

Hawai'i's Registered Teacher Apprenticeship Program: GIS Map Data Analysis



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Introduction

The Hawai'i Teacher Standards Board (HTSB) and the [Center on Great Teachers and Leaders](#) (GTL Center) at the American Institutes for Research® conducted a data analysis session with key stakeholders from across the state to help inform the development and design of a pilot registered teacher apprenticeship program (RTAP). The goal of the session was to identify areas of the state with the greatest need for teachers to help prioritize the development of the RTAP for the greatest success and impact. Participants analyzed data from a geographic information system (GIS) map that geographically visualizes educator workforce data, such as teacher vacancy rates and student demographic data, by complex, school, and educator preparation program. Examining data geographically allows participants to see the significance of geography and the intersection of various systems impacting teacher recruitment and retention. The GIS map was developed by the GTL Center in collaboration with the Hawai'i Department of Education (HIDOE) over 2 years as part of a [National Collaborative](#) to address educator shortages.

Session participants explored additional data from the map to inform the RTAP design, including subject areas with greatest need and student demographics. This paper provides

- an overview of the activities during the data analysis session,
- a summary of key data findings related to the communities with the greatest need for teachers and subject areas,
- a description of existing resources that could be leveraged for a pre-apprenticeship program, and
- an overview of data on the percentage of Native Hawaiian students in complexes with a greatest need for teachers.

SUMMARY OF POTENTIAL PRIORITIES FOR RTAP

- Consider piloting a pre-apprenticeship program at Nānākuli High and Intermediate, Waiʻanae High, and/or Lahainaluna High due to high existing resources for an educator pathway and higher teacher vacancy rate in their complex and because these schools serve a higher percentage of Native Hawaiian students.
- Focus RTAP on preparing teachers in special and/or elementary education due to high vacancy rates in these subjects in most of the state.
- Consider establishing an RTAP on Maui, Kauai, and/or the southwestern part of Hawaiʻi Island, including Kau, and/or Konawaena, due to high vacancy rates in these complexes and the lack of a nearby educator preparation program (EPP).

Overview of Activities

The GTL Center and HTSB's data analysis session was on July 24, 2024, and included key stakeholders from EPPs, Hawaiʻi P-20, Hawaiʻi House of Representatives, the Institutes for Native Pacific Education and Culture, HIDOE, the Hawaiʻi Department of Labor and Industrial Relations, and other stakeholders.

During the session, participants first explored the GIS map to determine which communities experience the greatest teacher shortages to help identify potential pilot sites for the RTAP. Next, participants explored the map data to identify subject areas (e.g., special education, elementary education) that experience greater teacher vacancies. Finally, participants engaged in a discussion, reflecting on the overall data and its implications for the RTAP and addressing teacher shortages in the state. These steps helped participants better understand the data in the state and the complexity of educator supply and demand to provide recommendations to HTSB on how to design the RTAP pilot.

Data Analysis Findings

This section summarizes the data findings discussed during the data analysis session. It provides an overview and data on the communities with the greatest need for teachers, subject areas with the highest vacancy rates, existing resources to potentially leverage for a pre-apprenticeship program, and the complexes with the highest percentage of Native Hawaiian students. The GIS map data are from HIDOE from the 2023–24 school year. The data exclude information about charter schools because those data are not collected by HIDOE.

Communities of Need

Participants were divided into teams and assigned one Hawaiian island within the school district to explore within the GIS map. Teams were provided a workbook with step-by-step instructions for how to navigate the map and document their data observations. As teams followed each step and navigated the map, they were provided with reflection questions to consider. Teams wrote their final data findings, identifying the communities experiencing the greatest teacher shortages. Participants noted which complexes and schools had the greatest separation/transfer rate, vacancy rate, and vacancy rates during the past 5 years. Table 1 lists the complexes participants identified with highest vacancy rates (see Appendix A for the full list of complexes, schools, and data findings).

Data Metric Definitions

The GIS map includes key data metrics developed by GTL Center data analysts in collaboration with HIDOE based on best practice and modeled after states such as Colorado.

Vacancy rate: The full-time equivalent (FTE) of unfilled or vacant positions divided by the total FTE of teachers, by school or complex

Separation/transfer rate: The FTE of separations from HIDOE and transfers of schools or role divided by the total FTE of teachers, by school or complex

Vacancy rate (5-year difference): The current vacancy rate subtracted by the vacancy rate from 5 years ago (2018–19)

Table 1. Complexes With the Highest Vacancy Rates

Complex	Island	Vacancy rate
1. Kau	Hawai'i	14%
2. Konawaena	Hawai'i	10%
3. Lahainaluna	Maui	10%
4. Kekaulike	Maui	9%
5. Hana	Maui	8%
6. Kohala	Hawai'i	8%
7. Baldwin	Maui	8%
8. Maui	Maui	8%
9. Nanakuli	O'ahu	7%
10. Waianae	O'ahu	7%
11. Waimea	Kauai	7%

Subject Areas of Need

In the same teams and island assignments, teams explored the GIS map to determine if there are subject areas that experience greater vacancies in the communities of need identified previously. For example, if there is a concentration of a specific subject area with a higher vacancy rate in any of the complexes that experience the greatest teacher shortages, HTSB may want to consider designing the pilot RTAP to focus on preparing teachers for that subject area.

Across all the islands, special education was identified as the subject area with the highest vacancy rates, and elementary education was identified as the second highest. These two subject areas consistently rose to the top, having the highest vacancy rates on each island. The data on school-level vacancy rates also show most schools with the highest vacancy rates are elementary or serve elementary grades (30 of 42 schools). Beyond special and elementary education, Molokai and Maui also had high vacancy rates for Hawaiian language. Table 2 illustrates the subject areas with the greatest vacancy rates for the complexes with the overall highest teacher vacancy rates (see Appendix B for the full list of subject areas with the highest vacancy rates for each island). The vacancy rate for the data in this table is scaled by the number of students served in each complex.

Table 2. Subject Areas With the Highest Vacancy Rates

Complex	Island	Subject areas Vacancy Rate
1. Kau	Hawai'i	Special education: 0.319 Elementary education: 0.213
2. Konawaena	Hawai'i	Special education: 0.185
3. Lahainaluna	Maui	Special education: 0.100
4. Kekaulike	Maui	Special education: 0.123 Elementary education: 0.123
5. Hana	Maui	
6. Kohala	Hawai'i	Elementary education: 0.130
7. Baldwin	Maui	Special education: 0.150 Elementary education: 0.075
8. Maui	Maui	Elementary education: 0.116
9. Nanakuli	O'ahu	Elementary education: 0.049
10. Waianae	O'ahu	Elementary education: 0.121 Special education: 0.081
11. Waimea	Kauai	Special education: 0.125 English language arts: 0.063 Social studies: 0.063

Resources to Build a Pre-Apprenticeship Program

One type of program that supports RTAP includes a pre-apprenticeship program that allows high school students to take college-level education courses and participate in work-based learning experiences in school or classroom settings. This model allows students to explore whether they are interested in a career in education, build experience working with students, and earn college credits to save on costs to become prepared to be a teacher. Hawai'i currently offers an education-specific career and technical education (CTE) course called Teaching as a Profession. If HTSB decides to establish a pre-apprenticeship program, schools that already offer the Teaching as a Profession course may have existing resources to leverage, including available CTE teachers, equipment, and interested students. Another resource to support a pre-apprenticeship program is Educators Rising, a national network aimed at supporting students interested in education-related careers. Local schools have an opportunity to pilot the curriculum from Educators Rising and receive funding to support this effort. Table 3 highlights which high schools offer these resources and whether they are in any of the complexes identified as having a high teacher vacancy rate. Only three high schools that offer the Teaching as a Profession course are in a complex with the highest teacher vacancy rate, and none of the schools piloting Educators Rising are in a complex with the highest vacancy rate. HTSB and HIDOE may want to consider using similar educator demand data to prioritize the expansion of these programs in addition to informing the RTAP.

Table 3. Existing Resources for Pre-Apprenticeship Programs

Island	High school	Teaching as a Profession	Educators Rising	In complexes with highest vacancy rate
O'ahu	Leilehua	✓		
	Mililani	✓	✓	
	Farrington	✓	✓	
	Campbell	✓	✓	
	Nānākuli	✓		✓
	Pearl City	✓	✓	
	Wai'anae	✓		✓
	Waipahu	✓	✓	
Maui	Lahainaluna	✓		✓
	Maui	✓	✓	
Hawai'i	Hilo	✓		
	Waiākea	✓	✓	
	Pahoa	✓		

Supporting Native Hawaiian Students

The HTSB expressed a priority of any RTAP in the state to help diversify the teacher workforce to reflect the students they serve, which includes giving priority to creating an educator pathway focused on Native Hawaiian students. The GIS map includes data of the percentage of Native Hawaiian students, by complex. Table 4 highlights the complexes with the highest percentage of Native Hawaiian students served and highest teacher vacancy rates and indicates whether each complex has a Hawaiian language immersion school.

Table 4. Complexes With the Highest Percentage of Native Hawaiian Students

Island	Complex	Percentage of Native Hawaiian students	In complexes with highest teacher vacancy rate	In complexes with a Hawaiian language immersion school
O'ahu	Nanakuli	69%	✓	✓
	Waianae	56%	✓	
	Kailua	45%		✓
	Castle	43%		✓
Molokai	Molokai	78%		✓
Maui	Hana	76%	✓	✓
Hawai'i	Pahoa	44%		
	Hilo	40%		✓

Conclusion

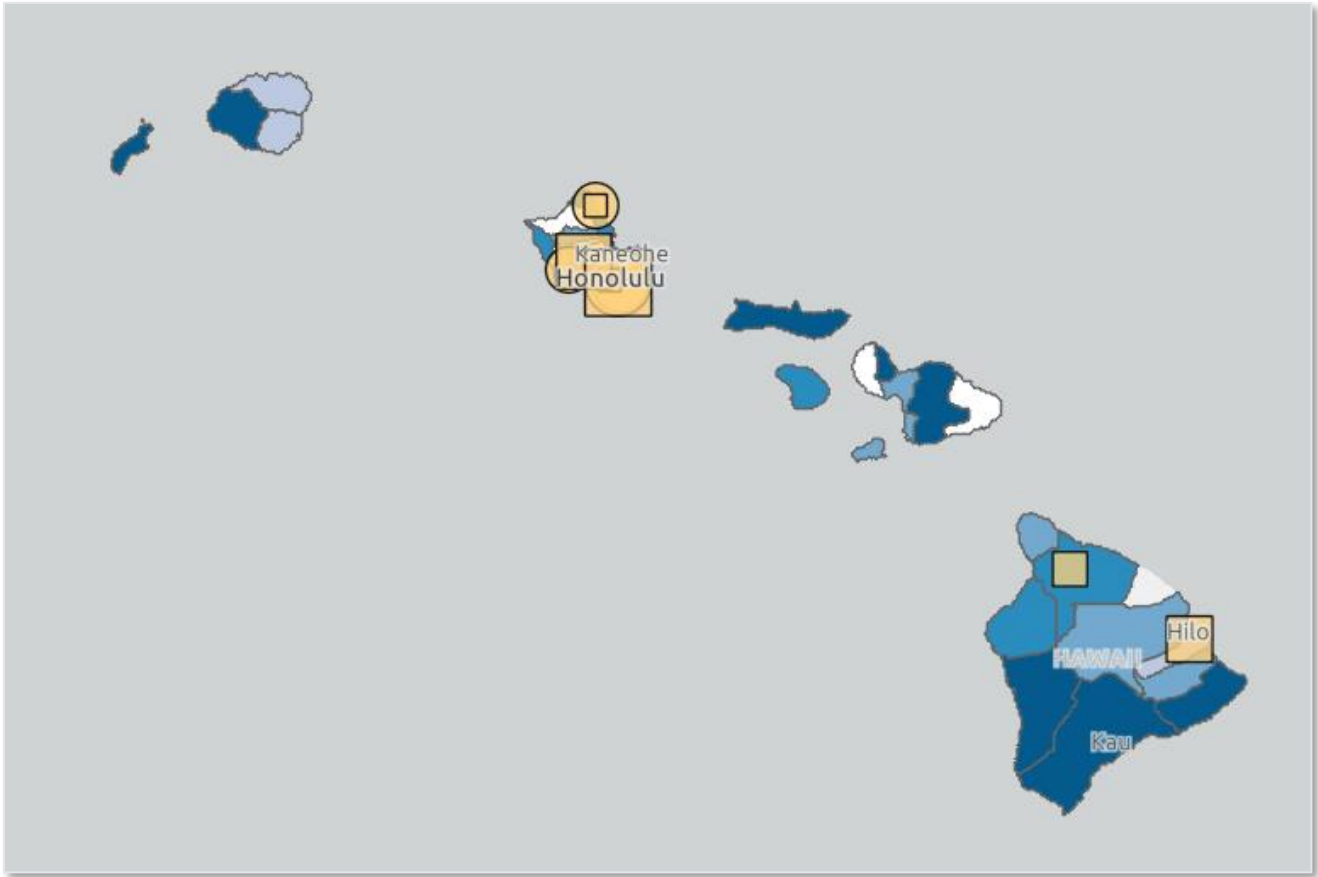
Hawai'i recently won a federal State Apprenticeship Expansion Formula Grant that includes funds to develop an RTAP. The grant is designed to help states advance apprenticeship programs as a talent management strategy to create career pathways in growing industries and increase opportunities for marginalized and underserved communities. The data analysis session was designed to help HTSB prioritize communities to launch a pilot RTAP by considering which complexes and schools have the greatest teacher shortages, which subject areas experience the greatest teacher vacancies, which schools have resources that could be leveraged for a pre-apprentice program, and which communities serve the highest percentage of Native Hawaiian students.

If piloting a pre-apprenticeship program, HIDOE and HTSB may want to explore launching at Nānākuli High and Intermediate, Wai'anae High, and/or Lahainaluna High. These high schools currently offer the Teaching as a Profession course and are in complexes with the highest teacher vacancy rates, at 8% and 9%. Nānākuli and Wai'anae complexes also serve the highest percentage of Native Hawaiian students (69% and 56%). These schools have existing student interest in education pathways and resources that could be potentially leveraged for a pre-apprenticeship program and are in communities with a need for teachers. Table 5 illustrates the comparison of complexes with a high school that offers Teaching as a Profession, the percentage of Native Hawaiian students by complex, and whether the complex has the highest vacancy rate.

Table 5. Complexes With a High School Offering Teaching as a Profession, Percentage of Native Hawaiian Students, and Complexes With Highest Vacancy Rates

Island	Complex	Percentage of Native Hawaiian students, by complex	High school with Teaching as a Profession	Complexes with highest vacancy rates
O'ahu	Nānākuli	69%	✓	✓
	Wai'anae	56%	✓	✓
	Pearl City	17%	✓	
	Campbell	15%	✓	
	Mililani	13%	✓	
	Leilehua	13%	✓	
	Farrington	8%	✓	
	Waipahu	8%	✓	
Maui	Lahainaluna	17%	✓	✓
	Maui	15%	✓	
Hawai'i	Pahoa	43%	✓	
	Waiākea	29%	✓	
	Hilo	40%	✓	

Figure 1. Image From GIS Map, Indicating Location of Educator Preparation Programs



If the pilot RTAP program will focus on preparing teachers in a specific subject area, HTSB should consider prioritizing special education and elementary education. For example, offering a dual licensure program that allows teacher candidates to earn their license in both elementary and special education. HTSB may want to consider complexes with high vacancies in special or elementary education but lack a nearby EPP. For example, Maui; Kauai; and the southwestern part of Hawai'i Island, including Kau and Konawaena, do not have a physical EPP. There are several complexes in these areas that have the highest teacher vacancy rate overall and specifically in special and elementary education.

Appendix A. Teacher Shortage, by Complex and School

Tables A1–A6 identify the complexes and/or schools with the greatest teacher shortages for each island, by either their separation/transfer rate, vacancy rate, and/or vacancy rate during a 5-year difference. The tables do not include every complex or school but rather those that appeared in the GIS map in the top tier of at least one of the three metrics. See page 3 of the main document for definitions for each of these data metrics.

Table A1. Complexes and Schools With the Greatest Teacher Shortages on Kauai

Complex	School
Kapaa <ul style="list-style-type: none"> • Separation/transfer: 13% • Vacancy: 5% • Vacancy 5-year difference: No change 	Hanalei Elementary <ul style="list-style-type: none"> • Separation/transfer: 14%
	Kapaa Middle <ul style="list-style-type: none"> • Separation/transfer: 33% • Vacancy: 14%
	Koloa Elementary <ul style="list-style-type: none"> • Vacancy: 14% • Vacancy 5-year difference: 14% increase
Waimea <ul style="list-style-type: none"> • Separation/transfer: 12.3% • Vacancy: 7.3% • Vacancy 5-year difference: 6.3% increase 	Kekaha Elementary <ul style="list-style-type: none"> • Separation/transfer: 12% • Vacancy: 14% • Vacancy 5-year difference: 11% increase
	Niihau High and Elementary <ul style="list-style-type: none"> • Separation/transfer: 50% • Vacancy: 50% • Vacancy 5-year difference: 50% increase
	Waimea Canyon Middle <ul style="list-style-type: none"> • Separation/transfer: 18% • Vacancy: 6% • Vacancy 5-year difference: 6% increase

Table A2. Complexes and Schools With the Greatest Teacher Shortages on O’ahu

Complex	School
<p>Castle</p> <ul style="list-style-type: none"> • Separation/transfer: 12% • Vacancy: 3% • Vacancy 5-year difference: 1% increase 	<p>Kahaluu Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 23.5% • Vacancy: 3.8% • Vacancy 5-year difference: 3.8% increase <p>King Intermediate</p> <ul style="list-style-type: none"> • Separation/transfer: 25% • Vacancy: 4.3% • Vacancy 5-year difference: 2% increase <p>Puohala Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 25% • Vacancy: 10% • Vacancy 5-year difference: 6% increase <p>Waiahole Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 25% • Vacancy: 8.3% • Vacancy 5-year difference: 8.3% increase
<p>Kahuku</p> <ul style="list-style-type: none"> • Separation/transfer: 8% • Vacancy: 5% • Vacancy 5-year difference: 3% increase 	<p>Hauula Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 14% • Vacancy: 14% • Vacancy 5-year difference: 11% increase
<p>Kailua</p> <ul style="list-style-type: none"> • Separation/transfer: 10% • Vacancy: 4% • Vacancy 5-year difference: 0.4% increase 	<p>Keolu Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 20% • Vacancy: 7% • Vacancy 5-year difference: 7% increase <p>Olomana School</p> <ul style="list-style-type: none"> • Separation/transfer: 14% • Vacancy: 12% • Vacancy 5-year difference: 6% <p>Pope Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 18% <p>Waimanalo Elementary and Intermediate</p> <ul style="list-style-type: none"> • Separation/transfer: 20% • Vacancy: 7% • Vacancy 5-year difference: 5% increase

Complex	School
<p>Kaimuki</p> <ul style="list-style-type: none"> • Separation/transfer: 12.5% • Vacancy: 4% • Vacancy 5-year difference: 1% increase 	<p>Kula Kaiapuni O Anuenue</p> <ul style="list-style-type: none"> • Separation/transfer: 8% • Vacancy: 12% • Vacancy 5-year difference: 4.2% increase <p>Lunalilo Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 34% • Vacancy: 8% • Vacancy 5-year difference: 0.4% increase <p>Washington Middle</p> <ul style="list-style-type: none"> • Separation/transfer: 12% • Vacancy: 9% • Vacancy 5-year difference: 6.3% increase
<p>Kalaheo</p> <ul style="list-style-type: none"> • Separation/transfer: 18% • Vacancy: 5% • Vacancy 5-year difference: 4% increase 	<p>Kailua Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 17% • Vacancy: 7% • Vacancy 5-year difference: 7% increase <p>Kainalu Elementary</p> <ul style="list-style-type: none"> – Separation/transfer: 21%
<p>Kapolei</p> <ul style="list-style-type: none"> • Separation/transfer: 12% • Vacancy: 5% • Vacancy 5-year difference: 3% increase 	<p>Barbers Point Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 33% • Vacancy: 9% • Vacancy 5-year difference: 9% increase <p>Mauka Lani Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 19% • Vacancy 5-year difference: 4% decrease
<p>Nanakuli</p> <ul style="list-style-type: none"> • Separation/transfer: 8% • Vacancy: 7% • Vacancy 5-year difference: 2% decrease 	<p>Nanaikapono Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 5% • Vacancy: 10% • Vacancy 5-year difference: 3% increase
<p>Waianae</p> <ul style="list-style-type: none"> • Separation/transfer: 13% • Vacancy: 7% • Vacancy 5-year difference: 1% increase 	<p>Leihoku Elementary</p> <ul style="list-style-type: none"> • Separation/transfer: 7% • Vacancy: 8% • Vacancy 5-year difference: 7% increase <p>Waianae High</p> <ul style="list-style-type: none"> • Separation/transfer: 18% • Vacancy: 10% • Vacancy 5-year difference: 5% increase

Table A3. Schools With the Greatest Teacher Shortages on Molokai

Complex	School
Molokai	Kaunakakai Elementary
<ul style="list-style-type: none"> • Separation/transfer: 7% • Vacancy: 6% • Vacancy 5-year difference: 6% decrease 	<ul style="list-style-type: none"> • Separation/transfer: 4% • Vacancy: 10% • Vacancy 5-year difference: 4% increase
	Molokai High
	<ul style="list-style-type: none"> • Separation/transfer: 10% • Vacancy: 3% • Vacancy 5-year difference: 4% decrease

Table A4. Schools With the Greatest Teacher Shortages on Lanai

Complex	School
Lanai	Lanai High and Elementary
<ul style="list-style-type: none"> • Separation/transfer: 16% • Vacancy: 2% • Vacancy 5-year difference: 7% decrease 	<ul style="list-style-type: none"> • Separation/transfer: 16% • Vacancy: 2% • Vacancy 5-year difference: 7% decrease

Table A5. Complexes and Schools With the Greatest Teacher Shortages on Maui

Complex	School
Baldwin	Ioa Intermediate
<ul style="list-style-type: none"> • Separation/transfer: 11% • Vacancy: 8% • Vacancy 5-year difference: 3% increase 	<ul style="list-style-type: none"> • Separation/transfer: 18% • Vacancy: 9% • Vacancy 5-year difference: 5% increase
	Puu Kukui Elementary
	<ul style="list-style-type: none"> • Vacancy: 8% • Vacancy 5-year difference: 4% increase
	Wailuku Elementary
	<ul style="list-style-type: none"> • Separation/transfer: 20% • Vacancy: 11% • Vacancy 5-year difference: 6% increase
	Waihee Elementary
	<ul style="list-style-type: none"> • Separation/transfer: 5% • Vacancy: 10% • Vacancy 5-year difference: 6% increase
Hana	Hana High and Elementary
<ul style="list-style-type: none"> • Separation/transfer: 6% • Vacancy: 8% • Vacancy 5-year difference: 2.5% increase 	<ul style="list-style-type: none"> • Separation/transfer: 6% • Vacancy: 8% • Vacancy 5-year difference: 3% increase

Complex	School
Kekaulike <ul style="list-style-type: none"> • Separation/transfer: 11% • Vacancy: 9% • Vacancy 5-year difference: 5% increase 	Kalama Intermediate <ul style="list-style-type: none"> • Separation/transfer: 13% • Vacancy: 10% • Vacancy 5-year difference: 7% increase Paia Elementary <ul style="list-style-type: none"> • Separation/transfer: 12% • Vacancy: 10% • Vacancy 5-year difference: 7% increase
Lahainaluna <ul style="list-style-type: none"> • Separation/transfer: 11% • Vacancy: 10% • Vacancy 5-year difference: 8% increase 	Lahainaluna High <ul style="list-style-type: none"> • Separation/transfer: 16% • Vacancy: 9% • Vacancy 5-year difference: 5% increase Nahienaena Elementary <ul style="list-style-type: none"> • Separation/transfer: 10% • Vacancy: 12% • Vacancy 5-year difference: 10% increase
Maui <ul style="list-style-type: none"> • Separation/transfer: 14% • Vacancy: 8% • Vacancy 5-year difference: 4% increase 	Lokelani Intermediate <ul style="list-style-type: none"> • Separation/transfer: 40% • Vacancy: 24% • Vacancy 5-year difference: 22% increase

Table A6. Complexes and Schools With the Greatest Teacher Shortages on Hawai'i

Complex	School
Kau <ul style="list-style-type: none"> • Separation/transfer: 18% • Vacancy: 14% • Vacancy 5-year difference: 9% increase 	Kau High and Pahala Elementary <ul style="list-style-type: none"> • Separation/transfer: 13% • Vacancy: 11% • Vacancy 5-year difference: 6% increase
Kealakehe <ul style="list-style-type: none"> • Separation/transfer: 16% • Vacancy: 7% • Vacancy 5-year difference: 4% increase 	Kealakehe Intermediate <ul style="list-style-type: none"> • Separation/transfer: 30% • Vacancy: 17% • Vacancy 5-year difference: 11% increase
Kohala <ul style="list-style-type: none"> • Separation/transfer: 9% • Vacancy: 8% • Vacancy 5-year difference: 7% increase 	Kohala Middle <ul style="list-style-type: none"> • Separation/transfer: 7% • Vacancy: 12% • Vacancy 5-year difference: 12% increase
Konawaena <ul style="list-style-type: none"> • Separation/transfer: 12% • Vacancy: 10% • Vacancy 5-year difference: 7% increase 	Ke Kula O Ehunuikaimalino <ul style="list-style-type: none"> • Separation/transfer: 8% • Vacancy: 18% • Vacancy 5-year difference: 18% increase

Appendix B. Subject Areas of Need

Table B1 provides data on the subject areas identified with the highest teacher vacancy rates, by each island. The vacancy rate for the data in this table is scaled by the number of students served in each complex. This definition is the count of unfilled or vacant positions divided by the count of students present in the 2023–24 school year. The table does not include every complex or subject area but rather those complexes and subject areas that appeared at the highest level of vacancy rate in the GIS map.

Table B1. Subject Areas With the Highest Vacancy Rates, by Island

Island	Subject areas	Vacancy rates, by complex
Kauai	Elementary education	Kauai – 0.084 Kapaa – 0.068
	English language arts	Waimea – 0.063
	Social studies	Waimea – 0.063
	Special education	Waimea – 0.125
O’ahu	Elementary education	Castle – 0.165 Radford – 0.137 Kailua – 0.128 Waianae – 0.121 Aiea – 0.116 Farrington – 0.102 Kaimuki – 0.088
	Math	Kahuku – 0.063
	Special education	Waialua – 0.153 McKinley – 0.100 Radford – 0.098 Kahuku – 0.095 Kaimuki – 0.088 Kailua – 0.086 Castle – 0.083 Kalaheo – 0.083 Waianae – 0.081 Mililani – 0.068 Kapolei – 0.066 Leilehua – 0.062 Farrington – 0.059

Island	Subject areas	Vacancy rates, by complex
Molokai	Elementary education	Molokai – 0.109
	Hawaiian	Molokai – 0.109
	Special education	Molokai – 0.328
Lanai	Elementary education	Lanai – 0.174
	Special education	Student numbers may be too small to calculate
Maui	Elementary education	Kekaulike – 0.123 Maui – 0.116
	Hawaiian	Kekaulike – 0.099
	Special education	Baldwin – 0.150 Kekaulike – 0.123
Hawai'i	Elementary education	Kau – 0.213 Konawaena – 0.185 Kealakehe – 0.149 Kohala – 0.130 Pahoa – 0.122 Honokaa – 0.119 Waiakea – 0.113
	Special education	Kau – 0.319 Pahoa – 0.183 Waiakea – 0.113