuanu	71,372	290	37.9	(33.6 - 42.3)
Downtown - Kalihi	69,010	265	41.0	(36.0 - 45.9)
Airport - Moanalua	66,070	181	39.3	(33.5 - 45.0)
Hickam - Pearl City	95,025	290	38.4	(34.0 - 42.8)
Waipahu	74,760	224	46.9	(40.7 - 53.0)
ʻEwa - Kalaeloa	54,207	63	23.2	(17.4 - 28.9)
Kapolei - Makakilo	46,972	67	34.2	(26.0 - 42.4)
Mililani	52,803	45	27.0	(19.1 - 34.9)
Wahiawā	41,216	94	46.7	(37.3 - 56.2)
Waiʻanae	48,519	106	50.4	(40.8 - 60.0)
Waialua	13,046	23	29.7	(17.6 - 41.8)
Koʻolauloa	21,406	30	32.6	(20.9 - 44.3)
Koʻolaupoko	115,164	322	37.2	(33.2 - 41.3)
Hawai'i County	185,079	549	42.1	(38.6 - 45.7)
Hilo	50,927	232	47.7	(41.6 - 53.9)
Puna	45,326	84	38.5	(30.2 - 46.7)
Kaʻū	8,451	17	31.7	
South Kona	9,997	24	30.6	(18.3 - 42.8)
North Kona	37,875	101	42.6	(34.3 - 50.9)
South Kohala	17,627	48	49.8	(35.7 - 63.8)
North Kohala	6,322	16	35.5	
Hāmakuā	8,554	27	38.4	(23.9 - 52.9)
Maui County	154,834	298	29.7	(26.3 - 33.1)
Hāna	2,291	<5	NR	
Makawao	41,887	60	24.2	(18.1 - 30.3)
Wailuku	77,848	176	33.3	(38.4 - 38.2)
Lāhainā	22,508	36	27.6	(18.6 - 36.6)
Lānaʻi	3,135	12	51.2	
Molokaʻi	7,255	12	21.4	
Kauaʻi County	67,091	206	39.8	(34.4 - 45.3)
Hanalei	7,828	13	26.1	
Kapaʻa	20,992	71	52.8	(40.5 - 65.1)
Līhuʻe	14,683	50	39.6	(28.6 - 50.6)
Kōloa	14,086	39	32.3	(22.2 - 42.5)
Waimea	9,332	33	39.8	(26.2 - 53.4)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring; U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

Notes: Rates were not reportable (NR) for areas with less than 5 events. No confidence intervals were computed when the number of events were less than 20. Standardized ratios less than 200 implies that the rates were not significantly higher than those for the State of Hawai'i. See Family Health Outcomes Project (FHOP), *Guidelines for Using Federal Data Templates with Small Numbers* (1997).



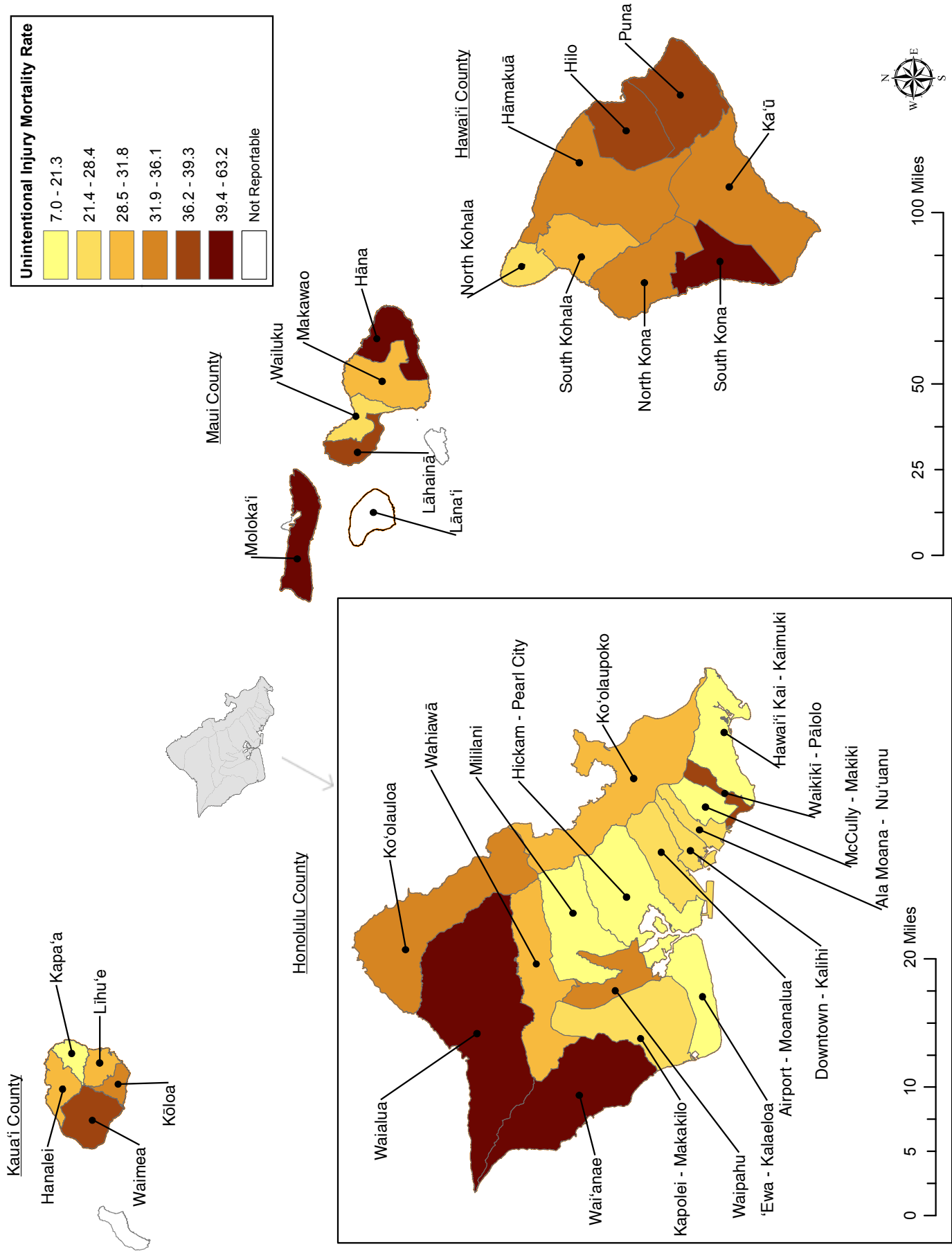
Map 6-4: Stroke (Cerebrovascular Disease) Mortality Rate (per 100,000) by Primary Care Service Area

Table 6-5: Unintentional Injury Mortality Rate, 2008-2013

Service Area	Annual Total Population (N)	Number of Unintentional Injury Deaths (n)	Age Adjusted Death Rate (per 100,000)	95% Confidence Interval
State of Hawai'i	1,360,301	2,564	29.0	(27.8 - 30.1)
Honolulu County	953,207	1,752	27.5	(26.2 - 28.8)
Hawai'i Kai - Kaimuki	70,638	117	18.4	(15.0 - 21.7)
Waikiki - Pālolo	52,489	143	36.2	(30.3 - 42.1)
McCully - Makiki	60,510	105	21.3	(17.2 - 25.4)
Ala Moana - Nu'uuanu	71,372	160	27.5	(23.3 - 31.8)
Downtown - Kalihi	69,010	151	28.4	(23.9 - 33.0)
Airport - Moanalua	66,070	94	22.6	(18.0 - 27.1)
Hickam - Pearl City	95,025	142	20.9	(17.5 - 24.4)
Waipahu	74,760	155	33.4	(28.1 - 38.6)
'Ewa - Kalaeloa	54,207	62	21.2	(15.9 - 26.4)
Kapolei - Makakilo	46,972	56	22.8	(16.8 - 28.8)
Mililani	52,803	15	7.0	
Wahiawā	41,216	65	31.0	(23.5 - 38.6)
Wai'anae	48,519	135	52.1	(43.3 - 60.9)
Waialua	13,046	39	49.1	(33.7 - 64.5)
Ko'olauloa	21,406	42	36.1	(25.2 - 47.0)
Ko'olaupoko	115,164	216	29.0	(25.1 - 32.8)
Hawai'i County	185,079	402	35.6	(32.1 - 39.0)
Hilo	50,927	125	36.9	(30.5 - 43.4)
Puna	45,326	95	36.8	(29.4 - 44.2)
Ka'ū	8,451	19	34.5	
South Kona	9,997	24	42.3	(25.4 - 59.2)
North Kona	37,875	80	35.9	(28.0 - 43.7)
South Kohala	17,627	29	29.9	(19.0 - 40.8)
North Kohala	6,322	10	28.3	
Hāmakuā	8,554	18	32.5	
Maui County	154,834	289	30.6	(27.1 - 34.1)
Hāna	2,291	8	63.2	
Makawao	41,887	80	30.8	(24.0 - 37.5)
Wailuku	77,848	121	25.7	(21.1 - 30.2)
Lāhainā	22,508	52	39.3	(28.6 - 49.9)
Lāna'i	3,135	<5	NR	
Moloka'i	7,255	18	42.8	
Kaua'i County	67,091	121	28.3	(23.3 - 33.4)
Hanalei	7,828	15	31.8	
Kapa'a	20,992	21	15.7	(9.0 - 22.5)
Līhu'e	14,683	32	29.4	(19.2 - 39.6)
Kōloa	14,086	32	36.1	(23.6 - 48.6)
Waimea	9,332	21	37.0	(21.2 - 52.9)

Source: State of Hawai'i, Department of Health, Office of Health Status Monitoring; U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

Notes: Rates were not reportable (NR) for areas with less than 5 events. No confidence intervals were computed when the number of events were less than 20. Standardized ratios less than 200 implies that the rates were not significantly higher than those for the State of Hawai'i. See Family Health Outcomes Project (FHOP), *Guidelines for Using Federal Data Templates with Small Numbers* (1997).



Map 6-5: Unintentional Injury Mortality Rate (per 100,000) by Primary Care Service Area

CHAPTER 7: ORAL HEALTH

This section of the Data Book updates the indicators, based on the Behavioral Risk Factor Surveillance System (BRFSS) survey, for adult oral health that was first presented in the 2005 edition of the Data Book. Oral health is an essential and integral component of health throughout life. Poor oral health can result in significant illness, disease, and even death. Poor oral health is associated with increased health care costs, increased absenteeism, and decreased productivity. People who do not receive regular professional care can develop oral disease that requires complex restorative treatment, leads to tooth loss, and contributes to health problems. Routine dental visits provide an opportunity for early diagnosis, prevention, and treatment of oral disease. The adult oral health indicators use aggregated data from the 2012 and 2014 BRFSS are defined on the next page. Additionally, this Data Book has added a new indicator based on claims data from Emergency Department Visits for what are considered preventable oral health visits among all ages. A recent report using the same data source found that 10.6% of all emergency room visits for preventable oral health conditions in 2012 in Hawaii were among children under 18 years of age.¹ Specific codes, based on consensus of national experts, of 521 (Diseases of hard tissues of teeth) and 522 (Diseases of pulp and periapical tissues) are used to assess visits that could have been prevented through access to outpatient dental care.² The Emergency Department Visit data comes from the Hawai'i Health Information Corporation (HHIC) data from visits that occurred from 2010-2014.

1 Family Health Services Division, Hawaii Department of Health. Hawaii Oral Health: Key Findings. August 2015. Available online at www.health.hawaii.gov/fhsd/publications.

2 Pew Children's Dental Campaign. A costly dental destination: Hospital Care Means States Pay Dearly. Pew Center on the States. Issue Brief. February 2012. Available online at www.pewcenteronthestates.org/dental.

ORAL HEALTH INDICATORS

Adults with No Dental Visit Within the Past Year = Self-report that their last visit to a dentist or dental clinic for any reason, including visits to specialists such as orthodontists, has been longer than one year ago.

Adults who Ever Had Any Permanent Teeth Removed = Self-report of having had permanent teeth removed due to tooth decay or gum disease. Does not include teeth removed due to injury or orthodontia.

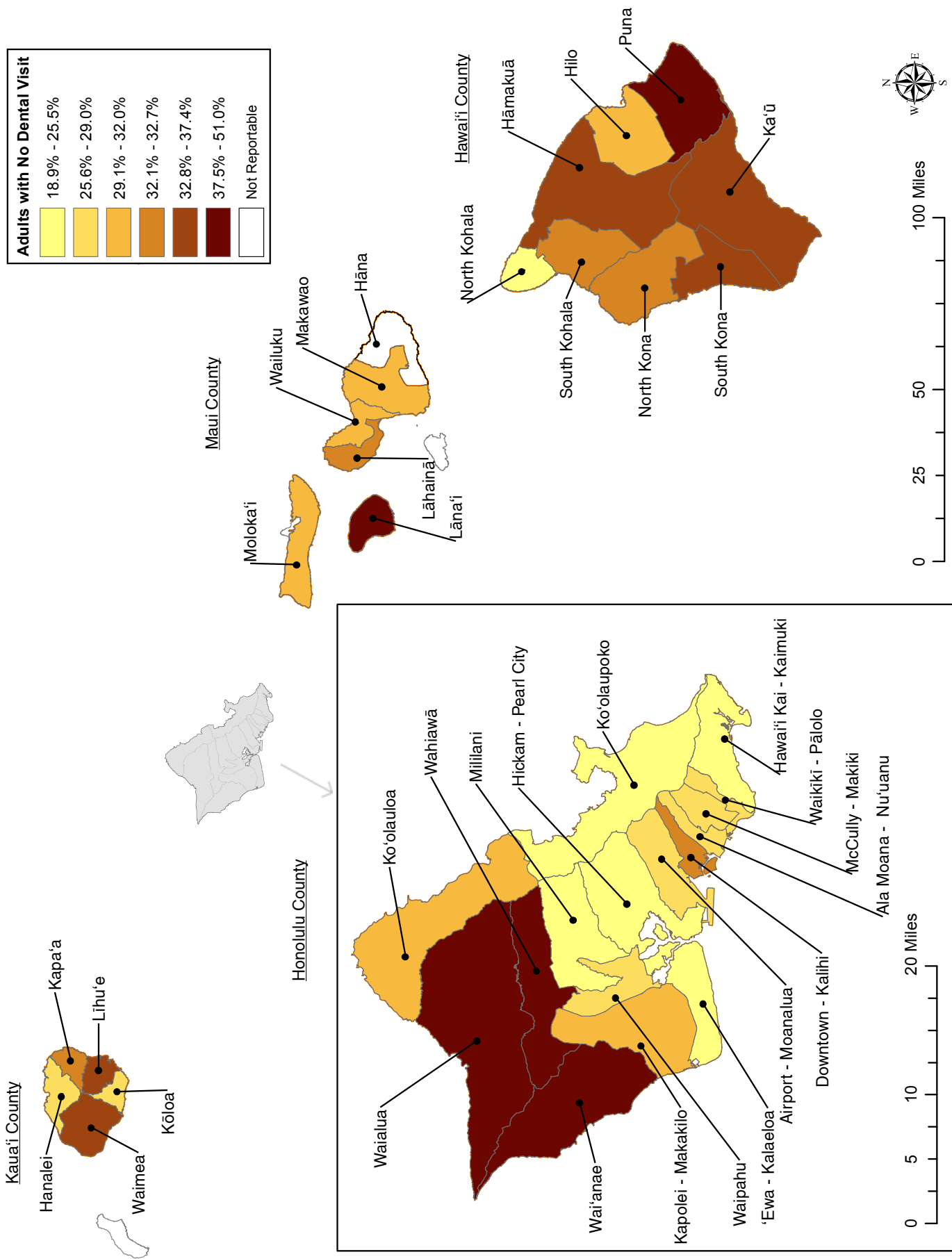
Oral Health Emergency Department Visit Rate =
$$\frac{\text{Number of emergency department visits for Diseases of Hard Tissues of Teeth and Diseases of Pulp and Periapical Tissues: ICD-9 code on any of the 20 levels (521-522) *10,000}}{\text{Total Population}}$$

Table 7-1: Adults with No Dental Visit Within Past Year, 2012 and 2014

Service Area	Annual Adult Population (N)	Number with No Dental Visit (n)	Percent with No Dental Visit (%)	95% Confidence Interval
State of Hawai'i	1,090,100	315,800	29.0	(27.9 - 30.1)
Honolulu County	765,100	208,100	27.2	(25.8 - 28.6)
Hawai'i Kai - Kaimuki	67,300	12,700	18.9	(15.2 - 23.2)
Waikiki - Pālolo	30,700	8,400	27.3	(22.1 - 33.1)
McCully - Makiki	46,600	13,500	29.0	(24.3 - 34.1)
Ala Moana - Nu'uuanu	53,400	14,400	27.0	(22.3 - 32.3)
Downtown - Kalihi	45,300	14,500	32.1	(26.6 - 38.2)
Airport - Moanalua	40,100	11,600	29.0	(23.0 - 35.8)
Hickam - Pearl City	78,300	16,500	21.1	(17.3 - 25.5)
Waipahu	52,400	14,300	27.2	(22.2 - 32.9)
'Ewa - Kalaeloa	45,400	11,600	25.5	(20.4 - 31.3)
Kapolei - Makakilo	37,000	11,300	30.6	(23.7 - 38.6)
Mililani	45,000	9,700	21.6	(16.6 - 27.6)
Wahiawā	24,200	9,500	39.5	(29.9 - 49.9)
Wai'anae	41,600	17,400	41.9	(34.8 - 49.4)
Waialua	10,700	4,100	38.1	(26.4 - 51.4)
Ko'olauloa	16,100	5,000	30.8	(22.1 - 41.2)
Ko'olaupoko	103,700	26,500	25.5	(21.9 - 29.4)
Hawai'i County	147,400	50,900	34.6	(32.1 - 37.1)
Hilo	43,200	13,700	31.6	(27.5 - 36.1)
Puna	25,400	10,300	40.6	(34.1 - 47.5)
Ka'ū	15,700	5,900	37.4	(29.8 - 45.8)
South Kona	11,000	4,100	37.4	(29.0 - 46.6)
North Kona	24,900	8,000	32.2	(26.8 - 38.2)
South Kohala	10,900	3,600	32.7	(25.5 - 40.8)
North Kohala	4,900	1,200	25.1	(15.7 - 37.5)
Hāmakuā	8,500	3,000	35.4	(25.7 - 46.5)
Maui County	123,900	39,600	31.9	(29.4 - 34.6)
Hāna	1,900	NR	NR	
Makawao	34,800	11,200	32.0	(27.4 - 37.0)
Wailuku	60,100	18,100	30.2	(26.4 - 34.3)
Lāhainā	14,600	4,700	32.1	(25.7 - 39.1)
Lāna'i	2,500	1,300	51.0	(35.7 - 66.2)
Moloka'i	6,900	2,000	29.3	(20.3 - 40.3)
Kaua'i County	53,700	17,300	32.2	(28.8 - 35.8)
Hanalei	6,900	1,900	27.7	(18.6 - 39.1)
Kapa'a	15,100	4,900	32.4	(26.4 - 39.0)
Līhu'e	11,400	4,200	36.8	(29.4 - 44.9)
Kōloa	11,700	3,200	27.2	(20.4 - 35.1)
Waimea	7,200	2,500	35.0	(26.7 - 44.3)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



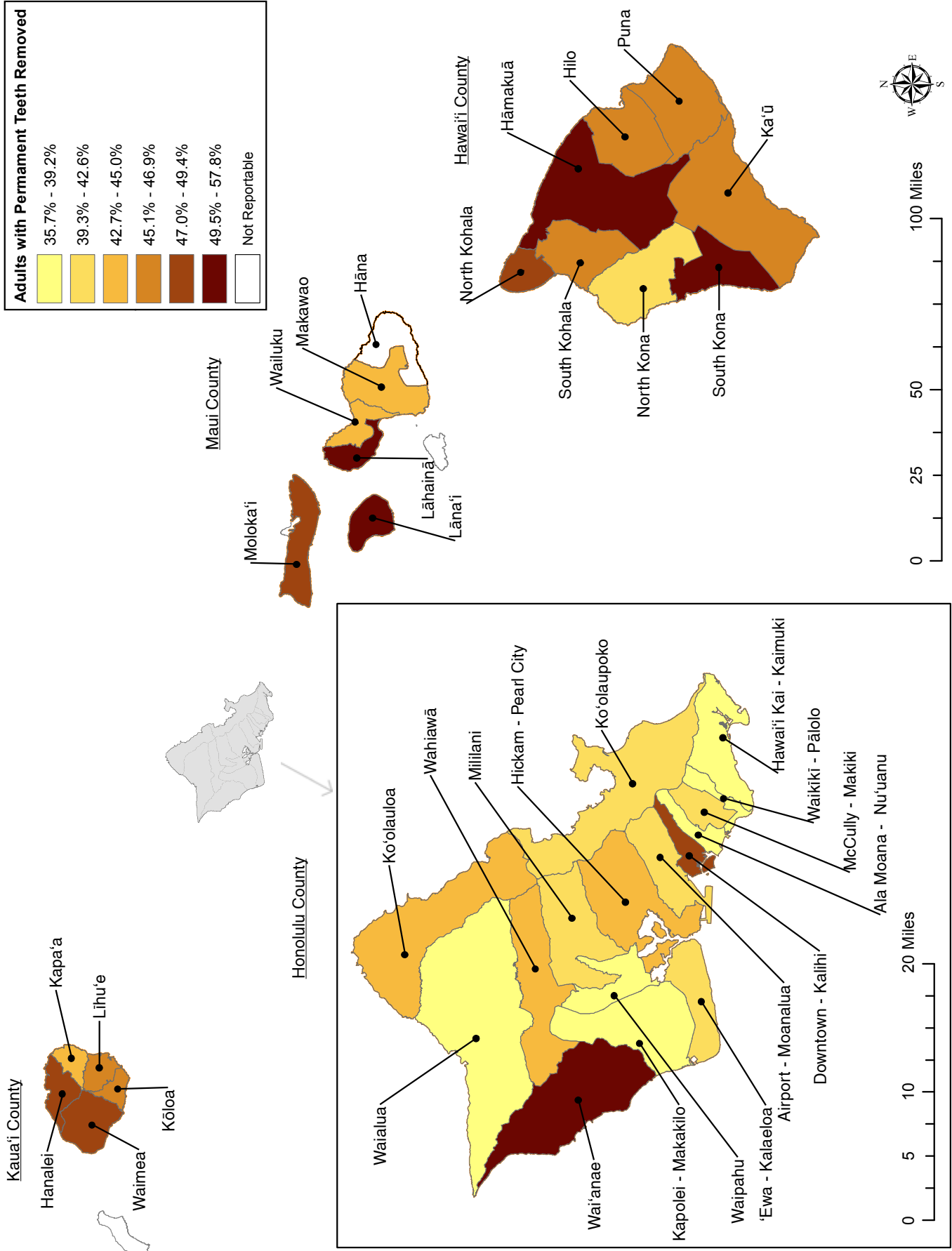
Map 7-1: No Dental Visit Within Past Year by Primary Care Service Area

Table 7-2: Adults with Permanent Teeth Removed, 2012 and 2014

Service Area	Annual Adult Population (N)	Number with Permanent Teeth Removed (n)	Percent with Permanent Teeth Removed (%)	95% Confidence Interval
State of Hawai'i	1,075,700	456,500	42.4	(41.3 - 43.6)
Honolulu County	754,200	309,000	41.0	(39.5 - 42.5)
Hawai'i Kai - Kaimuki	66,200	23,600	35.7	(31.2 - 40.4)
Waikiki - Pālolo	30,500	11,500	37.6	(31.0 - 44.6)
McCully - Makiki	45,500	19,400	42.6	(37.5 - 47.9)
Ala Moana - Nu'uaniu	52,700	20,700	39.2	(34.2 - 44.4)
Downtown - Kalihi	44,500	20,900	47.0	(40.9 - 53.3)
Airport - Moanalua	39,800	16,500	41.5	(35.0 - 48.3)
Hickam - Pearl City	76,700	33,300	43.4	(38.5 - 48.4)
Waipahu	51,600	19,400	37.5	(31.6 - 43.9)
'Ewa - Kalaeloa	44,000	17,300	39.3	(33.0 - 46.1)
Kapolei - Makakilo	36,700	14,000	38.1	(30.8 - 45.9)
Mililani	44,500	18,900	42.4	(36.2 - 48.9)
Wahiawā	24,100	10,500	43.5	(34.0 - 53.4)
Wai'anae	41,300	22,600	54.8	(47.1 - 62.2)
Waialua	10,900	4,100	38.0	(27.1 - 50.2)
Ko'olauloa	16,000	7,100	44.6	(34.3 - 55.3)
Ko'olaupoko	102,800	40,500	39.4	(35.5 - 43.4)
Hawai'i County	145,500	67,300	46.3	(43.7 - 48.9)
Hilo	42,900	19,900	46.4	(41.9 - 51.0)
Puna	24,600	11,200	45.7	(38.9 - 52.6)
Ka'ū	15,700	7,400	46.9	(38.5 - 55.6)
South Kona	11,000	6,300	57.8	(48.2 - 66.9)
North Kona	24,800	10,000	40.1	(34.6 - 45.9)
South Kohala	10,700	5,000	46.6	(38.5 - 54.8)
North Kohala	4,500	2,200	48.0	(35.1 - 61.1)
Hāmakuā	8,300	4,300	51.8	(41.3 - 62.2)
Maui County	122,700	55,500	45.3	(42.5 - 48.0)
Hāna	1,900	NR	NR	
Makawao	34,800	15,600	45.0	(40.0 - 50.1)
Wailuku	59,300	26,000	43.9	(39.8 - 48.1)
Lāhainā	14,400	7,200	50.3	(43.0 - 57.6)
Lāna'i	2,400	1,300	52.2	(36.3 - 67.8)
Moloka'i	6,800	3,300	49.1	(38.5 - 59.8)
Kaua'i County	53,300	24,600	46.1	(42.4 - 49.8)
Hanalei	7,000	3,400	48.2	(36.2 - 60.5)
Kapa'a	14,900	6,600	44.0	(37.6 - 50.6)
Līhu'e	11,300	5,300	46.8	(39.1 - 54.7)
Kōloa	11,600	5,300	45.8	(38.0 - 53.9)
Waimea	7,100	3,500	49.4	(40.4 - 58.4)

Source: State of Hawai'i, Department of Health, Behavioral Risk Factor Surveillance System (BRFSS)

Notes: Number and rates were not reportable (NR) for areas with <50 respondents or the relative standard error was >30% per Hawai'i BRFSS data suppression guidelines. No confidence intervals were included for areas with NR indicators.



Map 7-2: Adults with Permanent teeth Removed by Primary Care Service Area

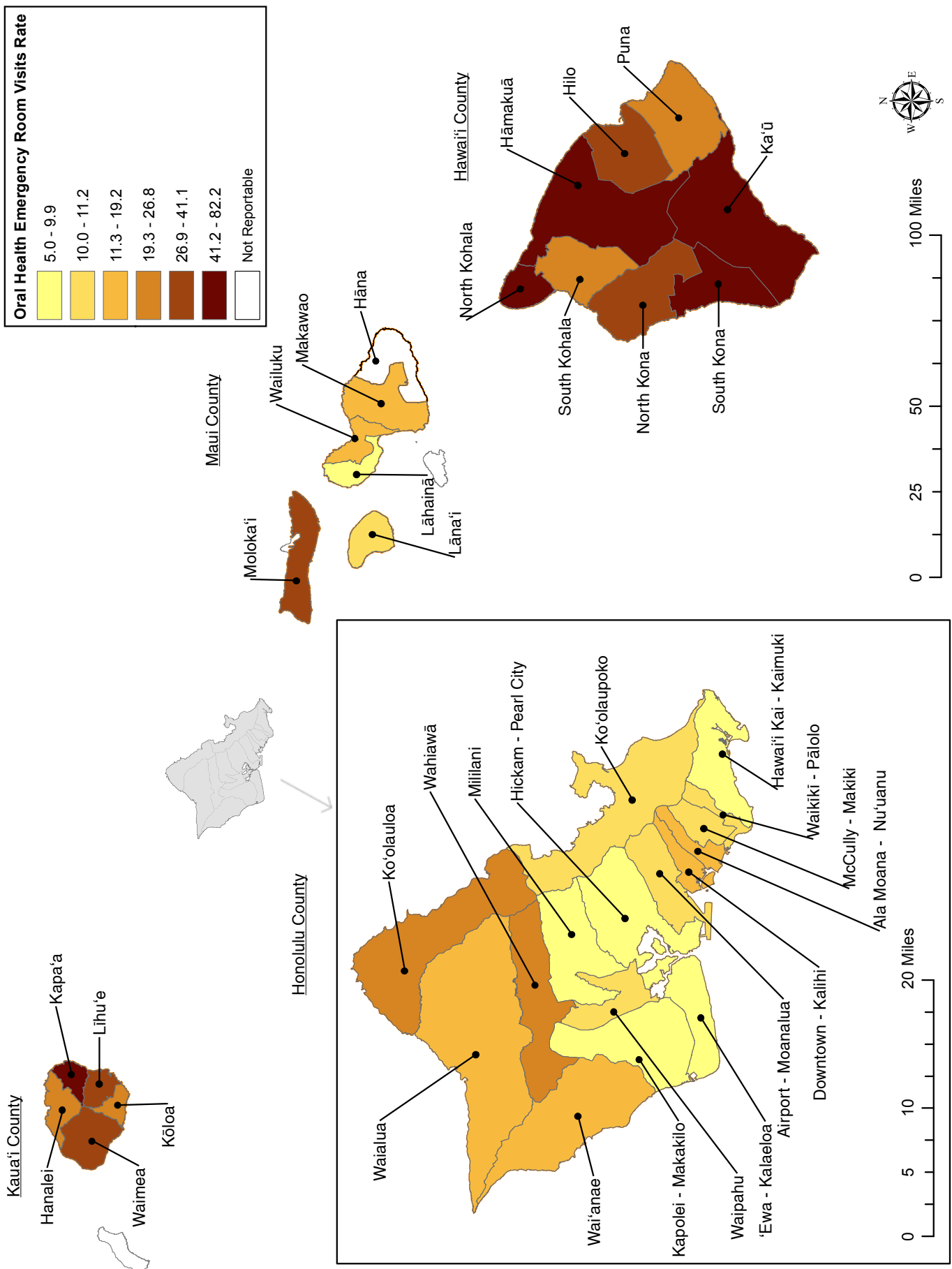
Table 7-3: Oral Health Emergency Department Visits, 2010-2014

Service Area	Annual Total Population (N)	Number with Oral Health Emergency Room Visits (n)	Oral Health Emergency Room Visits Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	13,716	16.8	(16.5 - 17.1)
Honolulu County	953,207	6,511	11.4	(11.1 - 11.7)
Hawai'i Kai - Kaimuki	70,638	218	5.1	(4.5 - 5.8)
Waikiki - Pālolo	52,489	335	10.6	(9.5 - 11.8)
McCully - Makiki	60,510	404	11.1	(10.0 - 12.2)
Ala Moana - Nu'uuanu	71,372	637	14.9	(13.7 - 16.0)
Downtown - Kalihi	69,010	738	17.8	(16.5 - 19.1)
Airport - Moanalua	66,070	437	11.0	(10.0 - 12.1)
Hickam - Pearl City	95,025	471	8.3	(7.5 - 9.0)
Waipahu	74,760	482	10.7	(9.8 - 11.7)
'Ewa - Kalaeloa	54,207	311	9.6	(8.5 - 10.6)
Kapolei - Makakilo	46,972	280	9.9	(8.8 - 11.1)
Mililani	52,803	158	5.0	(4.2 - 5.8)
Wahiawā	41,216	541	21.9	(20.0 - 23.7)
Wai'anae	48,519	332	11.4	(10.2 - 12.6)
Waialua	13,046	150	19.2	(16.1 - 22.2)
Ko'olauloa	21,406	270	21.0	(18.5 - 23.5)
Ko'olaupoko	115,164	712	10.3	(9.5 - 11.1)
Hawai'i County	185,079	3,995	36.0	(34.9 - 37.1)
Hilo	50,927	1,211	39.6	(37.4 - 41.9)
Puna	45,326	594	21.8	(20.1 - 23.6)
Ka'ū	8,451	417	82.2	(74.3 - 90.1)
South Kona	9,997	379	63.2	(56.8 - 69.5)
North Kona	37,875	711	31.3	(29.0 - 33.6)
South Kohala	17,627	281	26.6	(23.5 - 29.7)
North Kohala	6,322	182	48.0	(41.0 - 55.0)
Hāmakuā	8,554	220	42.9	(37.2 - 48.5)
Maui County	154,834	1,652	17.8	(16.9 - 18.6)
Hāna	2,291	< 10	NR	
Makawao	41,887	469	18.7	(17.0 - 20.4)
Wailuku	77,848	877	18.8	(17.5 - 20.0)
Lāhainā	22,508	122	9.0	(7.4 - 10.6)
Lāna'i	3,135	21	11.2	(6.4 - 15.9)
Moloka'i	7,255	157	36.1	(30.4 - 41.7)
Kaua'i County	67,091	1,558	38.7	(36.8 - 40.6)
Hanalei	7,828	126	26.8	(22.1 - 31.5)
Kapa'a	20,992	689	54.7	(50.6 - 58.8)
Līhu'e	14,683	362	41.1	(36.9 - 45.3)
Kōloa	14,086	209	24.7	(21.4 - 28.1)
Waimea	9,332	172	30.7	(26.1 - 35.3)

Source: Hawai'i Health Information Corporation (HHIC);

U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

Notes: Rates were not reportable (NR) for areas with less than 10 events. No confidence intervals were computed when the number of events were less than 20. Standardized ratios less than 200 implies that the rates were not significantly higher than those for the State of Hawai'i. See Family Health Outcomes Project (FHOP), *Guidelines for Using Federal Data Templates with Small Numbers* (1997).



Map 7-3: Oral Health Emergency Department Visits by Primary Care Service Area

CHAPTER 8: MENTAL HEALTH & SUBSTANCE RELATED ADMISSIONS

This section of the Data Book introduces indicators related to mental health and substance abuse. Substance use and mental health may contribute to high risk behaviors, worsen existing disease, and result in admissions to hospitals. The burden of mental illness in the United States is among the highest of all diseases, and mental disorders are among the most common causes of disability. Mental health is essential to a person's well-being, healthy family and interpersonal relationships, and the ability to live a full and productive life. Mental health disorders can have harmful and long-lasting effects—including high psychosocial and economic costs—not only for people living with the disorder, but also for their families, schools, workplaces, and communities. Early diagnosis and treatment can decrease the disease burden of mental health disorders as well as associated chronic diseases.¹ In general substance use also has a major impact on individuals, families, and communities. The effects of substance abuse are cumulative, significantly contributing to costly social, physical, mental, and public health problems. These problems include: teenage pregnancy, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), other sexually transmitted diseases (STDs), domestic violence, child abuse, motor vehicle crashes, physical fights, crime, homicide, suicide, and chronic diseases.²

The hospital admissions presented includes anyone, regardless of age, in which a mental illness or a substance abuse diagnosis was coded as a primary or secondary diagnoses on any of the up to 20 levels of diagnostic codes reported by the hospitals for each admission is presented. The same hospital admission could occur in multiple indicators in this report if that particular admission had ICD codes from more than one of the disorders listed. The categories used in this report is based on methodology used by the Agency for Healthcare Research and Quality.³ The five most common Mental Illness and Substance Related Disorders from the Hawai'i Health Information Corporation (HHIC) hospitalization data are defined on the next page. For some general information, the overall hospitalization rate was provided by area. All admission rates were based on the 2010 Census population and are not age-adjusted.

1 US Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Available online at: <http://www.healthypeople.gov/2020/LHI/mentalHealth.aspx>.

2 US Department of Health and Human Services (HHS), Office of Disease Prevention and Health Promotion. Healthy People 2010 midcourse review: Focus area 26, substance abuse [Internet]. Washington: HHS; 2006 [cited 2010 April 12]. Available online at: <http://www.healthypeople.gov/2010/Data/midcourse/pdf/FA26.pdf>

3 Owens P, Myers M, Elixhauser A, Brach C. Care of Adults with Mental Health and Substance Abuse Disorders in U.S. Community Hospitals, 2004- HCUP Fact Book No 10. AHRQ Publication No.)8-0008, January 2007. Available online at: <http://www.adhq.gov/data/hcup/factbk10>.

MENTAL ILLNESS AND SUBSTANCE RELATED INDICATORS

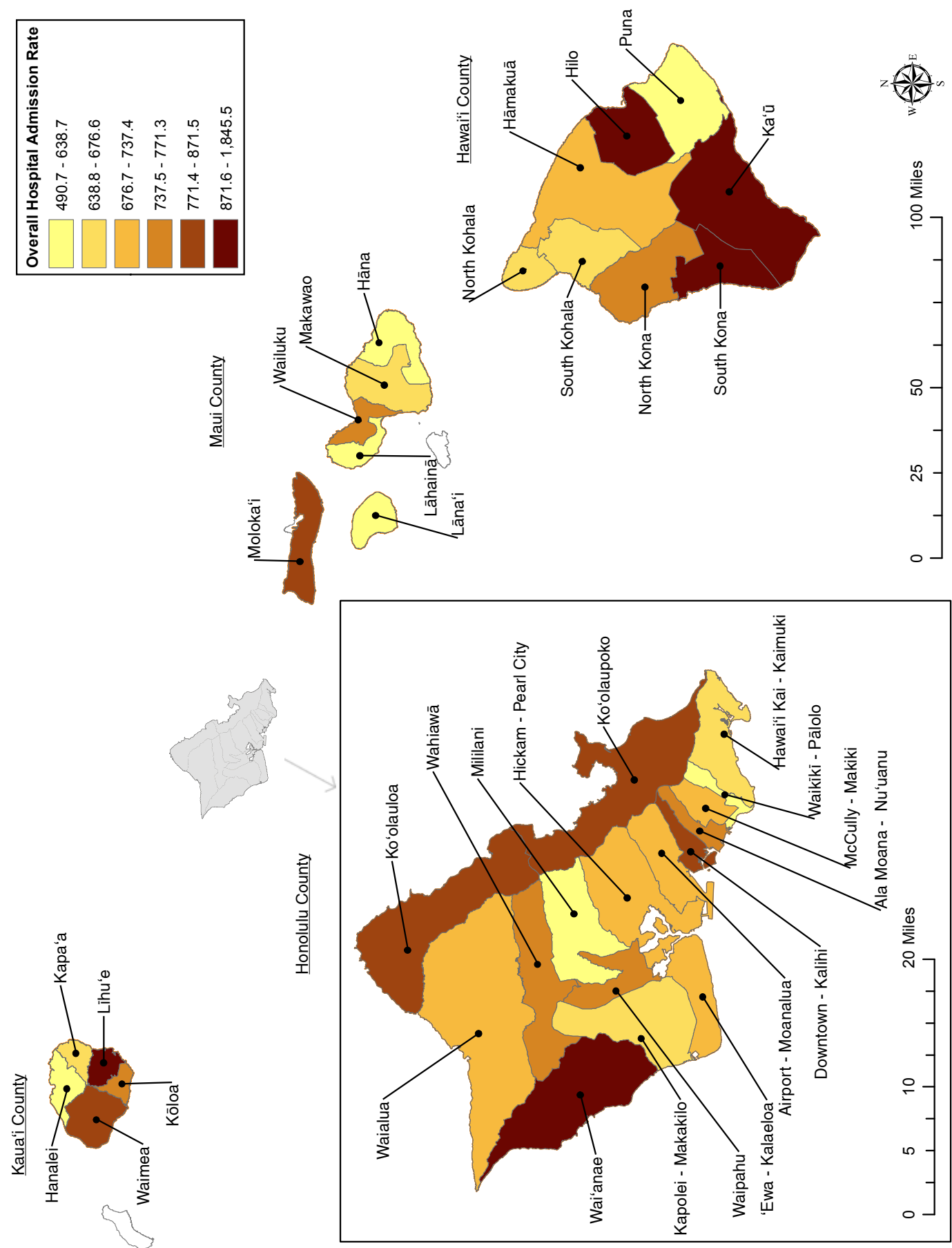
Overall Hospital Admissions	=	$\frac{\text{Number of Hospital Admission} * 10,000}{\text{Total Number of Discharges by Service Area}}$
Substance-Related Disorders	=	$\frac{\text{Number of Hospital Admissions with an Alcohol and Drug Related Disorder: ICD-9 code on any of the 20 levels (2910-2915, 2918, 29181, 29189, 2919, 2920, 29211, 29212, 2922, 29281-29284, 29289, 2929, 30300-30303, 30390-30393, 30400-30403, 30410-30413, 30420-30423, 30430-30433, 30440-30443, 30450-30453, 30500-30503, 30540-30543, 30550-30553, 30560-30563, 30570-30573, 30580-30583, 30590-30593, 64830-64834, 65550, 65551, 65553, 76072, 76073, 76075, 7795, 96500-96502, 96509, V6542) * 10,000}}{\text{Total Number of Discharges by Service Area}}$
Mood Disorders	=	$\frac{\text{Number of Hospital Admissions with a Depressive and Bipolar Disorder: ICD-9 code on any of the 20 levels (29600-29606, 29610-29616, 29620-29626, 29630-29636, 29640-29646, 29650-29656, 29660-29666, 2967, 29680-29682, 29689, 29690, 29699, 29383, 3004, 311) * 10,000}}{\text{Total Number of Discharges by Service Area}}$
Anxiety Disorders	=	$\frac{\text{Number of Hospital Admissions with an Anxiety Disorder: ICD-9 code on any of the 20 levels (29384, 30000-30002, 30009, 30010, 30020-30023, 30029, 3003, 3005, 30089, 3009, 3080-3084, 3089, 30981, 3130, 3131, 31321, 31322, 3133, 31382, 31383) * 10,000}}{\text{Total Number of Discharges by Service Area}}$
Delirium/Dementia, Disorders	=	$\frac{\text{Number of Hospital Admissions with a Delirium, Dementia, and Amnesic and Other Cognitive Disorder: ICD-9 code on any of the 20 levels (2900, 29010-29013, 29020-29021, 2903, 29040-29043, 2908, 2909, 2930-2931, 2940, 2941, 29410, 29411, 2948, 2949, 3100, 3102, 3108, 3109, 3310, 3311, 33111, 33119, 3312, 33182, 797) * 10,000}}{\text{Total Number of Discharges by Service Area}}$
Schizophrenia Disorders	=	$\frac{\text{Number of Hospital Admissions with a Schizophrenia and Other Psychotic Disorder: ICD-9 code on any of the 20 levels (29381, 29382, 29500-29505, 29510-29515, 29520-29525, 29530-29535, 29540-29545, 29550-29555, 29560-29565, 29570-39575, 29580-29585, 29590-29595, 2970-2973, 3978-2984, 2988, 2989) * 10,000}}{\text{Total Number of Discharges by Service Area}}$

Table 8-1: Overall Hospital Admission Rate, 2010-2014

Service Area	Annual Total Population (N)	Number with Hospitalization (n)	Hospitalization Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	605,189	741.5	(739.6 - 743.4)
Honolulu County	953,207	422,985	739.6	(737.4 - 741.8)
Hawai'i Kai - Kaimuki	70,638	27,576	650.6	(643.0 - 658.3)
Waikiki - Pālolo	52,489	17,953	570.1	(561.7 - 578.4)
McCully - Makiki	60,510	26,398	727.1	(718.3 - 735.9)
Ala Moana - Nu'uuanu	71,372	31,702	740.3	(732.2 - 748.5)
Downtown - Kalihi	69,010	36,085	871.5	(862.5 - 880.5)
Airport - Moanalua	66,070	28,243	712.5	(704.1 - 720.8)
Hickam - Pearl City	95,025	39,200	687.5	(680.7 - 694.3)
Waipahu	74,760	33,542	747.8	(739.8 - 755.8)
'Ewa - Kalaeloa	54,207	22,696	697.8	(688.7 - 706.9)
Kapolei - Makakilo	46,972	18,477	655.6	(646.2 - 665.1)
Mililani	52,803	18,172	573.6	(565.2 - 581.9)
Wahiawā	41,216	19,075	771.3	(760.4 - 782.3)
Wai'anae	48,519	29,304	1,006.6	(995.1 - 1,018.1)
Wai'alua	13,046	5,772	737.4	(718.4 - 756.4)
Ko'olauloa	21,406	10,372	807.6	(792.0 - 823.1)
Ko'olaupoko	115,164	55,880	808.7	(802.0 - 815.4)
Hawai'i County	185,079	87,295	786.1	(780.9 - 791.3)
Hilo	50,927	27,911	913.4	(902.7 - 924.2)
Puna	45,326	13,345	490.7	(482.4 - 499.0)
Ka'ū	8,451	9,358	1,845.5	(1,808.2 - 1,882.9)
South Kona	9,997	6,663	1,110.8	(1,084.2 - 1,137.5)
North Kona	37,875	16,970	746.8	(735.5 - 758.0)
South Kohala	17,627	6,970	659.0	(643.6 - 674.5)
North Kohala	6,322	2,467	650.4	(624.7 - 676.0)
Hāmakuā	8,554	3,611	703.6	(680.6 - 726.5)
Maui County	154,834	65,041	700.1	(694.7 - 705.5)
Hāna	2,291	812	590.7	(550.1 - 631.4)
Makawao	41,887	16,090	640.2	(630.3 - 650.1)
Wailuku	77,848	35,007	749.5	(741.6 - 757.3)
Lāhainā	22,508	8,625	638.7	(625.2 - 652.1)
Lāna'i	3,135	1,111	590.6	(555.9 - 625.4)
Moloka'i	7,255	3,396	780.2	(753.9 - 806.4)
Kaua'i County	67,091	29,868	742.0	(733.6 - 750.4)
Hanalei	7,828	2,677	570.0	(548.4 - 591.6)
Kapa'a	20,992	8,522	676.6	(662.2 - 691.0)
Līhu'e	14,683	7,681	871.9	(852.4 - 891.4)
Kōloa	14,086	6,323	748.1	(729.7 - 766.6)
Waimea	9,332	4,665	833.2	(809.3 - 857.1)

Source: Hawai'i Health Information Corporation (HHIC);

U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

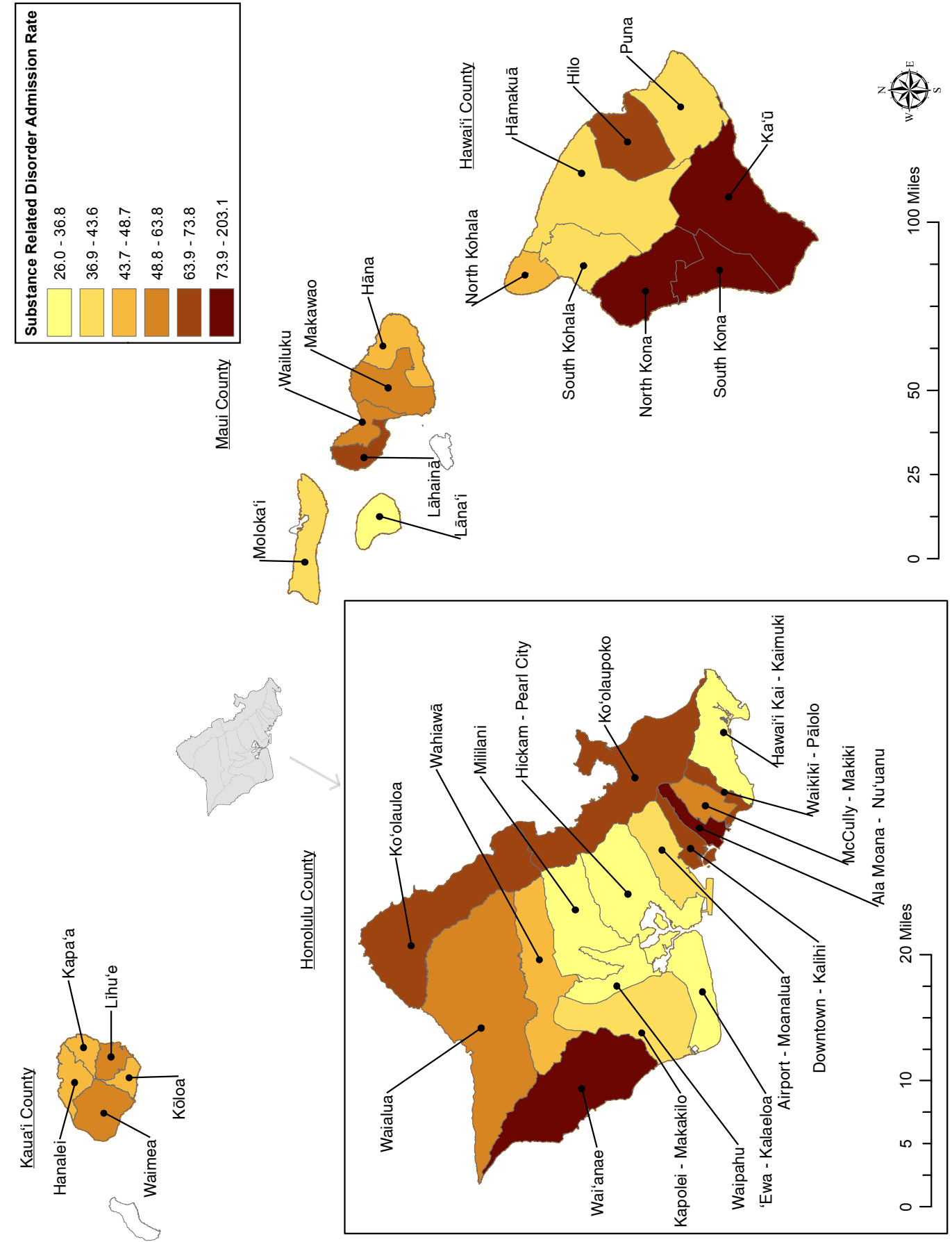


Map 8-1: Overall Hospital Admission Rate by Primary Care Service Area

Table 8-2: Hospital Admissions with a Substance Related Disorder Rate, 2010-2014

Service Area	Annual Total Population (N)	Number with Substance Related Disorder (n)	Substance Related Disorder Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	44,415	54.4	(53.9 - 54.9)
Honolulu County	953,207	29,300	51.2	(50.6 - 51.8)
Hawai'i Kai - Kaimuki	70,638	1,558	36.8	(34.9 - 38.6)
Waikiki - Pālolo	52,489	2,229	70.8	(67.8 - 73.7)
McCully - Makiki	60,510	1,914	52.7	(50.4 - 55.1)
Ala Moana - Nu'uuanu	71,372	3,425	80.0	(77.3 - 82.7)
Downtown - Kalihi	69,010	2,881	69.6	(67.0 - 72.1)
Airport - Moanalua	66,070	1,598	40.3	(38.3 - 42.3)
Hickam - Pearl City	95,025	1,737	30.5	(29.0 - 31.9)
Waipahu	74,760	1,356	30.2	(28.6 - 31.8)
'Ewa - Kalaeloa	54,207	917	28.2	(26.4 - 30.0)
Kapolei - Makakilo	46,972	1,042	37.0	(34.7 - 39.2)
Mililani	52,803	824	26.0	(24.2 - 27.8)
Wahiawā	41,216	1,132	45.8	(43.1 - 48.4)
Wai'anae	48,519	2,606	89.5	(86.1 - 93.0)
Wai'alua	13,046	483	61.7	(56.2 - 67.2)
Ko'olauloa	21,406	821	63.9	(59.6 - 68.3)
Ko'olaupoko	115,164	4,589	66.4	(64.5 - 68.3)
Hawai'i County	185,079	7,595	68.4	(66.9 - 69.9)
Hilo	50,927	2,255	73.8	(70.8 - 76.8)
Puna	45,326	1,169	43.0	(40.5 - 45.4)
Ka'ū	8,451	1,030	203.1	(190.7 - 215.5)
South Kona	9,997	682	113.7	(105.2 - 122.2)
North Kona	37,875	1,688	74.3	(70.7 - 77.8)
South Kohala	17,627	407	38.5	(34.7 - 42.2)
North Kohala	6,322	173	45.6	(38.8 - 52.4)
Hāmakuā	8,554	191	37.2	(31.9 - 42.5)
Maui County	154,834	5,591	60.2	(58.6 - 61.8)
Hāna	2,291	67	48.7	(37.1 - 60.4)
Makawao	41,887	1,334	53.1	(50.2 - 55.9)
Wailuku	77,848	2,982	63.8	(61.6 - 66.1)
Lāhainā	22,508	956	70.8	(66.3 - 75.3)
Lāna'i	3,135	62	33.0	(24.8 - 41.2)
Moloka'i	7,255	190	43.6	(37.4 - 49.9)
Kaua'i County	67,091	1,929	47.9	(45.8 - 50.1)
Hanalei	7,828	228	48.5	(42.2 - 54.8)
Kapa'a	20,992	573	45.5	(41.8 - 49.2)
Līhu'e	14,683	461	52.3	(47.6 - 57.1)
Kōloa	14,086	383	45.3	(40.8 - 49.9)
Waimea	9,332	284	50.7	(44.8 - 56.6)

Source: Hawai'i Health Information Corporation (HHIC);



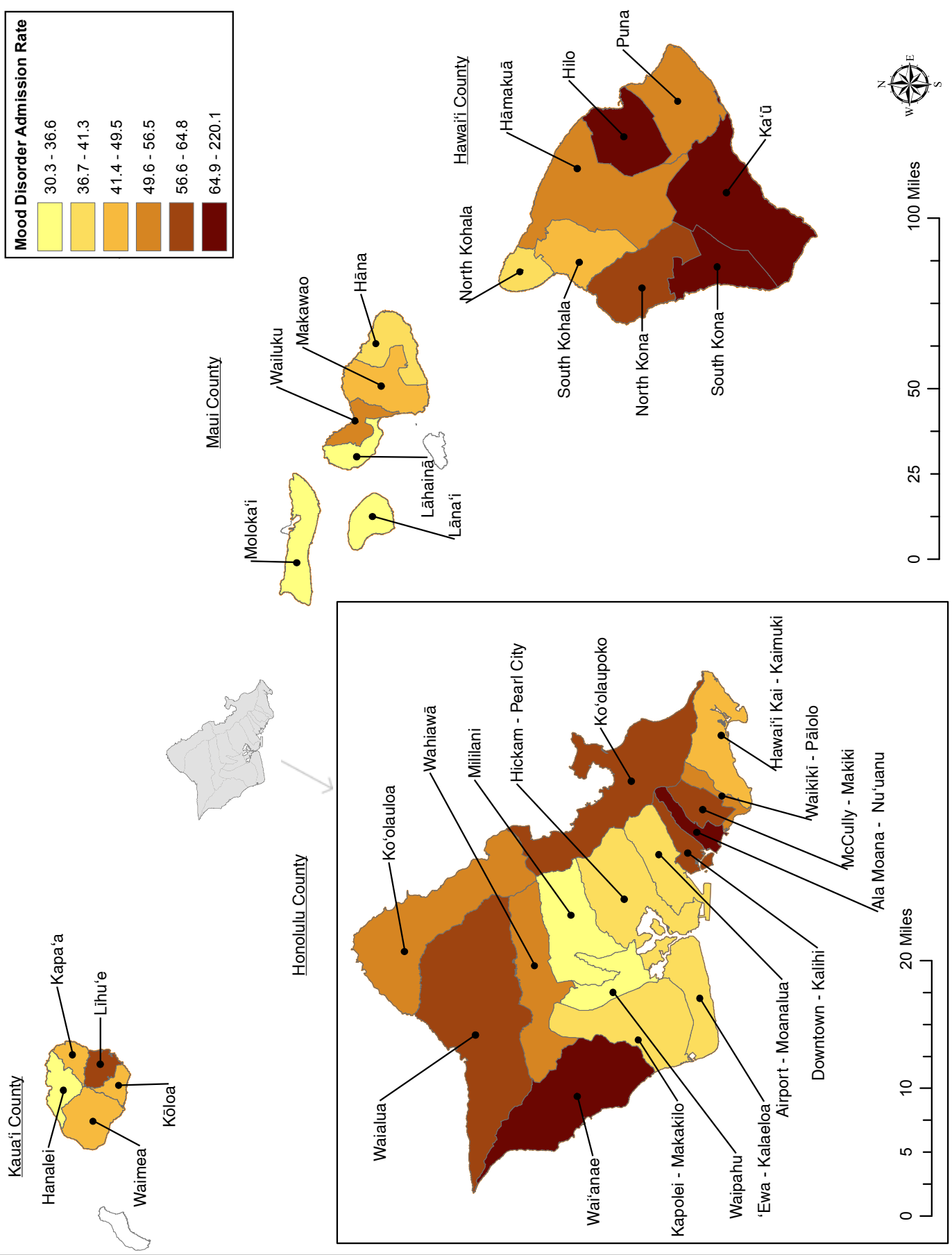
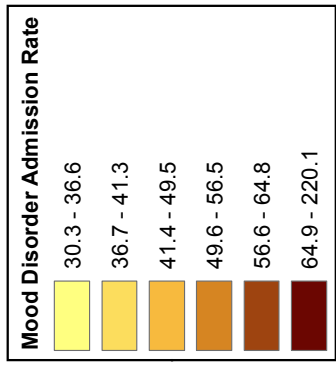
Map 8-2: Hospital Admissions with a Substance Related Disorder Rate by Primary Care Service Area

Table 8-3: Hospital Admissions with a Mood Disorder Rate, 2010-2014

Service Area	Annual Total Population (N)	Number with Mood Disorder (n)	Mood Disorder Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	43,665	53.5	(53.0 - 54.0)
Honolulu County	953,207	29,198	51.1	(50.5 - 51.6)
Hawai'i Kai - Kaimuki	70,638	1,933	45.6	(43.6 - 47.6)
Waikiki - Pālolo	52,489	1,777	56.4	(53.8 - 59.0)
McCully - Makiki	60,510	2,158	59.4	(56.9 - 61.9)
Ala Moana - Nu'uuanu	71,372	2,941	68.7	(66.2 - 71.2)
Downtown - Kalihi	69,010	2,348	56.7	(54.4 - 59.0)
Airport - Moanalua	66,070	1,558	39.3	(37.4 - 41.3)
Hickam - Pearl City	95,025	2,164	38.0	(36.4 - 39.6)
Waipahu	74,760	1,638	36.5	(34.7 - 38.3)
'Ewa - Kalaeloa	54,207	1,238	38.1	(35.9 - 40.2)
Kapolei - Makakilo	46,972	1,165	41.3	(39.0 - 43.7)
Mililani	52,803	1,085	34.2	(32.2 - 36.3)
Wahiawā	41,216	1,295	52.4	(49.5 - 55.2)
Wai'anae	48,519	2,032	69.8	(66.8 - 72.8)
Waialua	13,046	464	59.3	(53.9 - 64.7)
Ko'olauloa	21,406	681	53.0	(49.0 - 57.0)
Ko'olaupoko	115,164	4,480	64.8	(62.9 - 66.7)
Hawai'i County	185,079	8,330	75.0	(73.4 - 76.6)
Hilo	50,927	2,876	94.1	(90.7 - 97.6)
Puna	45,326	1,537	56.5	(53.7 - 59.3)
Ka'ū	8,451	1,116	220.1	(207.2 - 233.0)
South Kona	9,997	505	84.2	(76.8 - 91.5)
North Kona	37,875	1,440	63.4	(60.1 - 66.6)
South Kohala	17,627	445	42.1	(38.2 - 46.0)
North Kohala	6,322	151	39.8	(33.5 - 46.2)
Hāmakuā	8,554	260	50.7	(44.5 - 56.8)
Maui County	154,834	4,209	45.3	(43.9 - 46.7)
Hāna	2,291	56	40.7	(30.1 - 51.4)
Makawao	41,887	1,148	45.7	(43.0 - 48.3)
Wailuku	77,848	2,328	49.8	(47.8 - 51.9)
Lāhainā	22,508	465	34.4	(31.3 - 37.6)
Lāna'i	3,135	57	30.3	(22.4 - 38.2)
Moloka'i	7,255	155	35.6	(30.0 - 41.2)
Kaua'i County	67,091	1,928	47.9	(45.8 - 50.0)
Hanalei	7,828	172	36.6	(31.1 - 42.1)
Kapa'a	20,992	623	49.5	(45.6 - 53.3)
Līhu'e	14,683	523	59.4	(54.3 - 64.5)
Kōloa	14,086	351	41.5	(37.2 - 45.9)
Waimea	9,332	259	46.3	(40.6 - 51.9)

Source: Hawai'i Health Information Corporation (HHIC);

U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

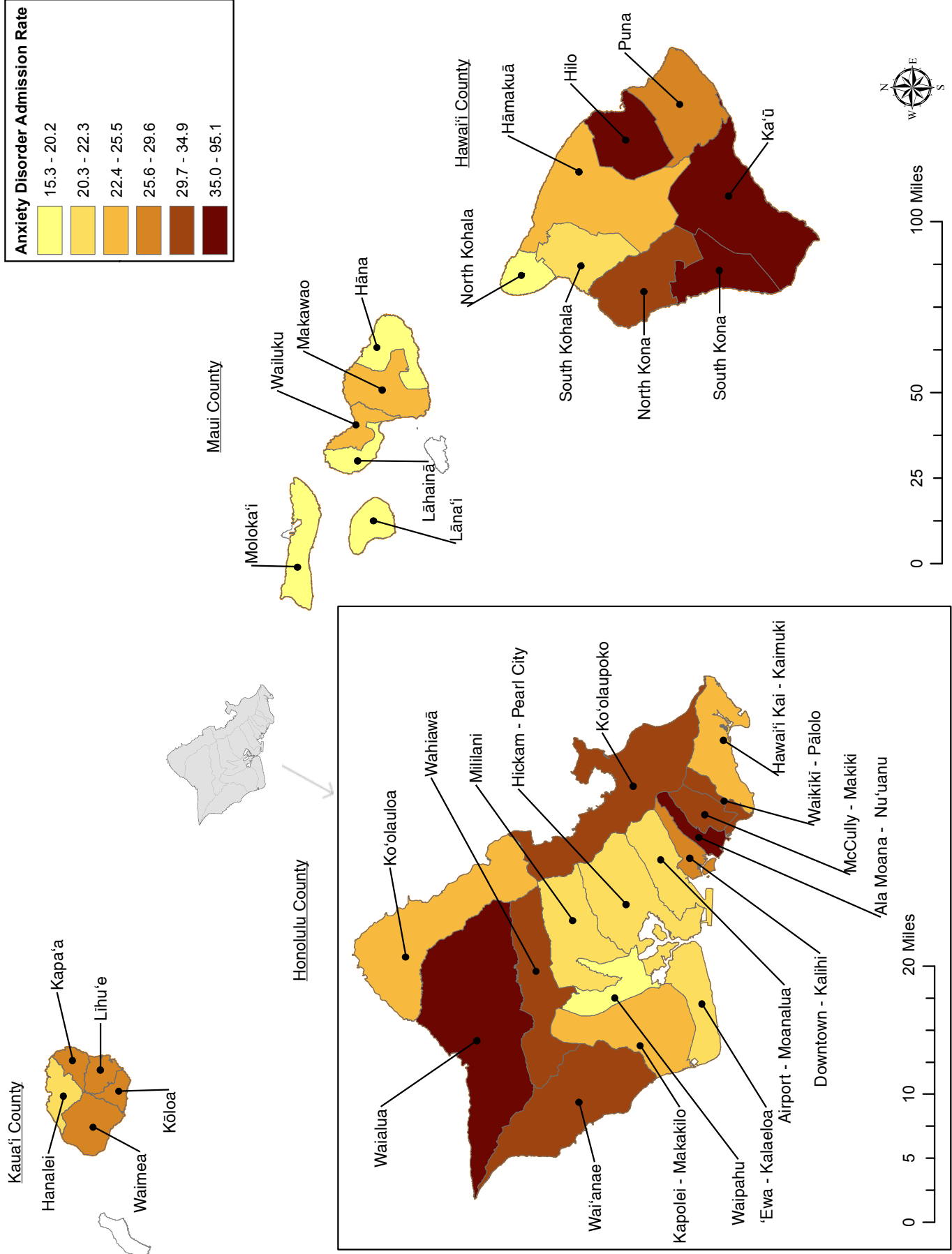
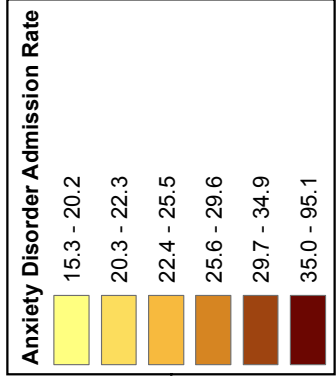


Map 8-3: Hospital Admissions with a Mood Disorder Rate by Primary Care Service Area

Table 8-4: Hospital Admissions with an Anxiety Disorder Rate, 2010-2014

Service Area	Annual Total Population (N)	Number with Anxiety Disorder (n)	Anxiety Disorder Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	22,788	27.9	(27.6 - 28.3)
Honolulu County	953,207	15,739	27.5	(27.1 - 27.9)
Hawai'i Kai - Kaimuki	70,638	1,074	25.3	(23.8 - 26.9)
Waikiki - Pālolo	52,489	993	31.5	(29.6 - 33.5)
McCully - Makiki	60,510	1,123	30.9	(29.1 - 32.7)
Ala Moana - Nu'uuanu	71,372	1,561	36.5	(34.6 - 38.3)
Downtown - Kalihi	69,010	1,118	27.0	(25.4 - 28.6)
Airport - Moanalua	66,070	834	21.0	(19.6 - 22.5)
Hickam - Pearl City	95,025	1,253	22.0	(20.8 - 23.2)
Waipahu	74,760	889	19.8	(18.5 - 21.1)
'Ewa - Kalaeloa	54,207	725	22.3	(20.7 - 23.9)
Kapolei - Makakilo	46,972	638	22.6	(20.9 - 24.4)
Mililani	52,803	647	20.4	(18.8 - 22.0)
Wahiawā	41,216	786	31.8	(29.6 - 34.0)
Wai'anae	48,519	938	32.2	(30.2 - 34.3)
Waialua	13,046	279	35.6	(31.5 - 39.8)
Ko'olauloa	21,406	326	25.4	(22.6 - 28.1)
Ko'olaupoko	115,164	2,413	34.9	(33.5 - 36.3)
Hawai'i County	185,079	3,793	34.2	(33.1 - 35.2)
Hilo	50,927	1,205	39.4	(37.2 - 41.7)
Puna	45,326	724	26.6	(24.7 - 28.6)
Ka'ū	8,451	482	95.1	(86.6 - 103.5)
South Kona	9,997	276	46.0	(40.6 - 51.4)
North Kona	37,875	699	30.8	(28.5 - 33.0)
South Kohala	17,627	220	20.8	(18.1 - 23.6)
North Kohala	6,322	69	18.2	(13.9 - 22.5)
Hāmakuā	8,554	118	23.0	(18.8 - 27.1)
Maui County	154,834	2,170	23.4	(22.4 - 24.3)
Hāna	2,291	25	18.2	(11.1 - 25.3)
Makawao	41,887	625	24.9	(22.9 - 26.8)
Wailuku	77,848	1,192	25.5	(24.1 - 27.0)
Lāhainā	22,508	206	15.3	(13.2 - 17.3)
Lāna'i	3,135	38	20.2	(13.8 - 26.6)
Moloka'i	7,255	84	19.3	(15.2 - 23.4)
Kaua'i County	67,091	1,086	27.0	(25.4 - 28.6)
Hanalei	7,828	98	20.9	(16.7 - 25.0)
Kapa'a	20,992	343	27.2	(24.4 - 30.1)
Līhu'e	14,683	243	27.6	(24.1 - 31.1)
Kōloa	14,086	236	27.9	(24.4 - 31.5)
Waimea	9,332	166	29.6	(25.1 - 34.2)

Source: Hawai'i Health Information Corporation (HHIC);
 U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

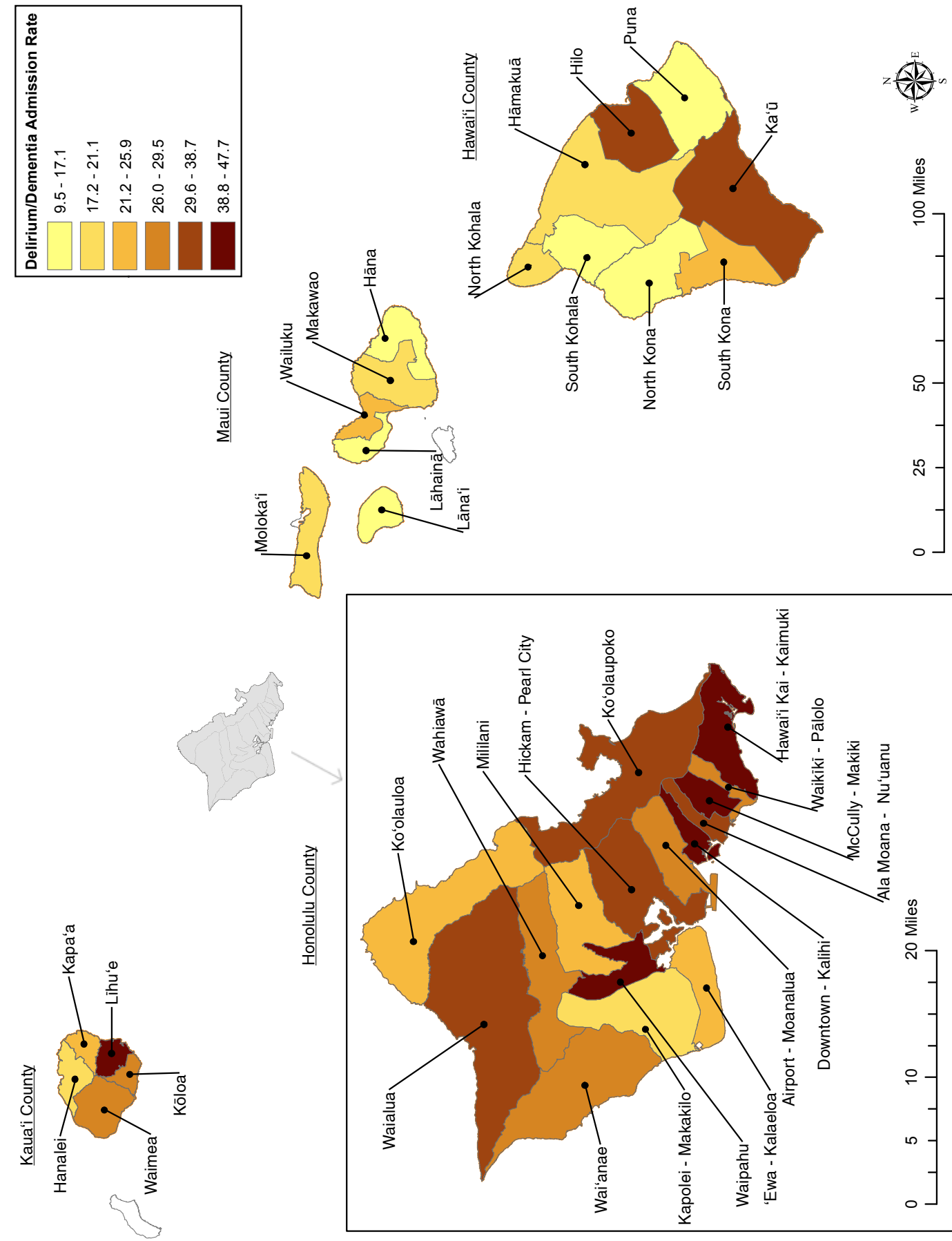


Map 8-4: Hospital Admissions with an Anxiety Disorder Rate by Primary Care Service Area

Table 8-5: Hospital Admissions with a Delirium/Dementia Disorder Rate, 2010-2014

Service Area	Annual Total Population (N)	Number with Delirium/Dementia Disorders (n)	Delirium/Dementia Disorder Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	25,464	31.2	(30.8 - 31.6)
Honolulu County	953,207	19,932	34.9	(34.4 - 35.3)
Hawai'i Kai - Kaimuki	70,638	1,943	45.8	(43.8 - 47.9)
Waikiki - Pālolo	52,489	930	29.5	(27.6 - 31.4)
McCully - Makiki	60,510	1,730	47.7	(45.4 - 49.9)
Ala Moana - Nu'uuanu	71,372	1,651	38.6	(36.7 - 40.4)
Downtown - Kalihi	69,010	1,762	42.6	(40.6 - 44.5)
Airport - Moanalua	66,070	1,148	29.0	(27.3 - 30.6)
Hickam - Pearl City	95,025	2,205	38.7	(37.1 - 40.3)
Waipahu	74,760	1,846	41.2	(39.3 - 43.0)
'Ewa - Kalaeloa	54,207	793	24.4	(22.7 - 26.1)
Kapolei - Makakilo	46,972	518	18.4	(16.8 - 20.0)
Mililani	52,803	769	24.3	(22.6 - 26.0)
Wahiawā	41,216	670	27.1	(25.0 - 29.1)
Wai'anae	48,519	764	26.2	(24.4 - 28.1)
Waialua	13,046	246	31.4	(27.5 - 35.4)
Ko'olauloa	21,406	276	21.5	(19.0 - 24.0)
Ko'olaupoko	115,164	2,539	36.7	(35.3 - 38.2)
Hawai'i County	185,079	2,493	22.4	(21.6 - 23.3)
Hilo	50,927	1,170	38.3	(36.1 - 40.5)
Puna	45,326	315	11.6	(10.3 - 12.9)
Ka'ū	8,451	183	36.1	(30.9 - 41.3)
South Kona	9,997	141	23.5	(19.6 - 27.4)
North Kona	37,875	388	17.1	(15.4 - 18.8)
South Kohala	17,627	123	11.6	(9.6 - 13.7)
North Kohala	6,322	67	17.7	(13.4 - 21.9)
Hāmakuā	8,554	106	20.7	(16.7 - 24.6)
Maui County	154,834	1,938	20.9	(19.9 - 21.8)
Hāna	2,291	13	9.5	(4.3 - 14.6)
Makawao	41,887	441	17.5	(15.9 - 19.2)
Wailuku	77,848	1,208	25.9	(24.4 - 27.3)
Lāhainā	22,508	161	11.9	(10.1 - 13.8)
Lāna'i	3,135	26	13.8	(8.5 - 19.1)
Moloka'i	7,255	89	20.4	(16.2 - 24.7)
Kaua'i County	67,091	1,101	27.4	(25.7 - 29.0)
Hanalei	7,828	99	21.1	(16.9 - 25.2)
Kapa'a	20,992	283	22.5	(19.9 - 25.1)
Līhu'e	14,683	341	38.7	(34.6 - 42.8)
Kōloa	14,086	227	26.9	(23.4 - 30.4)
Waimea	9,332	151	27.0	(22.7 - 31.3)

Source: Hawai'i Health Information Corporation (HHIC);
U.S. Department of Commerce, U.S. Census Bureau, Population Estimates

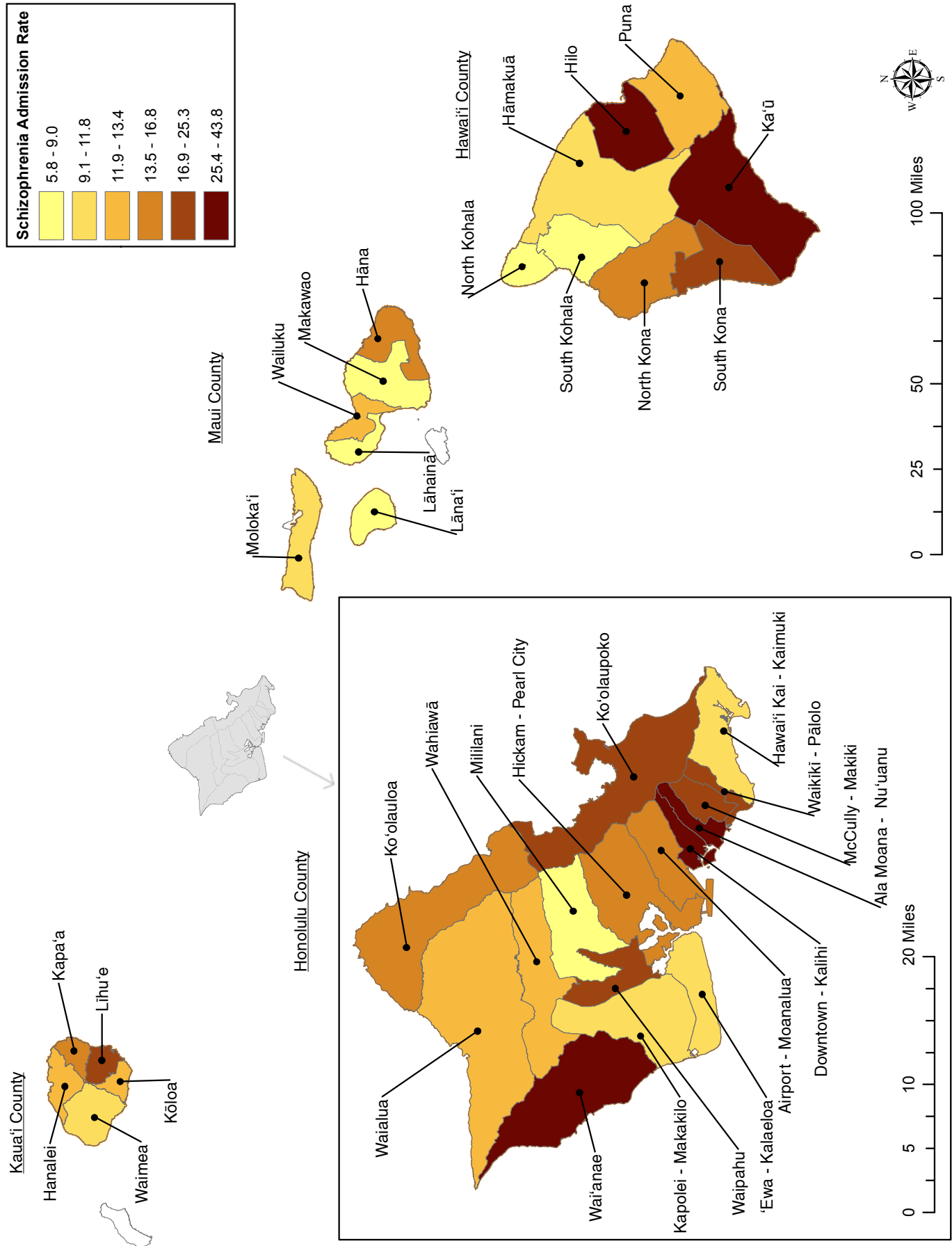


Map 8-5: Hospital Admissions with a Delirium/Dementia Disorder Rate by Primary Care Service Area

Table 8-6: Hospital Admissions with a Schizophrenia Disorder Rate, 2010-2014

Service Area	Annual Total Population (N)	Number with a Schizophrenia Disorder (n)	Schizophrenia Disorder Rate (per 10,000)	95% Confidence Interval
State of Hawai'i	1,360,301	14,240	17.4	(17.2 - 17.7)
Honolulu County	953,207	10,542	18.4	(18.1 - 18.8)
Hawai'i Kai - Kaimuki	70,638	443	10.5	(9.5 - 11.4)
Waikiki - Pālolo	52,489	616	19.6	(18.0 - 21.1)
McCully - Makiki	60,510	718	19.8	(18.3 - 21.2)
Ala Moana - Nu'uuanu	71,372	1,277	29.8	(28.2 - 31.5)
Downtown - Kalihi	69,010	1,167	28.2	(26.6 - 29.8)
Airport - Moanalua	66,070	585	14.8	(13.6 - 16.0)
Hickam - Pearl City	95,025	767	13.5	(12.5 - 14.4)
Waipahu	74,760	908	20.2	(18.9 - 21.6)
'Ewa - Kalaeloa	54,207	334	10.3	(9.2 - 11.4)
Kapolei - Makakilo	46,972	303	10.8	(9.5 - 12.0)
Mililani	52,803	205	6.5	(5.6 - 7.4)
Wahiawā	41,216	323	13.1	(11.6 - 14.5)
Wai'anae	48,519	953	32.7	(30.7 - 34.8)
Waialua	13,046	105	13.4	(10.8 - 16.0)
Ko'olauloa	21,406	207	16.1	(13.9 - 18.3)
Ko'olaupoko	115,164	1,547	22.4	(21.3 - 23.5)
Hawai'i County	185,079	2,114	19.0	(18.2 - 19.8)
Hilo	50,927	874	28.6	(26.7 - 30.5)
Puna	45,326	335	12.3	(11.0 - 13.6)
Ka'ū	8,451	222	43.8	(38.0 - 49.5)
South Kona	9,997	152	25.3	(21.3 - 29.4)
North Kona	37,875	378	16.6	(15.0 - 18.3)
South Kohala	17,627	61	5.8	(4.3 - 7.2)
North Kohala	6,322	34	9.0	(6.0 - 12.0)
Hāmakuā	8,554	58	11.3	(8.4 - 14.2)
Maui County	154,834	967	10.4	(9.8 - 11.1)
Hāna	2,291	19	13.8	(7.6 - 20.0)
Makawao	41,887	221	8.8	(7.6 - 10.0)
Wailuku	77,848	570	12.2	(11.2 - 13.2)
Lāhainā	22,508	98	7.3	(5.8 - 8.7)
Lāna'i	3,135	16	8.5	(4.3 - 12.7)
Moloka'i	7,255	43	9.9	(6.9 - 12.8)
Kaua'i County	67,091	617	15.3	(14.1 - 16.5)
Hanalei	7,828	62	13.2	(9.9 - 16.5)
Kapa'a	20,992	212	16.8	(14.6 - 19.1)
Līhu'e	14,683	164	18.6	(15.8 - 21.5)
Kōloa	14,086	113	13.4	(10.9 - 15.8)
Waimea	9,332	66	11.8	(8.9 - 14.6)

Source: Hawai'i Health Information Corporation (HHIC);



Map 8-6: Hospital Admissions with a Schizophrenia Disorder Rate by Primary Care Service Area

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ACKNOWLEDGMENTS

The Family Health Services Division (FHSD) appreciates the assistance given by the following organizations in providing data for this document:

- Hawai'i Department of Health, Office of Health Status Monitoring
- Hawai'i Department of Health, Behavioral Risk Factor Surveillance System
- Hawai'i Department of Health, Family Health Services Division
- Hawai'i Health Information Corporation
- United State Census Bureau

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* Position supported by the Family Health Services Division; the MCH Epidemiology Program, Centers for Disease Control and Prevention; and the MCH Bureau, Health Resources and Services Administration.



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This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U68HP11443, titled "Primary Care Services Resources Coordination and Development", with a total grant award of \$167,994. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.