



California's Redwood Region

Tribal Lands, Del Norte, Humboldt, Lake, and Mendocino Counties

Regional Plan Part 1: Regional Summary & SWOT Analysis Draft Version



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The California Center for Rural Policy at Cal Poly Humboldt is a research and policy center committed to informing policy, building community, and promoting the health and well-being of rural people and environments.

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Executive Summary

Redwood Region RISE Core Values

First and foremost, the Redwood Region RISE Collaborative (the “Collaborative”) wants to recognize the strengths, wisdom, resilience, and cultural wealth present in those communities that are centered in this effort. Per the State’s definition, the entire Redwood Region—Del Norte, Humboldt, Lake, Mendocino counties and Tribal Lands—is considered “disinvested.” To identify and address disparities in economic opportunity in the Region, the Collaborative set out to target resources and interventions to the communities that need them most—many of which have rarely participated in (let alone benefitted from) economic development processes such as these.

Rather than bounding “disinvestment” in terms of geography, the Collaborative believes it is more useful and accurate to consider the people and communities who have been marginalized by traditional planning efforts and institutions. One can think of “disinvested communities” as people who face a confluence of relatively severe and often interconnected hardships, including, but not limited to, poverty, disability, lack of access to household or community resources, and lack of economic or educational opportunities. Redwood Region RISE recognizes the experiences of BIPOC (Black, Indigenous, and people of color) communities, of Indian Country (including non-federally recognized Tribes), New Americans communities, and youth and the elderly who are generally underinvested in. The Redwood Region RISE Collaborative acknowledges the profound impact that trauma and disability have on the regional workforce.

To center the experiences of these communities in the work, the Convening Team, coordinated by Outreach & Engagement partners North Coast Opportunities (NCO) and True North Organizing Network (TNON), have built their strategy around conversations with:

- advocates for the populations listed above,
- community organizations that support people to rise above their struggles, and
- individuals with lived experiences.

While rural and urban areas may share similar struggles, it is important to recognize and understand that these issues are often greatly compounded for rural areas. The Collaborative is eager and excited to create mechanisms that channel investment and resources where they are needed the most. To that end, all participating members on the Collaborative have agreed to the following Core Values:

- Equitable Inclusion of Priority Partners and Communities
- Respect for Diverse Perspectives

- Cooperation and Collaboration
- Transparency and Accountability
- Adherence to the Collaborative Decision Model

Overview: Key Findings

The Region’s Strengths, Weaknesses, Opportunities, and Threats

Strengths	Weaknesses
<ul style="list-style-type: none"> ● The remaining stands of globally significant old growth redwood forest are predominantly located in their namesake region—sequestering millions of tons of carbon while drawing over a million visitors to the region each year. ● The original inhabitants of the region are still here on their ancestral lands, keeping alive thousands of years of traditional knowledge and best ecological practice with respect to land and forest management. ● Land ethic: the region’s unique social history continues to foster a culture of deep connection and reverence for its lands and waters. The region excels at eco-innovation and has a strong sustainability ethos. ● The region possesses two- and four-year universities who are proactively engaged in creating pathways for young residents to realize career aspirations, as well as re-training initiatives. 	<ul style="list-style-type: none"> ● An economy composed largely of non-tradable sectors, not driven by major, globally competitive industries (yet). Historic reliance on sale of primary commodities. ● Small private sector (esp. Del Norte). ● Low diversification means the region is vulnerable to boom-and-bust cycles. ● Prevalence of historic and childhood trauma, high incidence of mental health issues and related disabilities, insufficient care facilities and behavioral health workforce. Social isolation and alienation; remote and disconnected communities. Poor mental health outcomes disproportionately impacting several disinvested communities. ● High attrition from the workforce at prime age, high disability rates at prime age, likely related to the above. ● The region experiences high levels of poverty, driven in part by low labor force participation and lower wages. Poverty is exacerbated by the region’s high cost of living and scarcity of critical enabling services (e.g., healthcare and housing). High rates of poverty disproportionately impact disinvested communities including people of color, people with disabilities, and LGBTQAI+ individuals. ● Institutions have chronic low capacity, lack of key institutional partners to

	<p>advance economic development initiatives, nascent or absent collaboration on key issues facing the region due to lack of capacity.</p> <ul style="list-style-type: none"> ● Aging, obsolete infrastructure creates vulnerability in water delivery, transportation, energy, communications, and other crucial systems. Degraded waste sites jeopardize drinking water and fisheries. ● The housing crisis is severe on the North Coast. Outdated stock is associated with high incidences of lead poisoning in children.
<p>Opportunities</p> <ul style="list-style-type: none"> ● Restoring forest health is a major job-creation opportunity for the region, climate adaptation opportunity for the state, and carbon sequestration opportunity for the world. Natural resource and ecosystem restoration careers are a major opportunity. ● Three call areas along the Redwood Region were found in a recent feasibility study to be viable for offshore wind development–this is already underway in Humboldt Bay. ● Regionally, unified focus on four key areas for economic development and diversification: Health and Caregiving, Working Lands and Blue Economy, Renewable and Resilient Energy, and Arts, Culture, and Tourism. Construction needs in these sectors coupled with urgent needs for infrastructure updates and housing development drive the promise of building and trades-based industries in the priority clusters. ● Region’s need for medical professionals presents an economic development opportunity with the promise to deliver 	<p>Threats</p> <ul style="list-style-type: none"> ● Catastrophic wildfires have enormous economic, health, and social impacts, with impacted inland jurisdictions perpetually in “recovery mode.” Wildfires play a major role in greenhouse gas emissions in the region and are potentially the leading regional source. ● Sea level rise puts key coastal assets at risk. Extreme heat events are predicted to become more frequent and severe in inland areas. The area’s fog belt may decline. ● Natural disasters: communities in the region are also frequently recovering from earthquakes and tsunamis. Flooding is an issue. ● Rising cost of essentials pushes young people and skilled workers out of the Region. Rising incomes in urban areas pulls them away. ● A shifting regulatory environment and burdensome regulations hinder infrastructure development; public funding opportunities are delivered inaccessibly, perpetuating cycles of disinvestment. ● Artificial intelligence and automation put

thriving wage careers for Redwood Region residents.	lower wage workers in fields such as customer service at risk of displacement.
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Despite challenges, there are strong indicators for economic development opportunities in several industries, including those identified by the Collaborative as target industries. Industries within *Arts, Culture, and Tourism; Health and Caregiving; Renewable and Resilient Energy; and Working Lands and Blue Economy* show signs of regional competitive advantage and hold promise for development of high wage jobs.

Redwood Region RISE

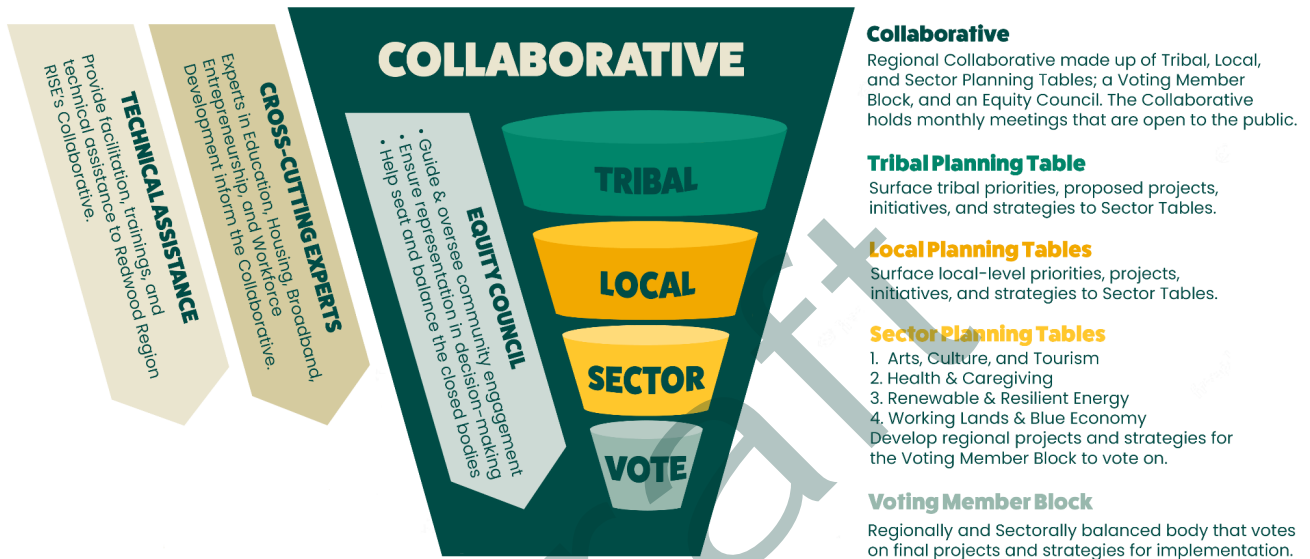
Planning Process and Community Engagement

In January 2023, the Redwood Region Convening Team finalized their contract with the State and officially joined the statewide “California Jobs First” (formerly the Community Economic Resilience Fund, CERF) initiative. The Region—Del Norte, Humboldt, Lake, Mendocino counties, and Tribal Lands—includes large areas that are not located on the Pacific Coast. Therefore, the Collaborative decided early on to call themselves the more inclusive “Redwood Region RISE ” (Resilient Inclusive Sustainable Economy), or RRRISE. After officially onboarding the CA Jobs First initiative, RRRISE hosted the first official Collaborative meeting in February 2023. This kick-off meeting (with 113 participants) focused on introducing the initiative and the RRRISE Convening Team, and setting the stage for regional cooperation. The Collaborative agreed to lead an inclusive, diverse, transparent, and accountable regional planning process, in which the community voices that do not always participate in or benefit from economic development planning processes are both centered and honored. Through active participation of citizens and representatives from community partners, four counties, and 32 Tribal Nations (federally and non-federally recognized), the Collaborative aims to develop a regional strategy and recommend investments to grow sustainable industries, diversify regional economies, and increase access to high-quality jobs in the Region.

Since the kick-off meeting, the Collaborative has met monthly to share updates, discuss progress, and learn from each other. A staple at these meetings was the team’s senior researcher and other experts’ “Data Walks.” These presentations of qualitative and quantitative data and key findings guided the Collaborative’s understanding of the Region, helped ground-truth the findings, encouraged community dialogue, and informed strategic regional thinking within, and beyond CA Jobs First. In May, the initial [governance structure](#) (see the Flow Chart on the next page) was shared, which the Taskforce and broader Collaborative helped refine in the subsequent months. Important developments included 1) the creation of the “Cross-Cutting Experts” body to uplift

key intersecting topics such as education, housing, broadband, entrepreneurship, and workforce development in the Region; 2) establishing a Tribal Planning Table; and 3) ensuring all Tribal Citizens are eligible to serve on the Voting Member Block.

Redwood Region RISE California Jobs First Planning Phase Flow Chart



Between April and December 2023, the Convening Team conducted 124 Listening Sessions and Empathy Interviews with a wide range of community members and representatives. These conversations allowed the team to gain a wide perspective on people’s lived experiences and the needs within the Region, provided valuable insights for the qualitative data section of the Regional Plans, and have proven to be a great way to further engage folks in RRRISE’s efforts.

Overview Of Listening Campaign Participants (1)

County + Tribal Land	Health and Caregiving	Arts, Culture, and Tourism	Blue Economy	Business/ Workforce Partners	Community-Based Orgs	Economic Development Agencies	Environmental Justice Orgs
Del Norte	1	1	2		4	2	
Humboldt	2	1	6	3	5	4	1
Lake	1	1		1	4	2	
Mendocino		1			4		
Regional			2	1	1	2	4

Overview Of Listening Campaign Participants (2)

County + Tribal Land	Government	Labor	Other	Philanthropy	Priority Communities and Community Members	Training/ Education	Tribes
Del Norte	2		1		28	1	
Humboldt	3		2	1	4	3	2
Lake	2		1		4		
Mendocino	5				4		3
Regional		1				1	

In June and July, the Equity Council took shape through a community nomination process. Twenty-two individuals representing our Region’s [priority communities](#) joined this important governing body to 1) guide and oversee the community engagement process; 2) ensure meaningful representation in decision-making; and 3) help seat and balance the Collaborative’s “closed” bodies. After submitting a draft of the Region Plan Part 1 in August, the Collaborative’s attention turned to seating the [Voting Member Block](#) and the four [Sector Planning Tables](#). The communities were asked to help identify and endorse the organizations and businesses they believed should be represented on these closed bodies. All representatives on these two bodies

were required to sign the official Partnership Agreement Letter and Data Collection Payment Form to finalize their onboarding process.

In September, around 50 representatives of the Sector Tables and Voting Members met in person for the first time in Ukiah (Mendocino County) for the formal launch of the Collaborative. A further 70 community members and representatives joined the hybrid event online to take part in a training on centering equity in economic development planning. All participants provided valuable input for the Region's Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis. Since the formal launch of the Collaborative, monthly meetings center around updates, report-outs from the Collaborative's Tables, and the Voting Member's discussions and votes. Of course, the entire Collaborative is still highly encouraged to join, and at the end of every meeting the public has an opportunity to ask questions and raise specific issues.

Between late September and early December, the first couple of public [Local Planning Table](#) meetings took place in the four counties and Tribal Lands, in addition to an informational webinar in October to onboard newcomers. Early December marked the first [Tribal Planning Table](#) gathering, and with the onboarding of the Sector Table Coordinators, the four Sector Tables are eager to start formally meeting in the new year. Several informal, community-organized sector meetings have already taken place. In the final weeks of 2023, the Collaborative has helped review and refine information presented in this Regional Plan Part 1, and looks forward to further exploring the findings through "Data Walks" in localized formats in the new year.

In the next phase of the planning process, January-June of 2024, the Collaborative will craft regional strategies to grow sustainable industries and diversify the economy, and increase access to high-quality jobs for communities in the Region. The Collaborative has started to catalog CA Jobs First-aligned projects and initiatives in the Region through the [Project Inventory Form](#). These projects will be workshopped by the Sector Tables—with feedback from Local and Tribal Tables—after which shortlisted projects are sent to the Voting Member Block to put forward 3-5 projects for implementation funding, using a collectively crafted "project scoring rubric." A key priority remains ensuring these projects will be ready to receive implementation funding, a process the Collaborative strives to accelerate through the Catalyst's pre-development funds.

Disinvested Communities

The Redwood Region as a whole qualifies as a "disinvested community" by the state's definition:

- Census tracts identified as "disadvantaged" by the California Environmental Protection Agency¹⁶.

- Census tracts with median household incomes at or below 80 percent of the statewide median income or with the median household incomes at or below the threshold designated as low income by the Department of Housing and Community Development’s list of state income limits adopted pursuant to Section 50093 of the California Health and Safety Code.
- “High poverty area” and “High unemployment area” as designated by the California Governor’s Office of Business and Economic Development California Competes Tax Credit Program; California Native American Tribes as defined by the Native American Heritage Commission (NAHC) Tribal Consultation Policy.

The repercussions of this disinvestment are not felt equally by groups in the Region. Consequently, the Collaborative characterizes disinvested communities as individuals residing in areas meeting the state's criteria, and those connected by common ancestry, ethnicity, belief, affinity, and shared experiences, who may be negatively affected by social, political, and economic exclusion.

As the *Partner Mapping* Assessment makes clear:

Residents of the Redwood Region, especially those belonging to priority communities, rank among the state's poorest based on conventional indicators of economic well-being. They face an elevated risk of experiencing disproportionately adverse health outcomes related to substance use, behavioral health issues, disability, and delayed or inadequate access to health and behavioral healthcare. Additionally, they are susceptible to climate impacts due to factors such as age, disability, health, and income statuses. Their annual income is predominantly allocated to essential expenses like healthcare, housing, transportation, and childcare, surpassing state averages.

Through CA Jobs First, Redwood Region RISE is deeply committed to convene representatives from various community groups to the planning table, bringing their perspectives, expertise, and input. The Convening Team has been collaborating to build a robust contact list inclusive of the Region, representing a diverse range of interests and backgrounds. Members of the Convening Team have worked with many of the Tribal partners previously and are actively inviting them to join the efforts.

Redwood Region RISE strives to center the voices of and seeks input and participation from community members representing or advocating for the following [Priority Communities](#):

- Advocates for People of Color (e.g., Black Lives Matter, Asian Americans Advancing Justice, New Hmong Rising Association, etc.)
- Communities of Color
- Immigrants with Documentation (e.g., work visas)
- Individuals that live in extremely remote/rural areas of the Redwood Region (Redwood Region RISE)
- Individuals who were Formerly Incarcerated
- Individuals that are Deaf or Hard of Hearing (HoH)
- Individuals with Intellectual Developmental Disabilities
- Individuals with Learning Disabilities
- Individuals with Physical Disabilities
- Individuals with Vision Impairment
- Individuals without Broadband Access
- Individuals without Documentation
- Lesbian, Gay, Bisexual, Transgender, Queer, Asexual, Intersex + (LGBTQAI+)
- Members of religions and ethnic minority communities
- Monolingual Hmong-Speakers
- Monolingual Spanish Speakers
- New Citizens
- Non-federally Recognized Tribal Nations
- Seniors
- Tribal Citizens
- Tribal Governments
- Unions
- Workers
- Youth

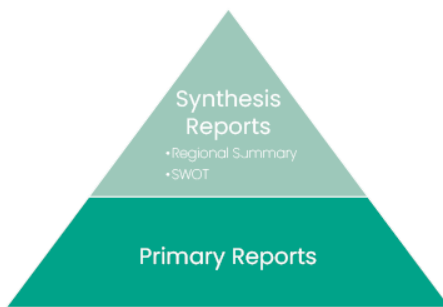
The Redwood Region RISE Collaborative's efforts to engage with residents in all aspects of the CA Jobs First planning process have been and will continue to be critical to ensure that all unseen needs are surfaced, to take all concerns into account, and to ensure transparency and equity. Through local and regional meetings, a Listening Campaign (including Empathy Interviews), and data collection, the Collaborative's Convening Team has worked to gather qualitative and quantitative data, and to disaggregate both by race, gender, and other factors where possible to better identify and address disparities in economic opportunity in the Redwood Region. While this will ultimately make it easier to target resources and interventions to the communities that need them most, it still requires the participation and involvement of those who "own" the data and the narrative the data tells. It also requires that the input of disinvested communities (see list above) be appropriately translated into actionable goals that accurately reflect their needs and values, not those of outside economic development policymakers.

Redwood Region RISE Target Industries

After reviewing county and tribal community economic development plans and surveying Collaborate participants, the Redwood Region RISE Collaborative has identified the following key industry groupings, known as 'Sector Planning Tables,' to explore regional economic development opportunities:

1. *Arts, Culture, and Tourism*
2. *Health and Caregiving*
3. *Renewable and Resilient Energy*
4. *Working Lands and Blue Economy*

Overview of Regional Summary and SWOT Analysis



These *Regional Summary and Strengths, Weaknesses, Opportunities, and Threats (SWOT)* documents both constitute high-level summaries and *syntheses* of a number of reports produced by CCRP in collaboration with their partners. These foundational reports—collectively referred to as *primary* documents—reflect a diverse array of issues, methods, styles, perspectives, and expertise too sizable to be compiled into a single document that is simultaneously useful, detailed, and approachable to the community. The aim of these *synthesis*

documents is to condense this broad information into a concise, useful, and community-friendly report, as well as to explore the interrelated nature of the issues. Those seeking in-depth information on topics such as climate or health should consult these primary sources.

The following table summarizes where additional information can be found.

Primary Documents

Analysis	Report Name	Prepared By	Material Covered
<i>Regional Plan Part 1: - Regional Summary - SWOT Analysis</i>	<i>Redwood Region Regional Plan Part 1: Regional Summary and SWOT Analysis</i>	California Center for Rural Policy (CCRP)	Regional Summary and SWOT Analysis for the Redwood Region

Appendix	<i>Supplementary Data and Figures</i>		Supplemental demographics, economic and environmental data, and analysis.
Stakeholder Analysis	<i>Redwood Region Partnership Mapping Report</i>	Bischoff Consulting	Organizations, partnerships, and networks. Data and narrative on the strength of partnerships, capacity of organizations, and opportunities for partnerships and collaboration.
Industry Cluster and Labor Market Analysis	<i>Regional Economic Analysis North State, Eastern Sierra, and Redwood Coast</i>	Economic Forensics & Analytics (EFA)	Industry Cluster Analysis and Labor Market Analysis Identification of industries with competitive advantage. Workers at-risk of displacement.
Public Health Analysis	<i>Exploring the Roots of Health Disparities in the Redwood Region</i>	California Center for Rural Policy (CCRP)	A comprehensive report covering health outcomes as they pertain to demographic, social determinants of health, and environmental factors.
Climate Analysis	<i>Redwood Coast Climate & Environment</i>	Sierra Business Council	Climate projection, sources of greenhouse gas, and environmental data and narrative.
Opportunities Report (Supplemental Material)	<i>Collaborative Planning Support Document: Economic Summary</i>	California Center for Rural Policy (CCRP)	A narrative report exploring economic development opportunities, development disparities, and the impacts of shocks and shifts.
Indicators Report (Supplemental Material)	<i>Redwood Region, California Indicators Report</i>	The National Economic Education Delegation (NEED)	Demographic, economic, industry, and housing data.

A Word on Data Limitations

While each report uses a variety of disparate data sources, there are certain data limitations that are general among data sources for rural areas. Low sample sizes produce higher levels of statistical uncertainty—a challenge that is exacerbated when looking at subsets of populations such as disinvested communities.¹ It is critical to understand that a failure to detect disparity between two groups in rural data sources with high uncertainty does not provide evidence for lack of disparity.

There is potential for differences in populations that complete surveys and those who do not complete surveys (i.e., non-respondent bias). There are methodological approaches to correct for this potential bias (the Census Bureau applies such methods), however, these methods are imperfect and in extreme cases estimates can become unreliable. For instance, during the pandemic in 2020, factors such as socioeconomic status were found to significantly influence the probability of non-response in the American Community Survey leading the Census Bureau to withhold one-year 2020 data. It is not difficult to imagine how lack of broadband access may also influence non-response among a wide range of survey instruments. It is therefore also critical to understand that publicly available data sources may have blind spots or distortions that result in estimates that do not accurately or fully reflect the reality on the ground in disinvested areas.

The Redwood Region

Consisting of some of the most rural and remote areas in California, the Redwood Region, beginning just under 100 miles north of San Francisco and extending to the Oregon border, comprises four counties (Mendocino, Lake, Humboldt, and Del Norte) and Tribal Lands situated in the northwestern corner of the state, and is home to 323,952 residents—accounting for less than one percent of the state's total population (U.S Census Bureau, n.d.).

The Redwood Region is the ancestral land of several Indigenous cultures, including (but not limited to) Hoopa, Karuk, Miwok, Pomo, Tolowa, Wappo, Wiyot, and Yurok. In the early 1850s, European settlers arriving for the California Gold Rush carried out policies resulting in displacement, genocide, and forced acculturation, among other atrocities. The legacy of this period is still felt by the Region's 33 tribes. Shortly after, commercial logging industries began on the Redwood Coast.

¹ In many of the data visualizations throughout the body of this report and appendices, this statistical uncertainty is represented by horizontal bars (i.e., confidence intervals) that represent the level of confidence associated with a statistical estimate. Larger confidence intervals indicate higher uncertainty about an estimate. Estimates that describe populations that represent a smaller share of the overall population generally have lower levels of confidence.

By the mid-to-late 19th century, the Region had several financially successful industries that remained viable well into the late 20th Century, with some still being major industries in the region today. The timber and logging industries were prominent in much of the region, particularly in Mendocino, Humboldt, and Del Norte counties, thanks to the abundance of redwoods, or “red gold,” in the area (California State Parks, n.d.; Del Norte County Historical Society, 2021b; Humboldt County Historical Society, n.d.). Commercial fishing and canneries were established in coastal areas and rivers in Humboldt, Del Norte, and Mendocino counties (Del Norte County Historical Society, 2021b; Humboldt County Historical Society, n.d.; Pomeroy et al., 2010). Agricultural industries were established soon after settlers had arrived during the Gold Rush. Wine making was successful in Lake County (Lake County, California, 2020), while dairy and livestock industries were especially prosperous in Humboldt County (Humboldt County Historical Society, n.d.). Even tourism was a prominent industry in the region at the time (Humboldt County Historical Society, n.d.; Lake County, California, 2020; Lake County, California, 2022).

By the mid-20th century, industries focused on resource extraction (e.g., timber and fishing) had diminished considerably due to depletion (Del Norte County Historical Society, 2021b; Pomeroy, et al.). Due to the post World War housing boom and subsequent destruction of over 90% of the region’s Redwood forests, logging and timber industries went into decline. At this time, the region experienced an influx of newcomers motivated by countercultural views. This migration is known as the “Back to the Land” movement. These newcomers introduced a novel agricultural industry into the region—cannabis cultivation. Illicit cannabis cultivation was a lucrative business, becoming the new major industry in much of the region, though not without concerted (albeit vain) efforts to thwart cannabis operations by state and federal authorities (University of Oxford, 2019). Nonetheless, cannabis cultivation and sale for medicinal use was legalized in 1996 (*California Proposition 215, Medical Marijuana Initiative (1996) - Ballotpedia, n.d.*), with recreational business and use being legalized in 2016 statewide (*Proposition 64: The Adult Use of Marijuana Act - Criminal_Justice_Prop-64, n.d.*). Once anticipated to generate an annual revenue of 3.5 billion, this industry is now in decline.

Other agricultural industries (e.g., vineyards and wine, fruit, dairy, cattle ranching) also make up a large part of the region’s current economy (Lake County, 2020). Tourism, hospitality, and recreation industries are abundant across the region as well (California Employment Development Department (EDD), n.d.); California EDD, Labor Market Information Division (n.d.); Del Norte County Historical Society, 2021b; Stenger, 2018; Submitted, 2022). The region’s economy continues to diversify, implementing economic strategies to include industries such as renewable energy (Redwood Coast Energy Authority, 2023), niche manufacturing, and innovation services (California EDD, Labor Market Information Division (n.d.)). Over time, the regional economy has transitioned from extractive industries to productive sectors like

agriculture and, more recently, consumptive industries. There is an increasing emphasis on tourism, conservation, and recreation (Kelly et al., 2016).

Given the region's reliance on land-based commodities and the associated boom-and-bust cycles, community leaders express concern that local economies need to diversify for increased resilience. Previous economic development efforts primarily focused on attracting businesses and investments without effectively leveraging existing and emerging industry clusters. Additionally, there has been a tendency to group the rural northern CA counties with those in the greater San Francisco area, neglecting their unique needs and characteristics.

Since the economic downturn of 1998-2000, there has been increased effort to form partnerships and enact policies better suited to the region's comparative advantages. These initiatives aim to diversify services and types of firms within industries that already have a strong foundation in the region. Despite these efforts, organizations working with disinvested communities in the region highlight challenges such as a lack of adequate workforce development initiatives, insufficient technical support for entrepreneurs—particularly for new Americans and entrepreneurs of color—lack of regional coordination on economic strategies, rising costs, missed opportunities to grow firms capable of accessing lucrative markets in nearby urban areas, and a failure to adapt to changing regulations and market conditions for key sectors.

The Redwood Region Today

Today, the region's population is predominantly white, non-Hispanic individuals (67.7%). Hispanic or Latino individuals make up 19% of the region's population, while the American Indian and Alaska Native (AIAN) population represents approximately 2.4% of the region's total population, higher than the statewide proportion of AIAN residents (see Appendix).

The Redwood Region is older compared to the statewide average, primarily due to the large proportion of older residents (i.e., 55 to 75 years). The median age ranges from 39.1 to 44.6, significantly higher than the state median of 37.0.

Poverty rates in the region are sharply higher compared to the state rate, particularly among youth, people of color, and Hispanic or Latino populations. High school graduation rates are adequate, though four-year degree attainment rates lag behind the state average. High mortality rates and out-migration have resulted in declining population counts, and this trend is expected to continue in the coming years. Life expectancy, mortality rates, health conditions (e.g., diabetes, heart disease), disability rates, and proximate risk factors are all challenges within the region (Kirsch, 2023).

Today, agriculture and natural resource-based industries remain key to the region's economy. However, with the aging population and relative decline of natural resource-based industries,

healthcare and government jobs are becoming more prominent. Combined healthcare and government employment constitute nearly one-third of the region’s workforce.

The Collaborative’s Vision

As the Redwood Region Resilient Inclusive Sustainable Economy (RISE) Collaborative moves into the next phase, the Collaborative is dedicated to exploring and pursuing economic development opportunities that align with its core values and respond to the diverse needs and values of the communities within the Redwood Region. A primary objective of the Regional Plan Part 1 is to thoroughly examine and identify the challenges and potential threats facing the region. Concurrently, it aims to identify existing strengths and uncover new opportunities, with a focus on fostering economic development that propels the region forward toward a more prosperous and equitable future.

*“To overcome barriers, we need a **unified vision of what kind of regional economy we want to build in the 21st Century. If we are unified, we can mobilize our common resources to accomplish our economic objectives.**”*

Draft

Economic Development and Well-Being Summary

Broad Trends in Economic Development

Much of California's rural and northernmost counties have had an economic trajectory wholly distinct from that of the state. As shown below, since 2001 statewide economic output per capita² has increased by an average of \$23,986 on inflation-adjusted terms. Much of this growth is concentrated in three Bay Area counties— San Francisco, San Mateo, and Santa Clara— each of which experienced a doubling of economic output in the past two decades, far exceeding the growth experienced by any other county. Statewide, output in counties other than these three increased by \$19,307 on average, indicating that strong economic growth was also widespread across the state during these decades.

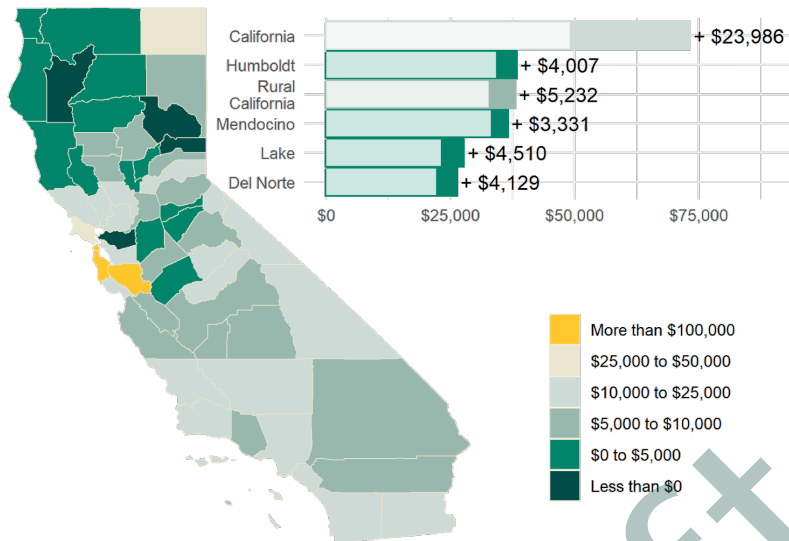
California's most rural counties,³ on the other hand, have experienced much slower growth on average, increasing by just \$5,232 since 2001. Among these, the Redwood Region experienced growth on par with other rural California counties, ranging from an increase of \$4,510 in Lake to \$3,331 in Mendocino. On average, per capita output in the Redwood Region was 62% of the statewide average in 2001 and is now 47% of the statewide average, indicating that the region has fallen farther behind in recent decades.

² Economic output is the total market value of all goods and services produced in a region during a period of time.

³ These counties are defined with an Index of Relative Rurality (IRR) greater than 0.5. This includes the four Redwood Region counties and 14 other counties.

Figure 1

Change in Economic Output (Real Gross Domestic Product [GDP]) per Capita from 2001 to 2021.



Note. Population estimates for 2021 and 2001 were sourced from the California Department of Finance, Table E-2.⁴

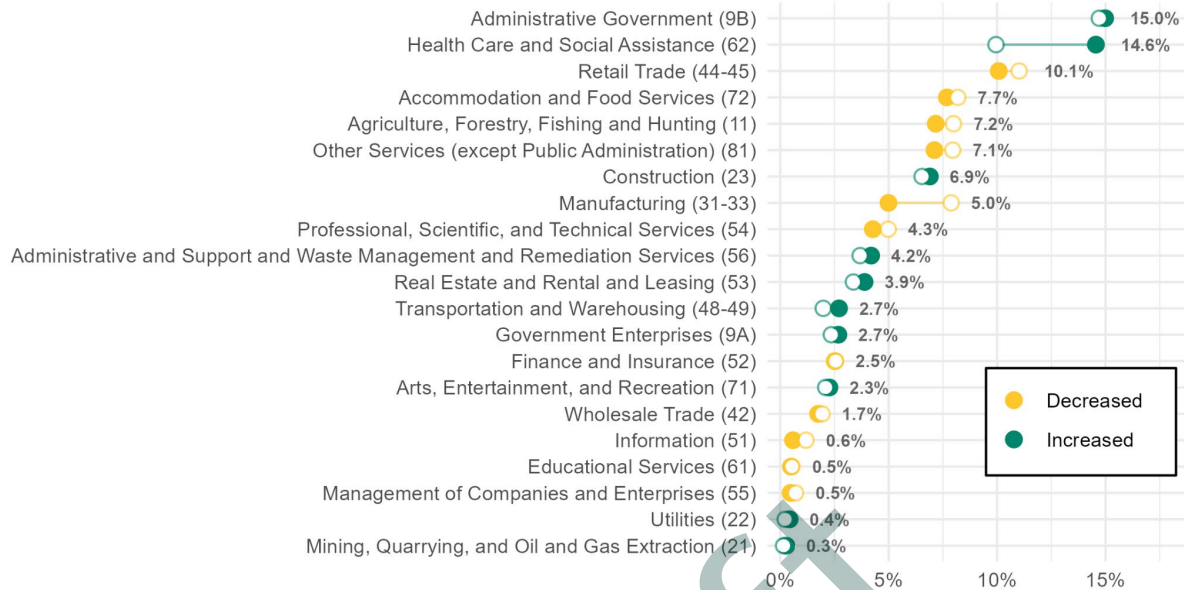
Industry Composition and Trends

As shown in Figures 2 and 3 below, the two largest industries by employment include *Administrative Government* and *Health Care and Social Assistance*. These two sectors employ nearly one-third of Redwood Region workers and both of which represent a much larger share of regional employment compared to the state averages.

⁴ Values represent real gross domestic product divided by the population estimates for 2001 and 2021. Data is in 2012 dollars. Rural California counties are defined as counties with an Index of Relative Rurality greater than 0.5. No counties experienced growth between \$50,000 and \$100,000.

Figure 2

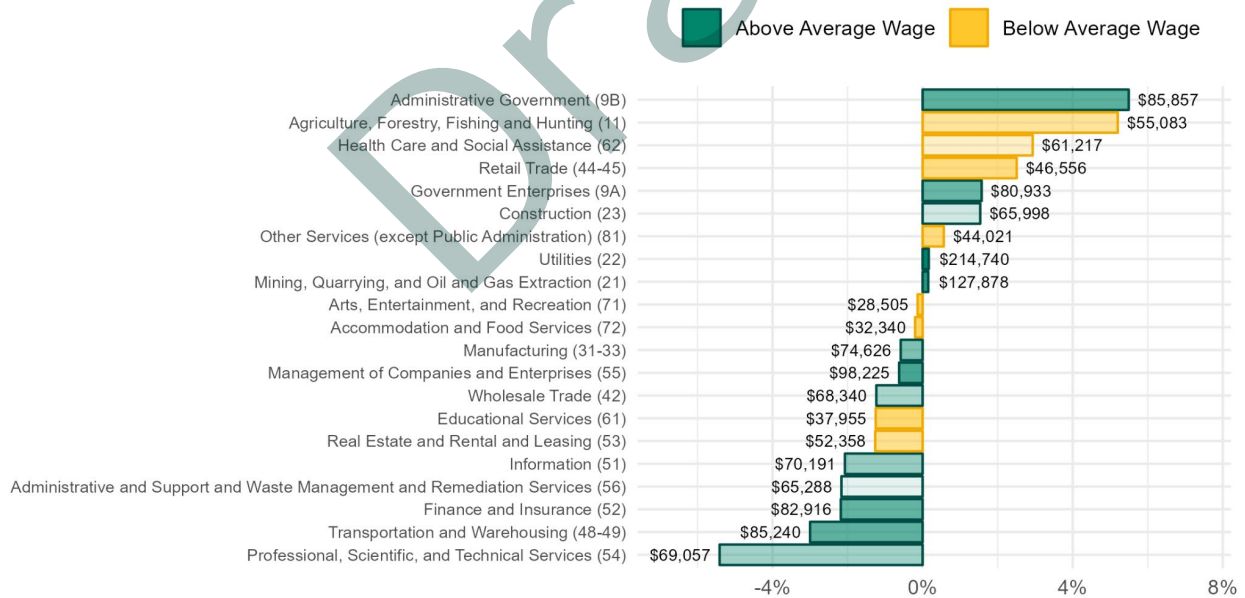
Industry Employment Concentration and Change Since 2001 (2001, 2022)



Note. Data sourced from IMPLAN⁵.

Figure 3

Difference in Industry Employment Concentration with Average Compensation (2022)



Note. Data sourced from IMPLAN⁶.

⁵ Average total compensation including value of benefits. North American Industry Classification System (NAICS#) code in parentheses. Solid points indicate current value.

⁶ Differences compared to state averages. Average total Redwood Region compensation including value of benefits. NAICS code in parentheses. The average compensation in this dataset is \$64,128.

The region's leading sector (by employment) *Administrative Government* (9B) along with *Government Enterprises* (9A⁷) both pay higher-than-average wages and employ much larger proportions of the region's workforce compared to the state level trends. Except for Construction, no other sectors have these qualities, highlighting the importance of government employment in supporting the region's wages. Moreover, other high wage industries are sharply underrepresented by employment in the Redwood Region.

Two sectors exhibit dramatic shifts since 2001. Employment in the *Health Care and Social Assistance* sector (a lower-than-average wage industry) has risen sharply while employment in manufacturing (a higher-than-average wage industry) has fallen sharply. Thus, the relative rise of a lower wage industry and relative decline of a higher wage industry has likely contributed to lower average wages in the region.

However, as discussed below,⁸ adverse wage gaps are evident among almost all occupations across industries and are sharpest among high-skilled workers and occupations. Depressed wages are a general problem, applying to most industries and occupations in the region.

Economic Well-Being and Cost of Living

As shown below, multiple indicators demonstrate that Redwood Region households are much less prosperous compared to statewide averages. Lower prosperity is a region-wide challenge. Not one Census tract in the Redwood Region has a median household income significantly higher than the state average. Median full-time earnings⁹ are significantly and substantially lower than the state average across the region, suggesting that lower wages are a key factor behind the region's lower household prosperity. However, as discussed below, prime age¹⁰ labor force participation is also significantly lower than the statewide average, suggesting that barriers to employment are also contributing factors (see Appendix).

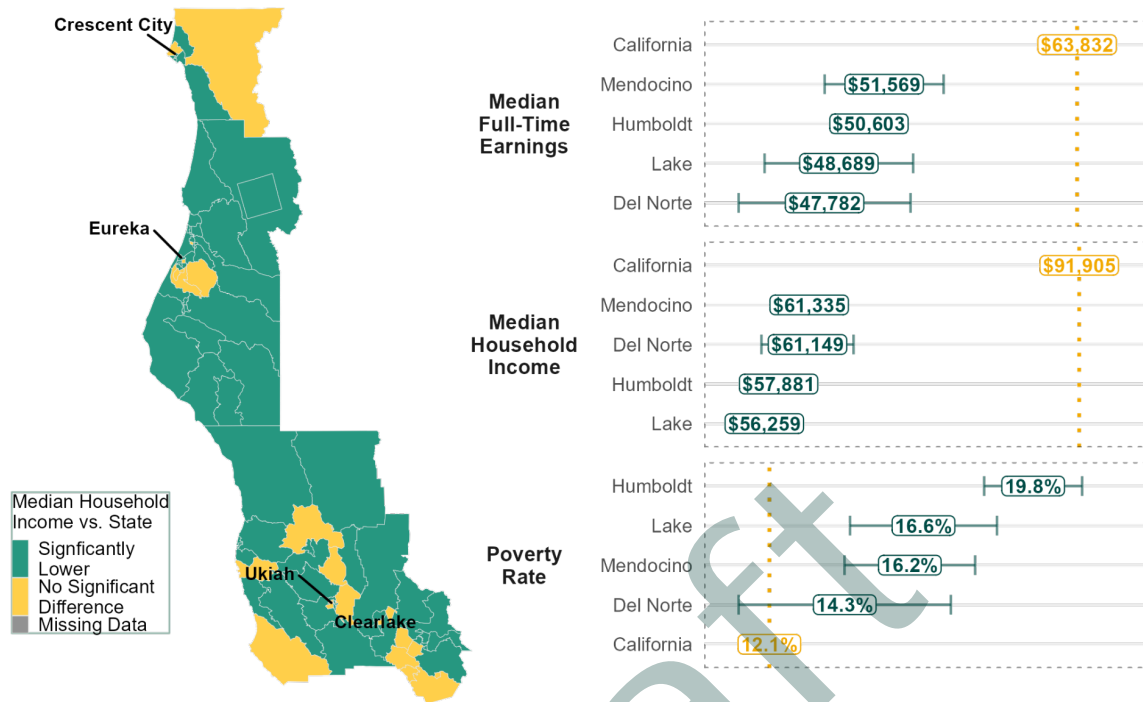
⁷ The distinction arises in part from the source of funding. Administrative Government is funded largely by the taxpayer, while Government Enterprises are partially or fully self-sufficient covering their operating costs by selling goods and services (IMPLAN, 2020).

⁸ Also see Appendix.

⁹ Earnings among those with full-time employment.

¹⁰ While there may be some intergenerational deliberation about which age ranges are prime, for the purposes of economic analysis "prime age" adults are defined as 25-54.

Figure 4
Indicators of Economic Well-being (2018 - 2022)



Note. Data sourced from the American Community Survey.

Cost of Living

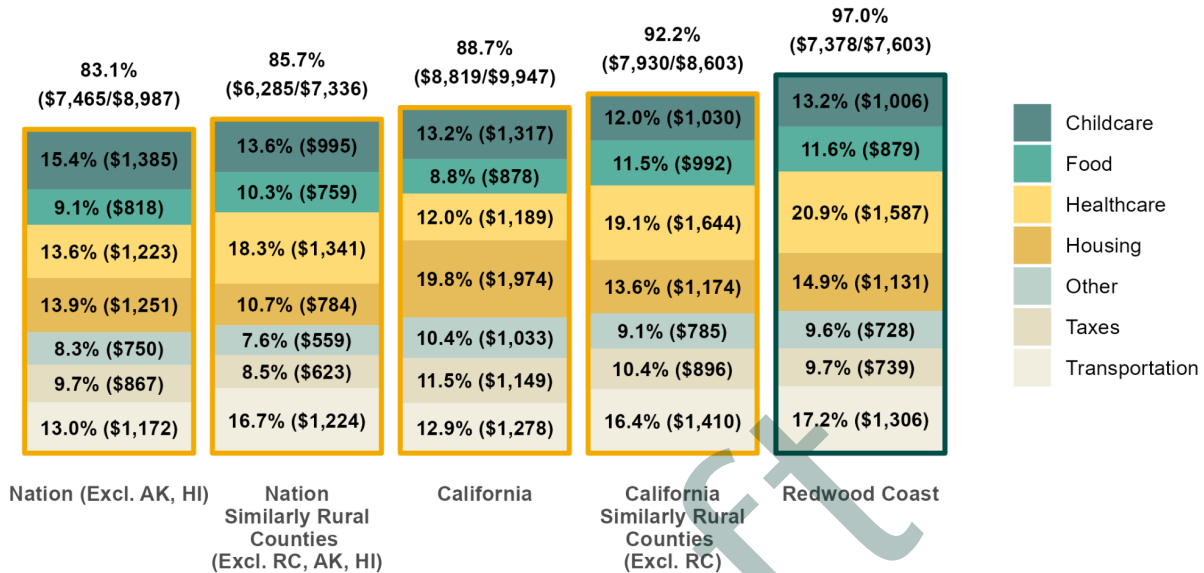
Redwood Region households have earnings typical of similar rural areas throughout the United States, but at a substantially higher cost of living. Even among households with two full-time earners, data suggests that Redwood Region households are in a precarious financial position. The figure below shows the ratio of estimated household expenditures to income for a hypothetical family of two full-time working adults¹¹ and two children. In the Redwood Region, this hypothetical family—let’s call them the “Medians”—has a monthly income of \$7,603 and total estimated expenses of \$7,378, amounting to 97.0% of their income. This leaves the Medians with very little income for wealth accumulation or unexpected expenses.

Compared to similar families in other rural areas of the country, the Medians spend a much more substantial proportion of their income on food, healthcare, housing, taxes, and transportation. If the Medians were to pick up and move to a typical United States county that has a similar level of rurality as the Redwood Region (see “Nation Similarly Rural Counties” below) their income would fall slightly from \$7,603 to \$7,336, but their estimated cost of living would decline substantially from \$7,378 to \$6,285.

¹¹ Total household income assumes two median full-time incomes and no other cash or in-kind income.

Figure 5

Monthly Cost of Living for a Family of Two Full-Time Working Adults and Two Children (2017 - 2021), Expressed as a Ratio of Labor Income



Note. Data sourced from Economic Policy Institute’s Family Budget Calculator, the American Community Survey, and the Index of Relative Rurality (IRR). See footnote for methodology.¹²
Shortages in an Isolated Context

Contributing to the region’s higher cost of living are critical shortages in essential goods and services including housing and healthcare. While these challenges are not unique to the Redwood Region, they are uniquely challenging to Redwood Region households. Unlike many other region’s classified as “rural” by various methodologies, the Redwood Region is both rural in the sense that it has a low population density, but it is rural in the more consequential sense that it is geographically isolated. For instance, both Humboldt County and Colusa County are Health Provider Shortage Areas (HPSAs, see *Public Health Analysis*) and have a similar level of rurality,¹³ however many Colusa residents are within a one hour drive to downtown Sacramento.¹⁴ By comparison, residents in the Humboldt Bay area may need to travel as far as

¹² The Index of Relative Rurality (IRR) ranks all counties in the United States from 0 (most least rural) to 1 (most rural). Rural comparison regions “Nation Similarly Rural Counties” and “California Similarly Rural Counties” include counties in the nation or state that have an IRR that is at least as high as the lowest IRR and no higher than the maximum IRR in the Redwood Region. Regional averages were calculated as a population-weighted average of the county-level data using American Community Survey’s (ACS) five-year estimates (2017 - 2021). Median full-time earnings sourced from ACS five-year estimates. Rurality measured by the Index of Relative Rurality (IRR). “California $0.5 \leq \text{IRR} \leq 0.53$ ” includes Amador, Calaveras, Glenn, San Benito, Tehama, and Tuolumne counties. Five counties were not included in the national estimates due to missing data.

“Other” is short for “Other Necessities.”

¹³ As indicated by the Index of Relative Rurality (IRR).

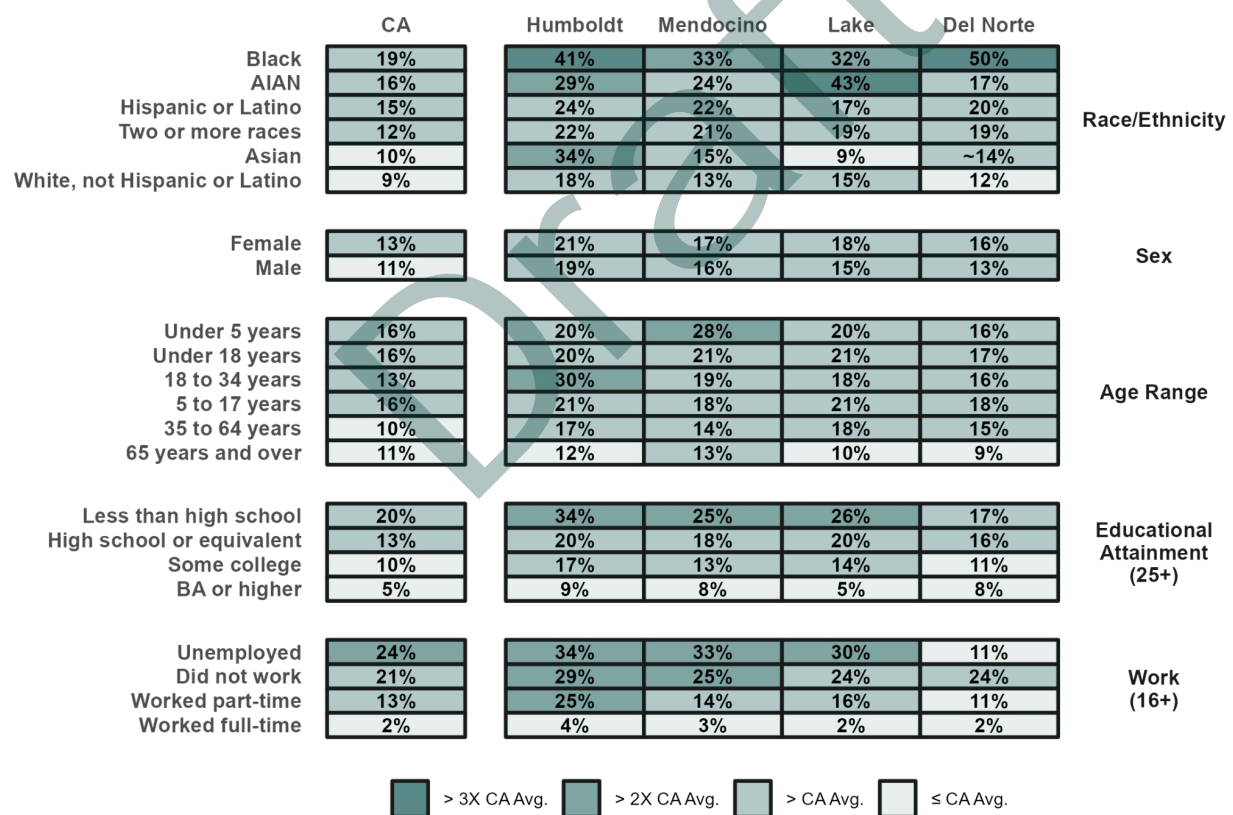
¹⁴ Or a little more than 2 hours in the northeastern most corner of the county.

Santa Rosa (a nearly four-hour drive) or San Francisco (five or more hours) when needed care is locally unavailable. It is particularly important to consider how these shortages in a context of an isolated rural community impact those with lower incomes.

Disparities in Economic Conditions and Access to Critical Services

While depressed economic conditions is a region-wide challenge, some communities are more impacted by the region’s challenges to prosperity than others. Poverty rates, which reflect the combined impact of various factors including labor force participation, fewer hours worked, lower wages, and household structure, are especially high among children, those with lower levels of education, among people of color, among women, those without full-time employment (see Figure 6 below), and among LGBTQAI+ individuals and individuals with disabilities (see Figure 15). Communities impacted by higher rates of poverty are less able to contend with the region’s high cost of living and shortages of essential resources.

Figure 6
Disaggregated Poverty Rates (2018 - 2022)



Note. Data sourced from the American Community Survey (ACS). (~) denotes statistically unstable estimates.¹⁵

¹⁵ For these data, an estimate is determined to be statistically unstable if it is not significantly higher than 0 or significantly lower than 100%.

Housing

Clean, safe housing is important for people to fully function in society and participate in the workforce, however many communities in the Redwood Region lack an adequate supply of housing. Rental vacancy rates are much lower than the state average, indicating more competitive conditions for renters (see Appendix). Such competitive conditions may push those with lower incomes into substandard or inadequate housing, or even homelessness. In many areas of the region, the housing stock is aging and dilapidated, resulting in health impacts including elevated blood lead levels in young children. Rates of homelessness are among the highest in the state, and public-school children are more likely to experience homelessness compared to state averages (see *Public Health Analysis*).

Catastrophic wildfires, a problem expected to worsen in the coming decades, have destroyed hundreds of housing units in the region in recent years, further diminishing the supply of housing as well as increasing cost of home insurance (See *Public Health Analysis* and *Climate Analysis*). Those with low income will be least able to adapt to these higher costs.

Healthcare

The Redwood Region's shortage of healthcare providers disproportionately impacts those with low incomes. People with incomes below the poverty line in the Redwood Region are more likely to have recently delayed healthcare or filling a prescription (see the *Public Health Analysis*). Moreover, people with incomes below the poverty line are more likely to exhibit or experience health factors (e.g., smoking and suicide ideation) associated with the region's adverse health outcomes.

Food

Rural poverty is closely linked to food insecurity.¹⁶ "Food deserts" in the Redwood Region increase food insecurity, and represent an additional inequitable barrier to economic participation that directly impacts health and well-being. Food insecurity can lead to malnutrition, stunted growth, cognitive development issues, and increased vulnerability to diseases, and other health problems, particularly among children. These conditions further strain already stretched healthcare systems in the Redwood Region. As shown in the *Public Health Analysis*, people with incomes below poverty are far less likely to be able to access fresh produce in their neighborhoods compared to those with higher incomes in the Redwood Region.

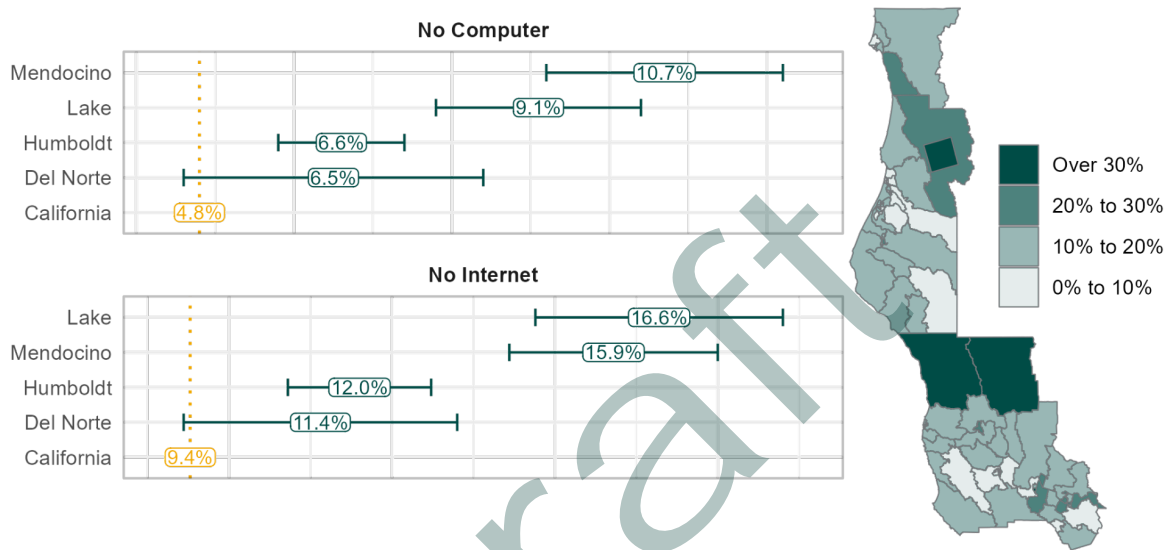
Broadband

As shown below, significantly more households in the Redwood Region lack internet access in the home. In some communities, particularly among the most remote areas of the region (e.g., Hoopa), about one-third of households lack any access to home internet. Across the U.S., only 65

¹⁶ Food insecurity (either chronic or a result of disruptions to food supply chains) means there is inconsistent access to enough food to meet nutritional needs.

percent of tribal populations have broadband access, compared to 98 percent in urban areas (UCLA, 2022). Broadband services can be critical to the health, wellbeing, and economic development of communities, and a lack of equitable access presents a serious basic human rights issue. Of particular importance for tribal communities in the Redwood Region is access to telehealth services, a much more time- and cost-effective way for people living in more remote areas to see a healthcare professional, especially in non-emergent circumstances.

Figure 7
Householders without Internet Access (2017 - 2021)



Note. Data sourced from the American Community Survey (ACS). Map indicates percentage of households lacking any form of internet subscription.

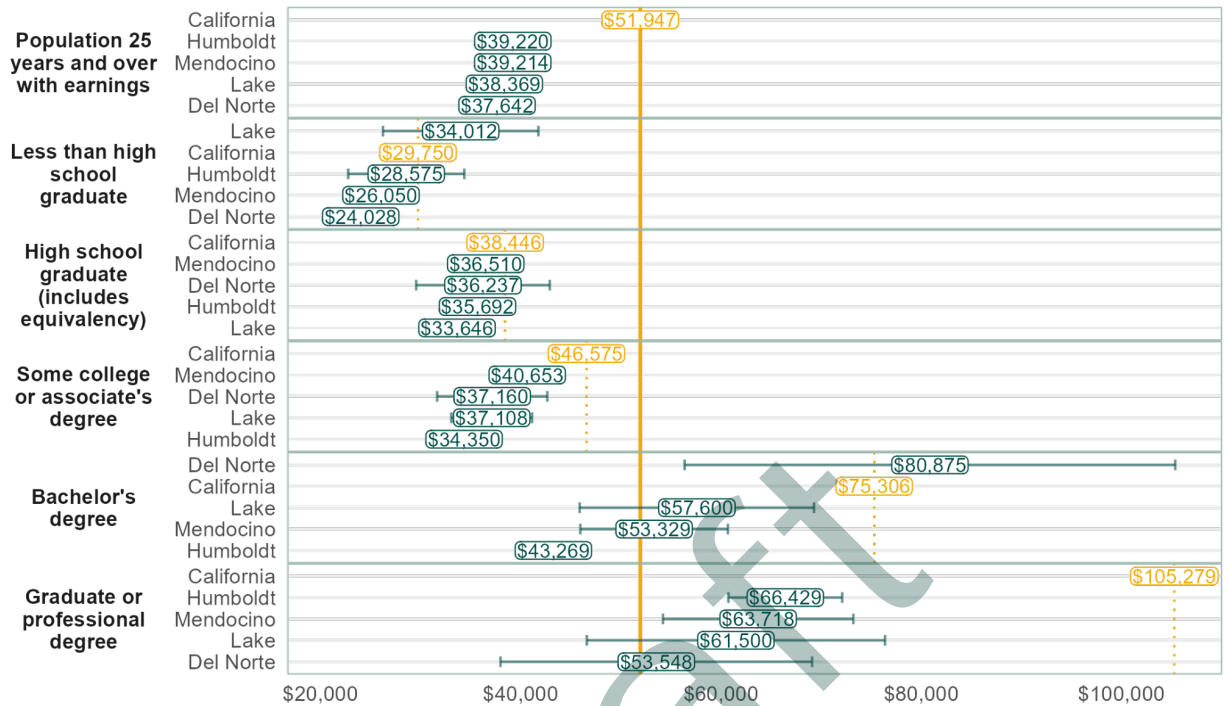
Labor Market Trends

Regional Wage Disparities

Comparing earnings region-wide to state averages reveals clear differences particularly among highly educated workers and among higher wage occupations. Workers with lower levels of education or working in low wage occupations are offered wages similar to what they would earn in other regions of the state. Conversely, those with higher levels of education and those working in high wage occupations, experience sharply lower wages compared to workers with similar education or occupations statewide. For instance, as shown below, a worker with a graduate degree in the Redwood Region earns approximately 60% of the average graduate degree holder statewide while a worker with a high school diploma has earnings much closer to the state average (roughly 87 to 95%).

Figure 8

Median Earnings by Education, Population 25 Years and Older with Earnings (2018 - 2022)

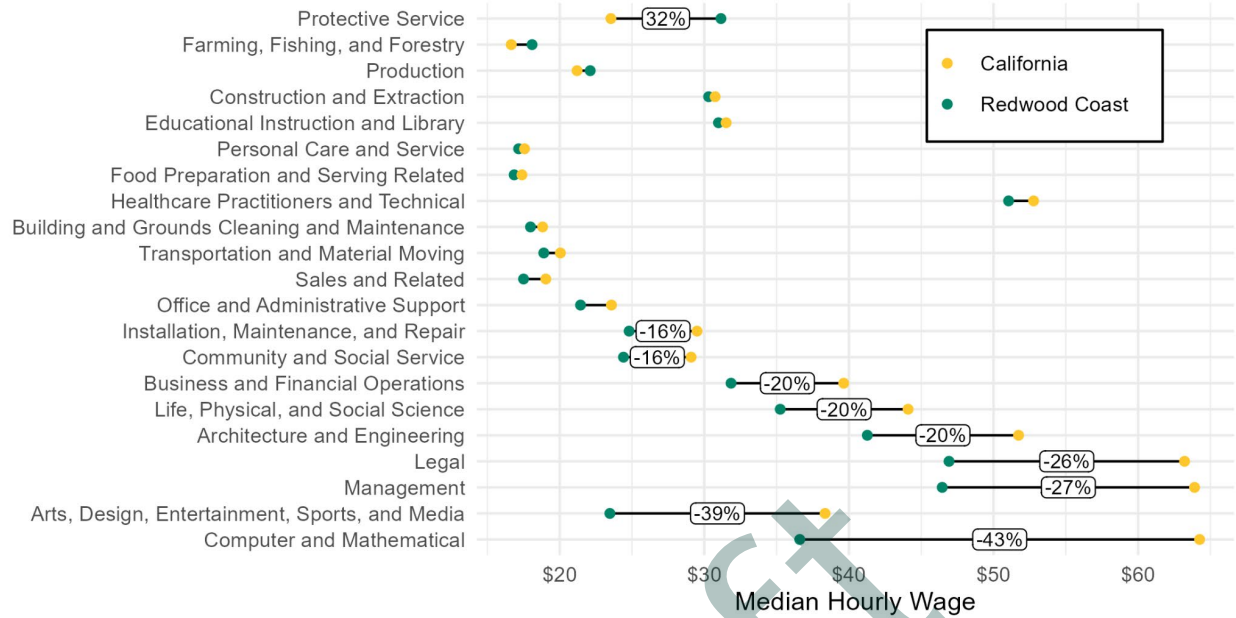


Note. Data sourced the American Community Survey. Bars indicate 95% confidence intervals.

Similarly, as shown below, occupation wage gaps between the Redwood Region are *proportionately* greatest among high wage occupations including STEM, legal, finance, and business-related occupations.

Figure 9

Gaps in Median Hourly Wage by Major Occupation Category (2022)



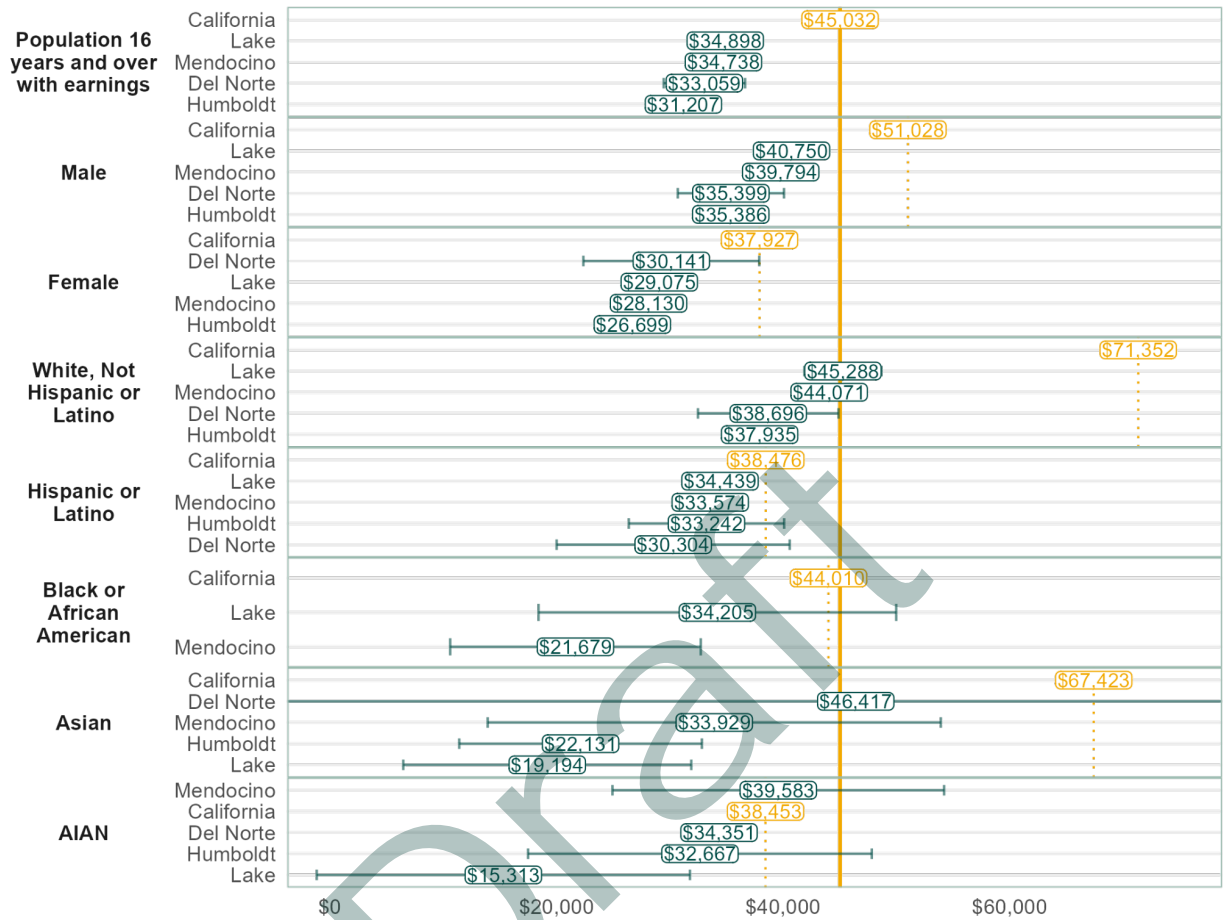
Note. Data sourced from California Employment Development Department. Standard Occupation Classification (SOC) code major groups.

Intraregional Wage Disparities

While median earnings are typically lower in the Redwood Region compared to the state median, median earnings among women and communities of color in some areas of the Redwood Region are particularly depressed (see below¹⁷). While these statistical estimates have high levels of uncertainty, tribal communities have estimated median earnings as low as \$15,313 per worker.

¹⁷ These estimates are subject to a high degree of statistical uncertainty.

Figure 10
Median Earnings by Sex, Race, or Ethnicity (2018 - 2022)



Note. Data sourced from the American Community Survey. Bars represent 95% confidence intervals.

Impacts of Wage Disparities

Wage disparities have many negative impacts on economies like the Redwood Region including (Thiede et al., 2020):

- Reduced productivity as workers paid less are often less productive (low wages can lead to stress, anxiety, and discouragement/disengagement)
- Increased turnover as low wages can lead to higher turnover as workers quit, find other employment, or move out of the area
- Reduced economic growth as workers earning less have less money to spend, so demand for goods and services is decreased along with economic growth (a downward spiral)
- Worker unrest, as workers who feel they are not being paid fairly may strike or quit

Lastly, another evident and critical impact of wage gaps in the Redwood Region is the loss of highly skilled labor to other regions. Redwood Region workers with advanced education, STEM, legal, financial, or business acumen could potentially experience *proportionately* greater income gains compared to those working in lower paid occupations from relocating to other areas of the state compared to those with lower levels of education or different skill sets. Such incentives may be a contributing factor to the region’s out-migration, particularly among high skilled workers. As shown in the *Indicators* analysis,¹⁸ there is a net out-migration of higher income individuals and individuals with graduate or professional degrees while there is a neutral or net inflow of lower income individuals to the region.¹⁹

However, there are signs that the region is attractive to highly compensated workers when geographic location does not limit their economic opportunities. Starting during the pandemic in 2020 when the proportion of the working population that worked from home doubled to 11.1%, the region experienced an influx of high-income workers from other regions of the state (even while total migration was negative due to residents leaving for other states²⁰).

Barriers to Employment

While wages are generally lower, the unemployment rate region-wide is just 5.2%²¹ (see *Industry Cluster and Labor Market Analysis*) and out-of-work individuals are much less likely to cite lack of employment opportunities as a reason for being out of work compared to state averages (see Appendix). This suggests that factors other than wage gaps or lack of employment opportunities contribute to the region’s elevated poverty rates relative to state averages. However, factors such as barriers to employment or lack of *full-time* employment may be critical. As shown in the Appendix, labor force participation rates (including among prime age adults) are lower than state averages. In Mendocino County, for example, 74% of 35- to 44-year-olds are either employed or looking for work compared to 82% for the same age group statewide.

¹⁸ See *Indicators Report*

¹⁹ See Figures 43 through 45 in *Redwood Region, California Indicators Report*. The region has experienced a net inflow of residents with low income (\$25,000 or lower), roughly net zero inflow of residents with moderate incomes (\$25,000 to \$75,000) and a net outflow of higher income residents in recent years.

²⁰ The out migration among higher income residents is partially offset by in migration of higher income residents from other parts of the state that began during COVID-19. During this same time, the proportion of the working population in California that worked from home doubled to 11.1% (see Figure 39 in the *Indicators Report*). Therefore, perhaps much of this trend can be attributed to remote workers relocated to relatively more affordable or more desirable areas such as the Redwood Region.

²¹ An unemployment rate of 5.0% is generally considered to be “full employment” or to be even more baroque near the Non-Accelerating Inflation Rate of Unemployment (NAIRU) by economists. For the layperson, an unemployment rate around 5% is generally thought to be the sweet spot. Achieving 0% unemployment is not thought to be possible due to labor market friction— some proportion of the workforce is always shifting between jobs or places in a dynamic economy. A sustained unemployment rate below the NAIRU is thought to contribute to inflation.

In the Redwood Region, barriers to employment appear to be a critical factor contributing to economic hardship and poverty. For instance, rates of disability are sharply elevated across most age ranges²² in the Redwood Region and those without work between the ages of 25 and 54 are twice as likely (24% vs. 12% statewide²³) to cite disability as the reason for being out of the workforce while significantly less likely to cite that they could not find a job (see Appendix).

Lack of Full-Time Employment

Workers in the Redwood Region are less likely to work full-time and throughout the year compared to the statewide workforce. Region-wide, 68.0% of workers aged 16 to 64 work more than 35 hours per week, while the comparable figure statewide is 76.5%. Similarly, 32.0% of Redwood Region workers in this age range worked fewer than 50 weeks out of the year while the comparable figure statewide is 22.7%.²⁴ However, it is not clear to what extent lower full-time employment is due to fewer full-time employment opportunities, workforce barriers to full-time employment, or other structural trends in the economy or demographics that result in more part-time work such as the college student population.

Many barriers exist that restrict equitable access to employment, including provision of public services such as transportation in smaller towns and more remote rural areas in the Redwood Region. As noted by participants who contributed to the Region's Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis participants, programs that provide support services such as childcare or transportation may be needed to provide access for workers for smaller, more remote tribal and nontribal communities. In regional Comprehensive Economic Development Strategy (CEDS) documents, investments in transportation (among other areas) were seen as essential for increasing business opportunities, jobs, development projects, and for generally building greater capacity and resilience.

Occupation Projections and Opportunities

While wages are generally low, there are clear opportunities for growth in select high wage occupations. As shown below, significant demand is expected among several high wage occupational groups, particularly in **management** and **skilled healthcare**.²⁵ Demand for education, construction, business and finance, and law enforcement, and Science, Technology, Engineering and Mathematics (STEM) occupations is also expected to be strong.²⁶ Among all

²² All except 75 years and older.

²³ This estimate only applies to Humboldt, Mendocino, and Lakes counties as Del Norte county data is not available in the CHIS.

²⁴ Sourced from American Community Survey, Table S2303 2018 - 2022 five-year estimates. Author's calculations.

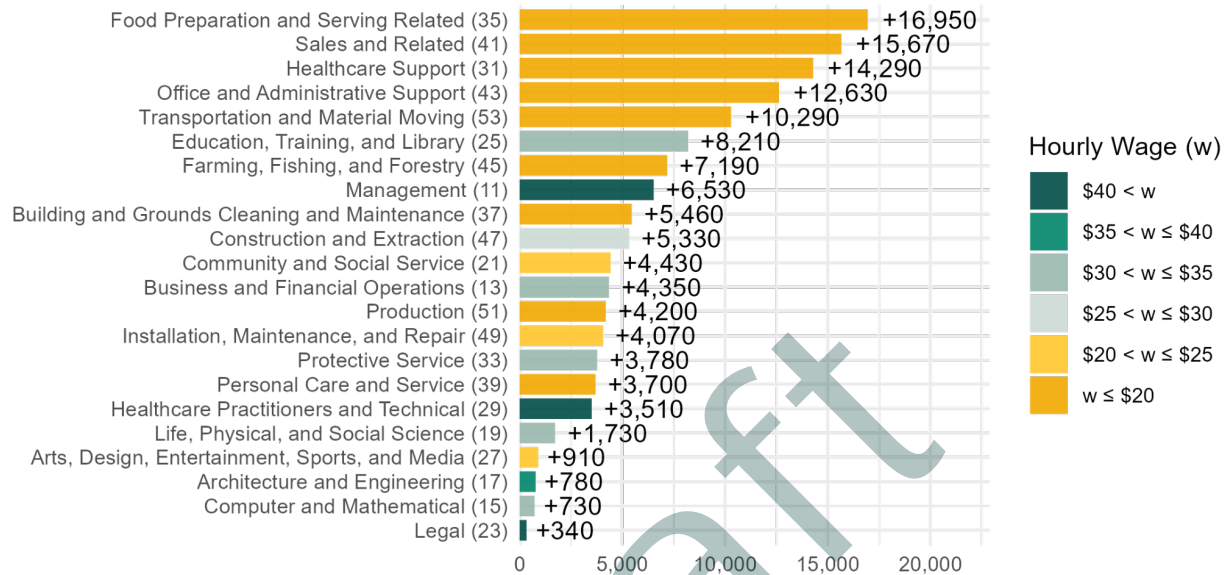
²⁵ See SOC 11 and 29.

²⁶ See SOC 25, 47, 13, 33, 19, 17, and 15.

occupations paying more than \$25, the top three occupations by projected job openings are **General and Operational Managers, Registered Nurses, and Carpenters**, each of which is expected to have at least one thousand job openings between 2020 and 2030 (see Appendix).

Figure 11

Total Projected Job Openings 2020-2030 by Major Occupation Group (2022)



Note. Data sourced from California Employment Development Department (EDD). Standard Occupation Classification (SOC) code major groups in parentheses.

Displacement Risks and At-Risk Workers

As discussed in the *Industry Cluster and Labor Market Analysis*, workers in low wage occupations such as in **food services, customer service, and office support fields** are particularly vulnerable to artificial intelligence (AI) and automation. Conversely, workers in fields such as healthcare, construction, and management are expected to be less vulnerable to Artificial Intelligence (AI) while also experiencing strong labor demand.²⁷

²⁷ For example, since the pandemic, many hotels have shifted toward more automated check-in and check-out procedures, reducing the number of staff required. This change, for instance, may have important implications for employment dynamics in the *Arts, Culture, and Tourism* target sector.

Competitive Advantages and Potential Growth Industries

Regional Assets

As discussed in the *Industry Cluster and Labor Market Analysis*, the region's abundance of natural resources is one of its key assets. Agriculture assets support **dairy, cannabis, wineries,** and forest-products industries. The region's marine and water resources support **scientific research** and **fishing industries**, while the region's unique natural landscapes and cultural attractions support **tourism and hospitality**. Natural and marine resources may also provide significant untapped potential for **renewable energy production** through **biomass** and **wind energy**.

These conclusions are largely congruent with the Collaborative's participatory research activities (see *Strengths, Weaknesses, Opportunities, and Threats* section). The natural beauty and abundant natural resources of the Redwood Region were mentioned often as regional assets and as a source of many economic development opportunities, particularly in the *Working Lands and Blue Economy* sector.²⁸

Industries with Competitive Advantage

As discussed in the *Industry Cluster and Labor Market Analysis*,²⁹ the following industries are identified as potentially having **competitive advantage**. These industries were ranked and selected using multiple factors including indicators of relative economic performance, environmental impact, as well as available infrastructure and workforce resources.³⁰ As shown below, generally these industries employ a larger proportion of the Redwood Region workforce compared to statewide averages, as indicated by Location Quotients (LQ) greater than one³¹ while most are high wage industries. Another key trend is the higher greenhouse gas emissions

²⁸ Participants noted a high potential for innovation in the Working Lands and Blue Economy sector, for example, including nurturing the region's ecosystem and microbiome assets that open diverse opportunities for emerging industries such as regenerative agriculture. So too, these land-based assets are often tied to the region's cultural assets and the region's original inhabitants and stewards of the land, bringing great potential to apply practices based on traditional ecological knowledge to land, forest, and river management (Tribal governments and nations in the Redwood Region are well known for their work to protect regional assets such as lands, forests, and rivers.) For example, there is significant potential for economic development in river-restoration activities and an expected increase in salmon populations resulting from dam removal on the Klamath River.

²⁹ *CERF Report Regional Economic Analysis North State, Eastern Sierra, and Redwood Coast*

³⁰ Factors used to assess competitive advantage included; forecasted employment growth, relative wages, multiplier effects on employment in other industries, productivity, environmental impact, infrastructure support, and workforce readiness.

³¹ Location Quotients (LQ), in this case, are calculated by taking the ratio of employment concentration (the percentage of the total workforce in a given industry) in the Redwood Region divided by the state employment concentration in a given industry. For instance, if 10% of the Redwood Region workforce works in Industry A, while 5% of the California workforce works in Industry A, then the Redwood Region LQ for Industry A is two. LQs greater than one indicates regional specialization in an industry and may be an indicator of competitive advantage.

per \$1 million of valued added economic activity (indicated by GHG below) among *Working Lands and Blue Economy* industries.

Figure 12
Industries with Competitive Advantage, Redwood Region (2022)

NAICS	Sector Table	Industry	Employment	LQ	Wages	GHG
487	Arts, Culture, Tourism	Scenic and Sightseeing Transportation	379	0.46	\$58,610	85,138
712	Arts, Culture, Tourism	Museums, Historical Sites, and Similar Institutions	114	1.24	\$41,170	91,028
622	Health & Caregiving	Hospitals	3,999	1.57	\$112,027	38,315
623	Health & Caregiving	Nursing and Residential Care Facilities	2,247	1.13	\$60,465	15,302
624	Health & Caregiving	Social Assistance	10,739	1.63	\$29,034	22,469
23	Renewable & Resilient Energy, Cross Cutting	Construction	10,827	1.29	\$65,998	416,669
811	Renewable & Resilient Energy, Cross Cutting	Repair and Maintenance	3,143	1.06	\$61,233	2,608
112	Working Lands & Blue Economy	Animal Production and Aquaculture	1,429	7.52	\$46,821	3,876,715
113	Working Lands & Blue Economy	Forestry and Logging	931	21.81	\$75,548	1,212,313
115	Working Lands & Blue Economy	Support Activities for Agriculture and Forestry	2,743	1.71	\$58,921	121,811
311	Working Lands & Blue Economy	Food Manufacturing	1,438	1.05	\$50,909	12,391,568

Note. Industry competitive advantage determined by methodology described in *Industry Cluster and Labor Market Analysis*. Greenhouse Gases (GHG) figures were also sourced from this report. Additional data sourced from IMPLAN.³²

Key Economic Trends

- Region-wide elevated rates of poverty driven by factors such as lower labor force participation and lower wages. Poverty disproportionately impacts disinvested communities.
- Elevated cost of living that is not commensurate with regional wages.
- Lower earnings region-wide, primarily driven by wage gaps in high-skilled higher wage occupations.
- Lower labor force participation, particularly among prime age adults. Barriers to employment are dynamically different from statewide trends, with disability being a strong potential factor.
- There are strong opportunities for high wage occupation growth in skilled healthcare and management occupations, while workers in lower wage customer service occupations are at risk of displacement due to automation.
- Independent analysis supports the Collaborative’s emphasis on target sectors³³ as economic development opportunities.

³² Calculations of location quotients (LQ) and Sector Table classifications performed by CCRP.

³³ See Sector Tables in Figure 12.

Public Health Summary

The following presents a high-level summary of the accompanying report presented in the *Public Health Analysis*.³⁴ Please see the full report for a comprehensive public health statistics and analysis.

Causes of Health Disparities Across the Region

The Redwood Region experiences significant health disparities when compared to California as a whole. These disparities include elevated premature death rates, disability rates, and behavioral risk factors. Key determinants contributing to these disparities are high rates of **tobacco use**,³⁵ **substance abuse**,³⁶ and **mental health challenges**,³⁷ leading to consequences such as lung cancer, respiratory diseases, motor vehicle deaths, drug-induced³⁸ and liver diseases, and suicides (see figure below).

Draft

³⁴ *California's Redwood Region: Exploring the Roots of Health Disparities*

³⁵ Tobacco use in the Redwood Region is nearly twice as high as the state rate among adults 18 to 54 (20% compared to 11%). Twice as many high school juniors in the Redwood Region have recently smoked compared to the state average (4.2% compared to 2.0%).

³⁶ Multiple indicators reveal higher levels of substance use from indicators of use (e.g., heavy drinking) to indicators of outcomes of use (e.g., liver disease). See *Public Health Analysis*.

³⁷ In the Humboldt, Mendocino, and Lake counties, 22% of adults 18 to 54 have seriously considered suicide compared to 14% statewide.

³⁸ Fentanyl overdose deaths are particularly severe having risen from four deaths in 2018 to 141 in 2022. Fentanyl deaths account for more than half of all drug overdose deaths in the Redwood Region in 2022.

Figure 13
Age-Adjusted Mortality Rates per 100,000 (2019 - 2021)

	Lake	Del Norte	Humboldt	Mendocino	CA
Accidents (Unintentional Injuries)	135*	78*	74*	106*	43
All Cancers	170*	182*	173*	160*	125
Drug Induced Deaths	78*	30	37*	56*	21
Chronic Lower Respiratory Disease	49*	57*	45*	32	26
Lung Cancer	41*	48*	33*	31*	22
Chronic Liver Disease and Cirrhosis	54*	31*	25*	17	14
Suicide	24*	26*	20*	24*	10
Motor Vehicle Traffic Crashes	30*	19	16*	29*	11
Coronary Heart Disease	112*	66	98*	98*	79
Prostate Cancer	19	35*	29*	24	18
Firearm Related Deaths	12	17*	14*	14*	8
Female Breast Cancer	20	21	26*	19	18
Colorectal Cancer	14	15	13	16*	12
Cerebrovascular Disease (Stroke)	32	41	98*	35	37
Homicide	7	7	8	9	6
Influenza and Pneumonia	11	22*	8*	12	12
Diabetes	15*	43*	22	20	23
Alzheimer's Disease	15*	14*	14*	13*	37

Difference from State (X)

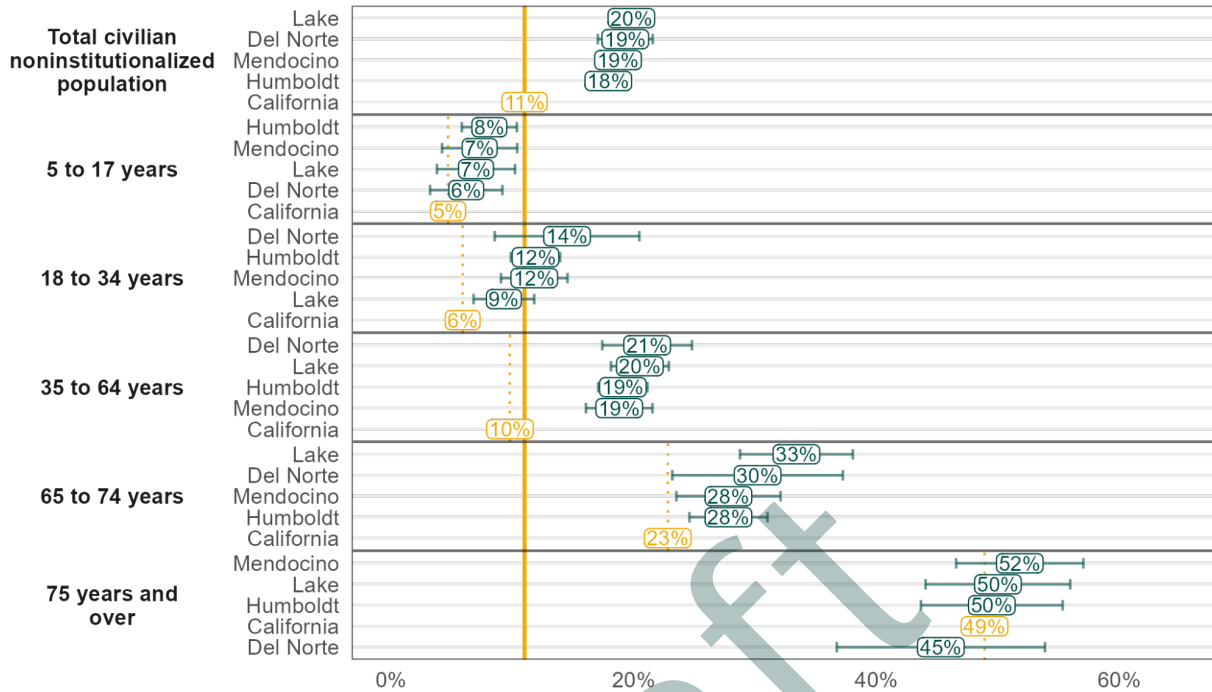
- 90 < X
- 60 < X ≤ 90
- 30 < X ≤ 60
- 5 < X ≤ 30
- 0 < X ≤ 5
- X ≤ 0

Note. Data sourced from the California Department of Public Health and the California Conference of Local Health’s *County Health Status Profiles* report data.³⁹

Disability rates are significantly higher than state averages, even among young adults aged 18 to 34. Among young adults 34 years and younger, **mental health and substance use**-related issues are the leading cause of years lived with disability (National Center for Complementary and Integrative Health). Moreover, as discussed previously, disability appears to be a critical barrier to labor market participation in the Redwood Region.

³⁹ The color scale denotes differences (X) between the region’s mortality rate and the corresponding state rate. Gold and yellow indicate higher mortality rates compared to the state. Asterisks (*) denote a statistically significant difference compared to the state rate. None of these causes include deaths where COVID-19 is the underlying cause of death. According to the California Department of Public Health (CDPH), “Deaths where COVID-19 was coded as the underlying cause of death are only included for all causes of death and are not included in any of the specific mortality health indicators. However, deaths where COVID-19 was listed as a significant condition contributing to death but not the underlying cause of death may be included for these health indicators” (2022).

Figure 14
Disability Rates by Age Range (2018 - 2022)



Note. Data sourced from the American Community Survey.

Social Determinants of Health

The region experiences adverse disparities in social determinants associated with tobacco use, substance abuse, and mental health challenges including high rates of poverty, homelessness, loneliness and isolation, adverse childhood experiences, and lower educational attainment and lower access to healthcare. As discussed previously, rates of poverty and homelessness are higher than state trends, while higher educational attainment is lower. As shown in the *Public Health Analysis*, more adults live alone (18% compared to 12%) have had multiple Adverse Childhood Experiences (ACEs⁴⁰) (33% compared to 22%). Populations impacted by these social determinants are at higher risk of mental and behavioral health challenges. For instance, nearly half (45%) of the Redwood Region adult population with four or more Adverse Childhood Experiences (ACEs) has seriously considered suicide and over one quarter (27%) of people living below the poverty line are current smokers.

⁴⁰ As discussed in the *Public Health Analysis*, Adverse Childhood Experiences (ACEs) include abuse and neglect as well as dysfunction in the household including mental illness, problematic substance use, violence against mothers, or imprisonment of a household member.

As illustrated in the *Public Health Analysis*, most of the region is a Health Provider Shortage Area (HPSA⁴¹) and the entirety of the region is a mental health HPSA. The Redwood Region population is significantly more likely to have recently delayed care compared to state averages (18% compared to 13% statewide), disproportionately impacting people with low incomes or mental health challenges.⁴² Moreover, the region is projected to need an additional 2,420 behavioral health workers⁴³ by 2027 (Cal Poly Humboldt, 2023) and expected to have 1,090 registered nurse job openings between 2020 through 2030 (see Appendix). These needs present both a challenge and opportunity for growth in skilled high wage occupations in the *Health and Caregiving* target industry.

Impact of Health Factors on Disinvested Communities

Disinvested communities within the region face even more pronounced disparities in health outcomes and factors. Communities of color exhibit higher rates of premature death, poor health, poverty, limited educational attainment, increased adverse childhood experiences, and limited access to nutritious foods.

Lesbian, gay, and bisexual communities experience elevated smoking and alcohol consumption rates, suicidal thoughts, poverty, adverse childhood experiences, domestic violence, deferred medical care, and health impacts from adverse weather events. Alarming, half of this community has seriously contemplated suicide.

Individuals with disabilities in the region face higher rates of poor health, increased smoking, poverty, lower levels of educational attainment, isolation, restricted access to healthy food, and deferred medical care.

There are also disparities in access to healthcare, disproportionately affecting lower-income individuals and those with mental health challenges. Furthermore, people without citizenship, lower levels of educational attainment, AIAN, Hispanic, and unemployed people are more likely to be uninsured (see the *Public Health Analysis*).

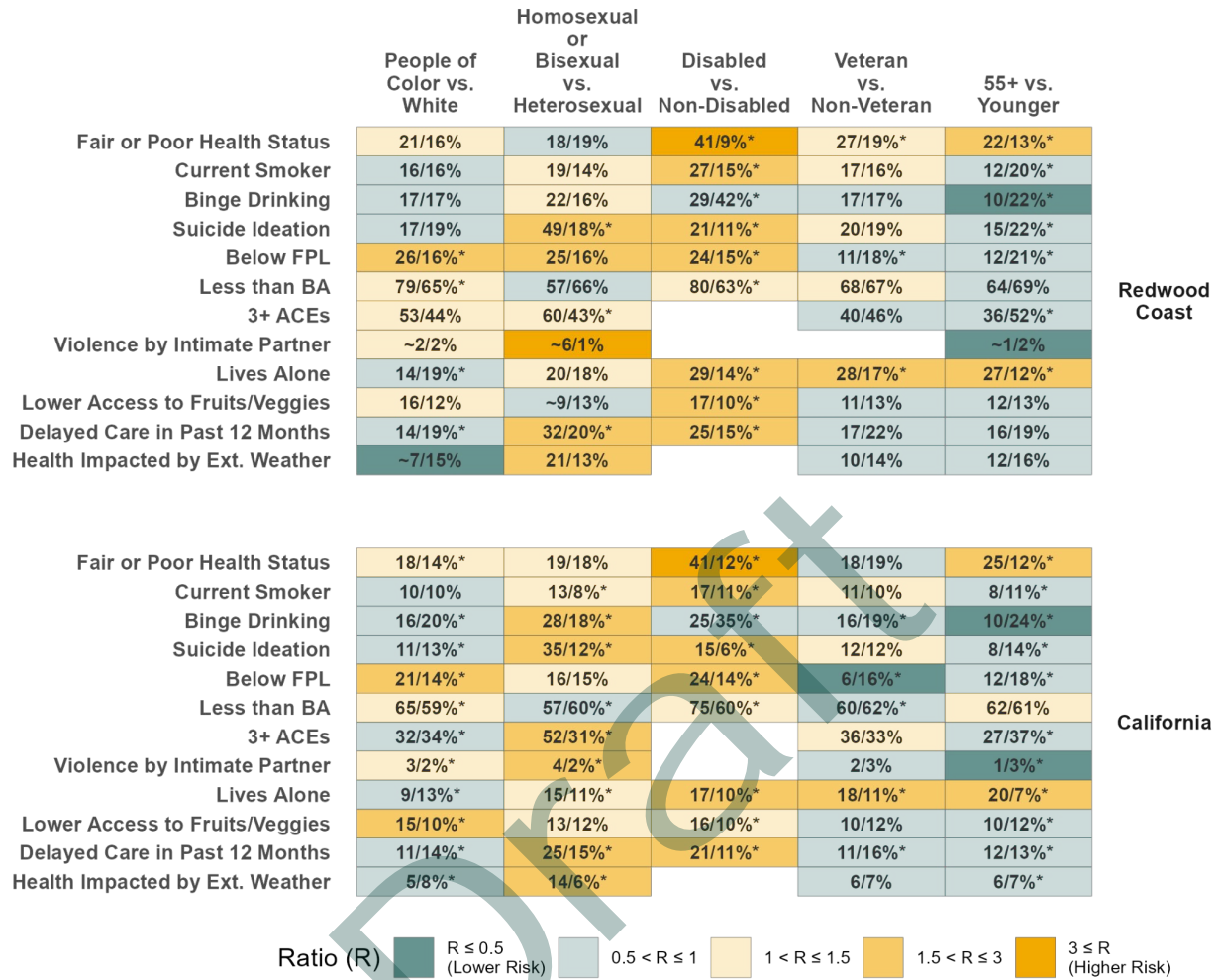
⁴¹ HPSAs are areas defined by U.S. U.S. Department of Health and Human Services (HHS) as having a shortage of primary care, mental health, or dental health providers. See the *Public Health Analysis* for a discussion of HHS methodology.

⁴² Delayed care is even greater among those with lower income (20% compared to 13% statewide). Among adults who have seriously considered suicide at some point in their lives, 42.5% ($\pm 5.0\%$) have delayed care in the past 12 months compared to just 16.4% ($\pm 2.4\%$) of Humboldt, Mendocino, and Lake county adults who have never considered suicide. CHIS data are not available for Del Norte.

⁴³ These include a broad range of health workers including substance use disorder counselors, marriage and family therapists, and psychiatrists.

Figure 15

Comparative Analysis of Demographic Disparities in Health Factors (2011 - 2022⁴⁴)



Note. Data sourced from the CHIS. (*) denote statistically significant differences and (~) denote unstable estimates.⁴⁵

⁴⁴ The figure offers a visual comparison of health outcomes and factors across demographics. Each column illustrates the differences between two populations. As an example, the first column contrasts the health factors of people of color to the white population. Gold shades denote adverse disparities for the primary population relative to the reference group. A specific observation reveals that, in the HML region, 26% of people of color live below the poverty line, in contrast to 16% of the white population.

⁴⁵ It is possible that an estimate can be unstable and simultaneously significantly different. Missing values not shown. Years are selected based on all available years from 2011 on. Binge drinking is either “Binge Drinking in Past Month” or “Binge Drinking in Past Year” depending on data availability.

Priority Public Health Challenges

The report highlights the following priority health challenges for the region. See the *Public Health Analysis* for further detailed analysis of health outcomes, risk factors, social determinants of health, and policy recommendations.

1. Smoking Prevention, Education, and Cessation
2. Substance Use Prevention and Treatment
3. Suicide Prevention and Access to Mental Health Care

Climate and Environment Summary

The following includes high level summary materials of the accompanying reports in *Public Health Analysis* and *Climate Analysis*.⁴⁶ Please see the full reports for a comprehensive climate and environment data and analyses.

Sources and Impacts Pollution and Hazardous Materials

The region's overall pollution burden is generally low compared to statewide trends (see *Overall Pollution Burden* below). Nevertheless, certain types of pollutants or environmental risks are elevated, while some communities of the region are more impacted than others. These risks include environmental risks that can imperil water resources (e.g., drinking water and fish contamination) such as *Solid Waste Sites*,⁴⁷ *Groundwater Threats*,⁴⁸ *Hazardous Waste Generators*,⁴⁹ and *Clean Up Sites*⁵⁰ as well as factors that put children at risk for lead poisoning. Despite low levels of human-caused air pollution, wildfires pose a critical risk to air quality, health, and prosperity in the region (see *Public Health Analysis* and *Climate Analysis*).

⁴⁶ *Climate Analysis*

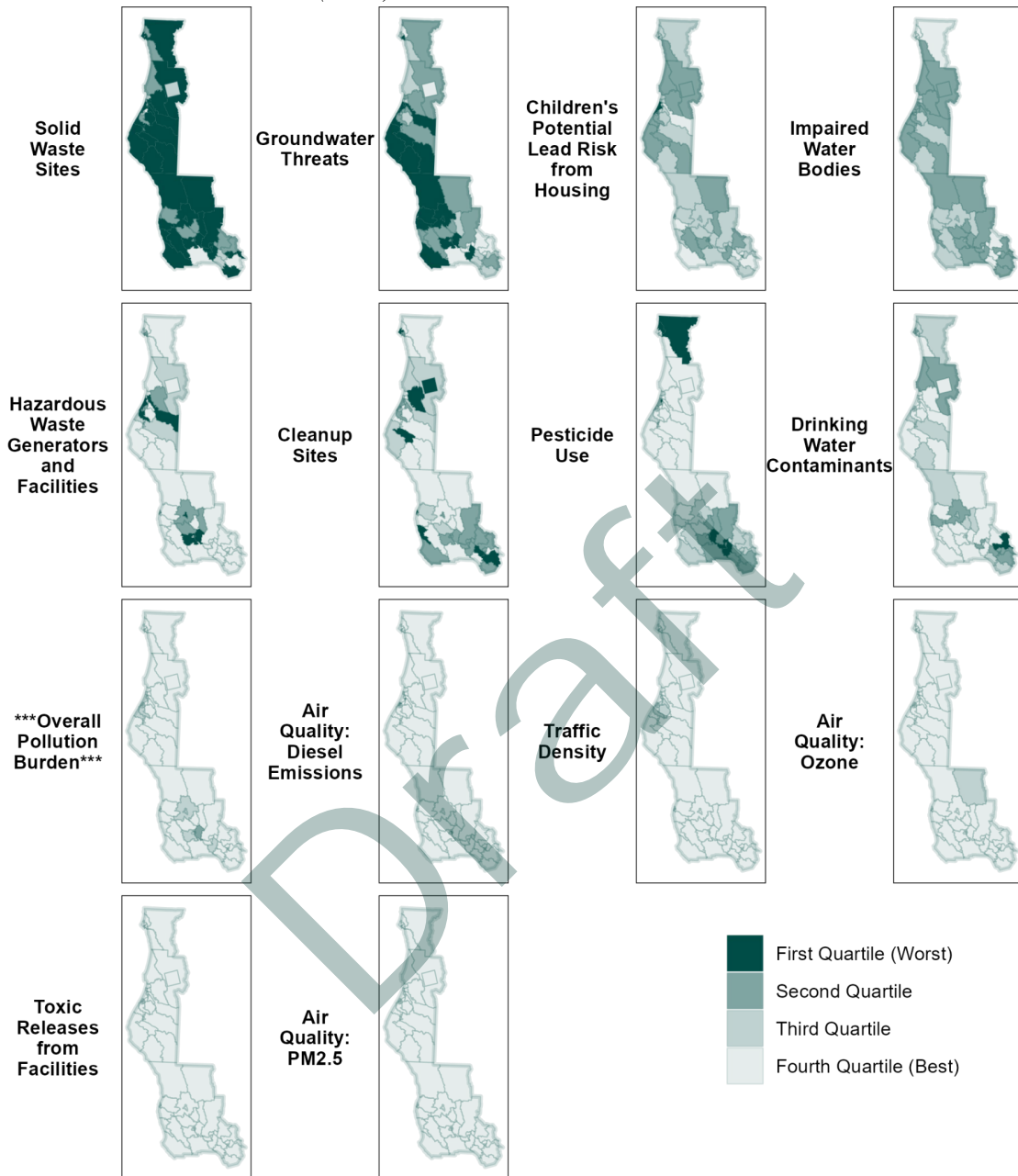
⁴⁷ Facilities (e.g., landfills, composting or recycling centers) where household garbage and other similar waste is collected, processed, or stored (*OEHHA*, n.d.).

⁴⁸ Hazardous chemicals stored or disposed of via storage tanks with the potential to contaminate soil and groundwater (*OEHHA*, n.d.-a).

⁴⁹ Facilities that create hazardous chemicals (i.e., hazardous waste) through commercial or industrial activities. These chemicals are transported to regulated facilities for treatment, storage, and/or disposal (*OEHHA*, n.d.-b).

⁵⁰ Locations with a history of mismanaged hazardous material or accidental spills or leaks.

Figure 16
CalEnviroScreen 4.0 Indicators (2023)



Note. Data sourced from CalEnviroScreen 4.0. Each Census tract is ranked compared to all other Census tracts in the state. Those in the first quartile (dark emerald) are among the worst 25% of Census tracts in the state. Those in the fourth quartile are among the best 25%.

Risks to Water Quality

Most of the region has drinking water contamination (see *Drinking Water Contaminants*⁵¹ above) levels comparable to state trends, however, the region's water bodies (see *Impaired Water Bodies*⁵²) are typically more likely to be polluted compared to statewide trends indicating a potential threat to drinking water quality.⁵³ Runoff or surface materials picked up by moving bodies is a critical source of water pollution in the region. Agricultural activities, erosion from timber harvesting, construction and roadways can contribute to surface pollution that ultimately accumulate in water bodies. The region's substantial cannabis industry also has an impact on the local environment. Water contamination, streamflow reductions due to water diversions, and poisoning of wildlife have been linked to cannabis production in the region (Carah et al., 2015). Additionally, there are hundreds of sites in the region potentially putting water quality at risk including cleanup sites, and underground storage tanks, putting groundwater sources at risk. Most of the region has above-average *Groundwater Threat* levels compared to state trends.

Impacts of Water Pollution

Contaminated surface waters pose a particular risk to public health as the region's drinking water primarily comes from these sources. Moreover, high levels of pollutants such as mercury can lead to fishing advisories, potentially impacting recreational activities and fishing-related industries— potential threats to *Arts, Culture, and Tourism*, and *Working Lands and Blue Economy*. Communities that depend on fish such as tribes may be disproportionately impacted.

Rivers and streams are primarily impacted by elevated levels of sediment and aluminum. Sediment can accumulate resulting in shallower water bodies, increasing the risk of flooding. Elevated levels of sediment can also increase the cost of processing drinking water from these sources.

Sources of Hazardous Waste

Most of the region has fewer *Hazardous Waste Generators and Facilities*⁵⁴ compared to statewide trends, however, populated areas surrounding Ukiah and near Humboldt Bay appear to have higher levels.

⁵¹ Chemicals, bacteria, other pollutants from natural or human sources that are harmful when ingested (*OEHHA*, n.d.-c).

⁵² Bodies of water, including streams, bays, rivers, and lakes, that are used for recreation, fishing, drinking, and have been contaminated by pollutants (*OEHHA*, n.d.-d).

⁵³ See the *Public Health Analysis*.

⁵⁴ *Hazardous Waste Generators and Facilities* include retailers that sell product potentially hazardous materials such as bleach, paint, pesticides, aerosols, and pharmaceuticals as well as Pacific Gas and Electric, forest product companies, and healthcare facilities.

Impacts of Hazardous Waste

While in most areas there are lower levels of hazardous waste generators compared to the state, the region's more severe wildfires impacting such sites can lead to risk of exposure to first responders and the public.

While overall *Clean Up Sites* are less common region-wide, the incidence of such sites is uneven. *Clean Up Sites* tend to be located in lower income areas and people living near these sites are at greater risk of harm (e.g., Hoopa).

Air Pollution and Wildfires

As discussed in the *Climate Analysis* report, natural sources, particularly wildfires, are by far the single most significant contributor to overall air pollution.⁵⁵ Of non-natural sources, the dust stirred up along the region's rural unpaved roads contribute substantially to particulate matter emissions. Residential fuel use (particularly wood fires) as well as managed burns are also major contributors to overall air pollution.

While indicators of overall air pollution are low relative to state trends, wildfires are a more critical risk for the region compared to the state as a whole and as discussed in the *Public Health Analysis* and Appendix, this appears to have substantial impacts on the health and prosperity of the region.

Lead Exposure in Children

As discussed in the *Public Health Analysis*, exposure to lead through lead-based paint in older housing is the most significant source of lead poisoning in children. Children's estimated risk of exposure to lead from housing is elevated in many areas of the region, particularly in the Humboldt Bay area and the more urbanized areas of Del Norte and Mendocino Counties. Moreover, children 5 and younger in Humboldt and Lake counties have elevated blood lead levels compared to the state average (6.7% and 3.3%, respectively compared to 1.9% statewide).

Critical Environmental Risk Factors

1. Potential for ground or surface water contamination
2. Wildfires
3. Lead exposure in young children

⁵⁵ Vehicles make up the largest emitter of NOX, particularly off-road equipment.

Sources of Greenhouse Gas (GHG) Emissions

As discussed in the *Climate Analysis*, there are major greenhouse gas emission data gaps in the Redwood Region highlighting the need for the region to conduct a comprehensive emissions inventory for data-informed emissions planning purposes.⁵⁶ What data are available suggest that the residential energy use followed by transportation are the largest anthropogenic emitters of greenhouse gasses in the Redwood Region. However, the largest overall source of greenhouse gases in the Redwood Region is likely wildfires (see the *Climate Analysis*⁵⁷).

Among target sectors, data from *Industry Cluster and Labor Market Analysis*, suggest that relative to economic value added, *Working Lands and Blue Economy* industries have the highest output of greenhouse gas emissions among the target industry sectors (see Figure 10 previously).

Anticipated Climate Impacts

As discussed in the *Climate Analysis*, the region's future climate is projected to exhibit greater levels of heat along with changing precipitation patterns that result in both more extreme precipitation events and longer dry periods.⁵⁸

Wildfires

This combination is expected to increase atmospheric evaporation leading to drier conditions and lead to higher wildfire risk. Across the region, summertime high fire risk days and total wildfire area burned are expected to increase markedly by midcentury, exacerbating an already heightened risk to health, life, and property. Total wildfire burn area is expected to rise between 29% in Lake County and as much as 213% in Del Norte.

Landslides

An intensity of rainfall during wet seasons will increase the likelihood of flooding and landslides within the region. Landslides threaten residents and housing, as well as critical infrastructure, including but not limited to, transportation networks, water and sanitation systems, and communication networks. Landslides can negatively affect the habitats of local wildlife. For example, elevated sediment deposits due to landslides may accumulate in streams or rivers. These deposits can degrade spawning habitats for fish and reduce the diversity of their food source (California Energy Commission et al., n.d.), a potential threat to *Working Lands and Blue Economy*.

⁵⁶ While some limited greenhouse gas emissions estimates are available, they should not be used for planning purposes according to the *Climate Analysis*.

⁵⁷ Statewide, wildfires were the second largest contributor to GHG emissions in 2020, offsetting previous efforts to reduce GHG emissions (Jerrett et al., 2022).

⁵⁸ However, total annual average precipitation is expected to be similar or slightly higher.

Heat

As discussed in the *Climate Analysis*, greater heat also increases the need for indoor cooling. The number of days per year potentially requiring home cooling is projected to rise substantially across the region.⁵⁹

Sea Level Rise

Coastal communities in Del Norte, Humboldt, and Mendocino counties are projected to experience varying impacts of sea level rise. Coastlines such as areas around Crescent City that have low slopes are particularly vulnerable to sea level rise, where even a small level of sea level rise can result in substantial loss of shoreline. Humboldt Bay is a particularly vulnerable area, not only in the Redwood Region, but along the entire West Coast. This area is projected to experience up to 1.5 feet of sea level rise, exacerbated by sinking land.

Impact on Disinvested Communities

Some communities in the Redwood Region may be particularly vulnerable to the potential impacts of climate change. Economic barriers experienced by people with low incomes can result in insufficient shelter or lack of mobility during extreme weather events. Children, seniors, and people with disabilities may also be at higher risk potentially related to age, illness, isolation, or dependence on caregivers or medical equipment. Power outages can also adversely impact the health of individuals reliant on air conditioning, refrigerated medicines, or electronic medical equipment (see the *Climate Analysis*). Moreover, the region is aging, rates of disability and poverty are elevated, and far more of the region's population lives alone compared to the state, indicating such vulnerable populations are substantial in the Redwood Region (see the *Public Health Analysis*).

Tribal populations within the region disproportionately face several climate-related threats, including food and water insecurity, limited access to traditional foods, and loss of culturally vital plant, fungi, and wildlife (Bull Bennett, et al.). Impacts on freshwater resources is a particular concern for Tribal communities that depend on said resources for drinking, fisheries, and cultural activities. Climate impacts to culturally significant species and habitats can detrimentally affect social and cultural components to Tribal communities (California Energy Commission et al., n.d.).

⁵⁹ While Del Norte is expected to experience only a modest increase in such days, Humboldt which historically had fewer than 1 such day per year is expected to have on average 8.6 days by midcentury. Similarly, Lake's figure is expected to rise from an average of about 21 days per year to about 54 and Mendocino is expected to rise from 9 to 24.

Potential Climate Change Impacts on Targeted Industries

As discussed in the *Climate Analysis*, these climate impacts may have the following impacts on the region's targeted industries:

Allied Health and Caregiving

- Increased need for healthcare during extreme events (e.g., wildfires, floods, heat).

Working Lands and Blue Economy

- Changing weather patterns may impact agricultural and natural resource productivity.⁶⁰
- Sea level rise or algae blooms may disrupt maritime industries.

Arts, Culture, and Tourism

- Degradation of culturally important landmarks, sites, and infrastructure.
- Flooding, wildfires, and algae blooms may decrease tourism.

Renewable and Resilient Energy

- Increased need for building cooling during heat waves.
- Need for reliable energy sources during heat waves, wildfires, and storms.
- Sea level rise may damage infrastructure.

Strengths, Weaknesses, Opportunities, Threats Analysis

SWOT Methodology

To better center community voice, lived experience, local expertise and resident perceptions of issues and their causes, the RRRISE research team opted for a mixed methods approach to assessing the region's Strengths, Weaknesses, Opportunities, and Threats. This SWOT uses a "concurrent nested approach"- meaning the qualitative data generated by the community leads the research, while the quantitative analysis of publicly available data is primarily used to substantiate the observations and causal relationships put forward by those research participants. Complementing these efforts were two rounds of surveying (March-June 2023: n=97, July-November 2023: n=132), sampled from both Collaborative partners and the broader community, querying respondents on their priorities, challenges, and aspirations for the RRRISE Collaborative (results from these surveys are reviewed in depth in the Partner Mapping report).

⁶⁰ Increasingly arid conditions, along with less reliable water supplies and deficits in soil water, will negatively impact crops and pastures (California Energy Commission et al., n.d.).

Data Sources:

1. Participatory SWOT exercise with the Redwood Region RISE Collaborative members: 50 members participating in person (Ukiah Conference Center, 9/16/23), 71 participants via Zoom.
2. Listening Campaign: 124 participants engaging in semi-structured, multipurpose conversations focusing on key priorities, challenges, opportunities, partnerships, and interest in engaging with CA Jobs First. Participants came from a broad range of organizations and sectors. Research contributors also included unaffiliated residents interested in the initiative (roughly 25% of research participants). Conversation ranged from 30 minutes to two hours in length, and topics covered were driven by respondents' interest and priorities.
3. Review and synthesis of the Industry Cluster, Labor Market, Public Health, and Partner Mapping Analyses; and the Economic Regional Summary information found above.

Additionally, researchers consulted the regional planning documents identified by the Collaborative. These include:

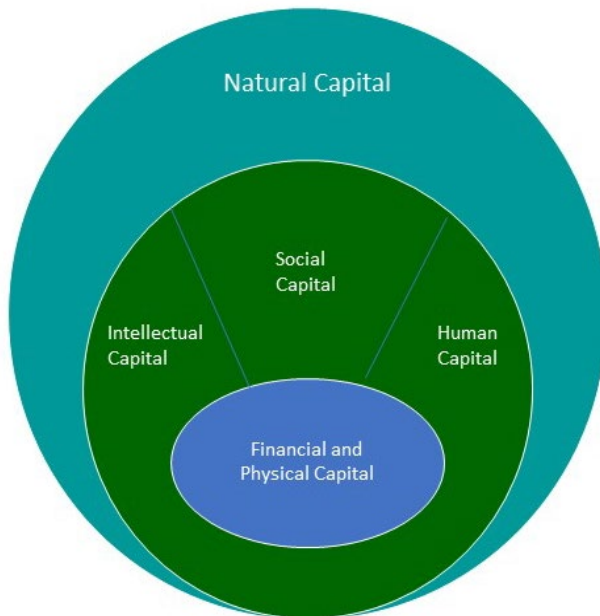
Document Type	Strategic Plan title	Approximate Date Produced
Comprehensive Economic Development Strategies (CEDs)	County of Del Norte	2019
	Crescent City Economic Development Strategic Action Plan	2021
	Humboldt CEDs	2018-2023
	Lake CEDs	2016
	Mendocino/Sonoma CEDs	2022
	MOVE2030: Community plan	March 2021
	MOVE2030: Economic Resiliency plan	March 2021
Tribal CEDs	Hoopa Valley Tribe	2016-2020
	Karuk Tribe Comprehensive Economic Development Strategy	2021
	Wiyot Tribe Strategic Plan 2020-2024	2019
	Yurok CEDs	2017

Transportation Plans	Caltrans District 1	2021
	Del Norte Regional Transportation Plan	2020
	GHD-County of Humboldt, Planning Department	2021
	Humboldt County Transit Development Plan (2023-2028)	2023
	Lake County Regional Transportation plan/Active Transportation Plan	2022
	Lake County Transit Development Plan - 2023 Update	2023
	Mendocino County Transit Development Plan	2022
	Climate Strategy Documents	Hoopa Valley Tribe Strategic Energy Plan
Humboldt Regional Climate Action Plan		2021 (draft)
Karuk Climate Adaptation Plan		2019
Toma Resilience Campus		
Yurok Tribe Climate Change Adaptation Plan		2014
Workforce Development	Del Norte County Labor Market Profile and Industry Sector Analysis	2019
	Lake County Labor Market Analysis & Strategy	2023
	Mendocino County Labor Market Analysis & Strategy	2023

To provide structure to the analysis below, RRRISE researchers used a composite framework loosely derived from different versions of the popular Five Capitals Framework⁶¹:

⁶¹ See for example Maria Maack, Brynhildur Davidsdottir, Five capital impact assessment: Appraisal framework based on theory of sustainable well-being, Renewable and Sustainable Energy Reviews, Volume 50, 2015, Pages 1338-1351, ISSN 1364-0321, <https://doi.org/10.1016/j.rser.2015.04.132>.

The Region’s Strengths, Weaknesses, Opportunities and Threats



Human and Intellectual Capital

Community members celebrate the independent spirit of the North Coast, noting the cultural richness, “scrappiness,” and deep connection to the land and environment. An aging population, brain drain, lack of opportunity for youth, and skilled workforce shortages were pain points brought forward in listening sessions. Better channels to connect young and marginalized people to their aspirations are all desired. In particular, creating opportunities for fulfilling careers in environmental fields is seen as a way to celebrate the traditional ecological knowledge held in the region by tribal cultures, diversify away from natural

resource extraction, and uplift eco-innovation which is a strength of local educational institutions and entrepreneurs.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Independent, resilient, “scrappy,” self-reliant, innovative, “out of the box” thinkers and doers. • Deep connection to land, younger people desire to work outdoors and live in a way that is supportive of and by the environment. • Original stewards of these lands are still here. There is great interest in applying Traditional Ecological Knowledge to solving climate and environmental threats. Many other cultures and cultural movements call the region home and create potential for more development in the creative sector. • Community College networks and Cal Poly Humboldt create educational 	<ul style="list-style-type: none"> • Labor shortages and skills gaps create bottlenecks and limit opportunity for the region at large. This is most egregious in health and caregiving fields but also in skilled trades and professional services across various industries. • The Region has some of the most troubling mental health outcomes in the state. Generational, historic, and childhood trauma are startlingly prevalent. Correspondingly, mental health issues including substance use, depression, suicidal ideation, and anxiety abound. • These mental health issues are associated with cognitive disabilities, attrition from the workforce, low income, social alienation, housing instability and other

<p>opportunities for residents, and are currently expanding their reach across the region.</p>	<p>interrelated challenges.</p>
<p>Opportunities</p> <ul style="list-style-type: none"> • Recently established Polytechnic can help drive more innovation in key sectors, particularly related to sustainable, eco-based industries. • Historic and growing emphasis on “grow your own” workforce strategies and establishing CTE and other career pathways for young people. Major investments in Cradle to Career programs established over the last three years. • Expanding broadband access and grid connections could bolster opportunities for remote workers. 	<p>Threats</p> <ul style="list-style-type: none"> • Rising cost of living, housing scarcity, lack of training opportunities and low incomes continue to squeeze working families, and drive young people to seek opportunity elsewhere. • Competition from urban regions exacerbates local struggles to maintain workforce in health-related fields (Brain Drain).

“We need to address two things: the shortage of educated individuals and the scarcity of positions that don’t require extensive education”

Workforce shortages, skills gaps, and access to training are widespread problems impacting most key industries and resident wellbeing. Higher educational attainment lags behind the rest of the state, contributing to lack of skilled workforce (though high school graduation rates are higher, see Figure A.7 in the Appendix). Those with the highest education and in the highest skilled occupations face the most substantial proportionate wage gap. Out migration is led by those with the highest incomes and graduate degrees. In other words, despite critical shortages in skilled careers, those professionals are leaving the region to pursue their careers elsewhere (See Figures 43 through 45 in *Redwood Region, California Indicators Report*).

With respect to prospective industries like offshore wind and aquaculture development, preliminary data analysis indicates that labor shortages for occupations like electricians and construction workers number in the 1,000s. Listening session participants often emphasized “grow your own” workforce strategies, focused on enriching and expanding training opportunities existing within the region rather than increasing access to programs outside, which are viewed as a source of attrition of regional workers particularly in trades occupations.

“When they are doing their training they can make more money in places like Santa Rosa, so they don’t come back.”

At present there are no union training centers in the Redwood Coast Region, so apprenticeship requires leaving the area. Regionally situated unions expressed interest in partnering with North Coast organizations to create more opportunities for use of their mobile training unit which can provide basic construction skills education on location.

Medical and Caregiving Occupations: There are acute shortages of medical personnel in virtually every specialization and profession- primary care, specialists, behavioral health, dental- and more. While pathway approaches are being created and strengthened, the struggle to retain recruits is also problematic. A recent report on the region’s behavioral health workforce noted that there are currently 1,900 individuals employed, which is 950 workers short of what is required to meet the mental health and substance use treatment services needed in the region.⁶² Additionally, 990 behavioral health workers are anticipated to leave the field in the next five years via retirement, career change, or outmigration.

Career Technical Education and Career Pathways: Over and over, research participants expressed anxiety that the Redwood Region is not a place of opportunity for young people. Participants noted insufficient skills building, career technical education, and workforce development happening in high schools, that local educational institutions are not adequately preparing students for the workforce, especially for the industries of the future.

These trends, observed alongside critical labor shortages, signal an opportunity for the Redwood Region. Expanding Career Technical Education (CTE) was a recurring theme offered by residents, and there is some momentum growing with K-16 being established in the Region and other Cradle to Career programs. Increasing trade and vocational training opportunities and apprenticeships are seen as a strategy to retain young people in the area. Partners from building trades careers noted that there were once more hands-on learning opportunities in the local high schools, and many have the infrastructure to revive that curriculum, however finding instructors to teach CTE classes was a barrier that caused high schools to abandon their programs (respondents from both Del Norte and Humboldt counties noted). Tribal members expressed support for creating training centers, especially heavy equipment operators (one such center is proposed for the Orick area with the Yurok Nation in the lead).

Innovation and Technology:

“If you have tech innovations developed and applied locally it helps support the local workforce, and if they can be exported then it helps the economy grow.”

⁶² 2023 North Coast Behavioral Health Workforce Needs Assessment.

Having the newly anointed Cal Poly Humboldt university in the region is a crucial engine for growth, respondents expressed (though less felt in distant Lake County). In 2023, the Redwood Region's only four-year university became the state's third polytechnic- Cal Poly Humboldt. Residents associated this development with the potential for upskilling the workforce and attracting "new minds" to the region. The Collaborative would like to see Cal Poly, particularly its applied science departments create more positions for students in the community- hands on learning and apprenticeships were mentioned. Participants also brought up opportunities to create stronger pathways for students connecting Mendocino College, College of the Redwoods, Cal Poly Humboldt and then on to emerging industries. There is optimism about the expansion of the University, new opportunities to commercialize ideas coming from its research, and helping leverage its innovation engine to benefit the region at large.

Figure A.13 in the Appendix gives an overview of key innovation criteria.

Mental health and well being, soft skills development- An epidemic of mental health issues and their comorbidities, which result in disability and attrition from the workforce, concern economic development planners and community members alike. Shortages in providers and facilities to provide intervention and care are barriers to better outcomes. Other issues which inhibit residents from accessing the supports they need include siloed provider networks, transportation barriers, fear of stigma that comes with pursuing mental healthcare in a small community, and complexity when trying to navigate a fragmented system of care.

“[Workforce Initiatives need to understand] barriers like transportation, childcare, housing...understand the holistic approach that is needed. It takes working with regional partners, and looking at larger problems.”

Workforce development partners noted the need for a holistic approach in order to overcome the barriers community members are facing in their working lives. The essential strategy is to “get people into jobs, and then make sure that they progress up to a livable wage,” but as one respondent noted, disruptions like COVID and wildfires make this linear progression difficult for everyone.

Because such a large segment of the workforce has been employed in an industry (cannabis⁶³) that was once illicit and retains a good deal of informality in its working culture, capable workers struggle to “punch a clock” and work under conventional rules and norms. Another issue impacting workers' soft skill set is trauma- providers in particular noted the need for assistance

⁶³ There isn't reliable employment data for the cannabis industry (see *Industry Cluster Analysis*), but the effects of its recent collapse are easily witnessed in the communities who relied on it, as detailed in this article featuring RRRRISE Equity Council Member: <https://calmatters.org/economy/2023/02/emerald-triangle-cannabis-workers/>.

with issues like managing workday stress and interpersonal issues. As data reveals, the region has low prime-age labor force participation, which is attributed to these factors (Figure A.11).

Opportunities and Barriers for Remote Workers: Despite the preference for "grow your own" approaches, there's a widespread acknowledgment that the aging and diminishing population poses challenges. With its scenic landscapes and abundance of outdoor recreation opportunities, the region could attract and retain more skilled young people if it were easier to maintain remote work. Economic development partners' workforce development strategy employs three approaches: "Build, Attract, and Retain." Increased investment in broadband infrastructure could help achieve this, and bolster digitally based economic activities and entrepreneurship generally. A Lake county participant noted that despite the destruction from catastrophic wildfire (2015-17), they are still experiencing in-migration from urban areas, which is a source of optimism. Many in the region believe that the favorable climate, coastal clean air, and access to abundant water will make this a destination for climate migrants.

Social and Relational Capital

"The lack of institutions to do this work. That is our primary [economic development] problem."

"People want to work with each other and are invested in the community."

"In a rural community, capacity is a HUGE issue. We hear this all the time from city and tribal planners... most organizations are treading water; we can't keep up with the current workload"

Strengths	Weaknesses
<ul style="list-style-type: none"> ● Innovative social programs combat disconnection and disinvestment with connection, belonging, and resources. ● Human-centered perspective on economic well-being: economic development practitioners center the needs of people-housing, healthcare, purpose, and opportunity- as opposed to hyper focus on standard economic indicators. ● Appetite for regional partnerships ● Strong and engaged Community Colleges finding innovative ways to expand workforce training opportunities. 	<ul style="list-style-type: none"> ● Negative perceptions of working culture include observations of low quality and unsustained cooperation, lack of collective vision, fear of success and a "dream small" mentality, egos, grudges, scarcity mindset, and mistrust. A fear of failure means professionals do not take the risks needed to move the needle forward on key issues. ● Few young professionals to "pass the torch to," lack of diversity in current leadership of the public sector.

<p>Opportunities</p> <ul style="list-style-type: none"> ● Better partnerships to strengthen training offerings, esp. in natural resource careers, offer local apprenticeships ● Community benefit agreements ● Community is motivated to enhance B2B activity, create business incubators and general support to entrepreneurs and small local businesses. 	<p>Threats</p> <ul style="list-style-type: none"> ● Brain Drain. ● Lack of resourcing to support nascent partnerships; provide backbone support to networks and collaborations.
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Working Culture: A surprising result of the participatory SWOT research session with Collaborative members was the frequent emphasis placed on the region’s working culture, particularly in the public sector and economic development space. Cultural and organizational barriers were mentioned frequently and included: low quality cooperation, unsustained cooperation, lack of a collective vision, fear of success and a “dream small” mentality, egos, grudges, scarcity mindset, and mistrust. The most frequently mentioned issue for organizations was capacity, but working in silos, duplicative economic development efforts, and not enough depth of experience in economic development were also mentioned. Related, participants note a dearth of energized leadership and lack of succession plans to empower young up and comers. One of the consequences of this is a lack of professionals to “pass the torch to.” Capacity constraints impact collaboration and innovation, according to listening session participants.

“It’s difficult to get agencies to pivot or try something new, even if it’s to their benefit.”

Partnerships: There are opportunities to be had with enhanced collaboration between economic development agencies, and by establishing and strengthening cross industry partnerships.

“We assume that NGOs have those connections to the community and business, but we often find that our nonprofit organizations are very siloed.”

The accompanying partner mapping report gives in depth analysis of the Region’s and Collaborative’s organizations; and their relationships and capacity to carry out development work and influence outcomes. Some key findings include:

- Most organizations are small (42% report 0-5 staff members) and work at the county level.
- Many serve priority communities, however relatively few work with non-Federally recognized tribes, unions, or the Hmong community.
- Few organizations explicitly working on Environmental Justice exist, and there is relatively little union presence. Therefore, there are fewer partnerships reported with these types of organizations.

- The predominant partner category within the Collaborative is grassroots and community-based organizations (34%).
- At present RRRISE’s reach includes over 900 organizations and individuals in the Region.

Capacity constraints are a persistent theme for the Region. In particular, lack of economic development planning capacity impacts jurisdictions across the region- “everyone is spread really thin,” was heard repeatedly. Good initiatives struggle to secure capital, navigate pre-development, and move into implementation. In particular, there is a lack of organizations who can serve as backbone support to convene those desirable collaborations that break down silos. The relative lack of professional organizations in the region inhibits innovation and growth across sectors and industries, and likely impacts the ability of leaders from disinvested and marginalized groups to attain leadership positions and influence outcomes.

Challenges identified in economic planning include a historical lack of planning infrastructure in rural areas, reallocation of resources after disasters, staff turnover, lack of funding and data, the need to prioritize mandates, community resistance, and rapid shifts in the economic development landscape due to policy changes and external factors like climate impacts and emerging opportunities (e.g., legalization of cannabis, wildfire, storm and flooding devastation, and offshore wind).

Tribal Collaboration: Greater collaboration between tribal nations and non-tribal jurisdictions is seen as a catalyst for positive development. Tribal collaborators are cautiously optimistic about recent developments which have included tribal voice at the table, for example in the offshore wind negotiations that took place in Humboldt County. Much more needs to be done to create partnerships that can function beneficially for tribal collaborators- please see *Partner Mapping Analysis* for more in depth treatment of this topic.

Social connection and Support: In conversations across the region, residents' connection to each other is often framed as both the greatest opportunity and biggest weakness. Isolation and social alienation were brought up repeatedly. The need for better connection, especially across generations, was a strong theme. Participants also noted some excellent supportive programs that have been developed, which are implementing innovative solutions to these social issues: projects like the workforce development program “[BUILD](#)” in Lake County which offers training in construction trades, Second Chance re-entry and support, Community Schools, child care expansion activities, and others, help support re-connection, fresh starts, and overcome barriers working families face in the region. A family resource center in Humboldt County is hosting the region's first Guaranteed Income pilot, one of the few rural pilots in the nation. Social assistance is a promising sector named in the accompanying *Industry Cluster Analysis* report.

These issues are of heightened importance to Priority Communities. As noted in the Partner Mapping report:

Direct feedback from priority communities calls attention to their struggles in obtaining stable jobs that pay enough to cover expenses, relevant skill development opportunities, resources in their communities that meet basic needs for housing, transportation, child/family care and healthcare, and meaningful work structured in ways that fulfill the reasons they choose to live and work in this region – at times, despite enduring and significant challenges. People in priority communities spoke about the impacts of trauma, violence, discrimination and exclusion, and the importance of connection, social safety, the experience of being valued and the desire to simply meet basic needs while being able to choose their career path, where they live and how to honor the many reasons they call this region home.

Physical Capital

Road networks, water and sewerage connections, energy and communications infrastructure that is consistently described as “crumbling or absent” is the disheartening overview communities gave of their physical assets. Lack of housing is the primary constraint cited when it comes to economic and workforce development.

Strengths	Weaknesses
<ul style="list-style-type: none"> ● Renowned Blue Lake Rancheria microgrid initiative is inspiring similar projects across the Region. ● West Coast leader on Offshore Wind Development- motivating additional infrastructure development along the coast and in transmission corridors. 	<ul style="list-style-type: none"> ● A vast, rural, and remote region means it is inherently difficult to provide adequate network infrastructure coverage. ● The housing crisis is severe, several counties have the highest ratio of unhoused to housed residents in the state. ● Permitting-anything- takes years. ● Critically outdated water delivery infrastructure particularly challenges the region's small, remote, rural, and unincorporated communities. Few financial solutions in sight to invest in upgrades. ● The current grid can no longer support economic development or housing construction initiatives. Delayed and denied hookups, fires caused by deferred maintenance, and rate hikes result in the region losing faith in provider PG&E.

	<ul style="list-style-type: none"> ● Underperforming solid waste sites and groundwater contamination threats indicate need for infrastructure investments in these areas.
<p>Opportunities</p> <ul style="list-style-type: none"> ● Jurisdictions are receiving funding to improve broadband coverage and wireless access, many tribal areas who need connectivity the most are undertaking major investments in this infrastructure now. ● Potential to synergistically develop better electrical transmission, broadband, and transportation infrastructure concurrently along key corridors, improving access for rural and remote communities. 	<p>Threats</p> <ul style="list-style-type: none"> ● Climate risks make infrastructure development an uphill battle. Scarce resources available are used in rebuilding and recovering from shocks, instead of pro-actively addressing deficits.

Broadband access limits other key opportunities like the ability to deliver online training to entrepreneurs and workers, or to attract remote workers- two examples provided by respondents. Many believe that attracting more remote workers to the region may help stabilize the pattern of economic boom and bust, however at present much work needs to be done to upgrade electricity supply, deliver broadband infrastructure, and create housing to accommodate these workers. There are several major resources launching to address this constraint. For example, Yurok Telecom Corporation has received a large grant to improve cell phone reception in the area- five new towers will be built. Noting that the Tribe owns their airspace so if providers want to expand their reach they can use the tribal broadband capacity, which will expand services to the community. Other Broadband initiatives are listed below.

“There is synergy with broadband. People haven’t necessarily made connections between broadband and offshore – internet is a power hog – all the surplus wind power from offshore wind and expanded broadband is going to make this area an attractive place .”

Transportation: Road construction is a priority, frequently mentioned in Del Norte and adjacent tribal areas. One partner associated this challenge with workforce development issues, noting that they will send apprentices away for training, and those workers often don’t return to fill critical positions- *“we don’t have training facilities, so when people go to train, they don’t come back.”* The vulnerability of limited road infrastructure was felt by tribal communities- *“we are so easily cut off from the world.”* In Del Norte county, Last Chance Grade was a major source of anxiety. Areas with only one way in and out can become “islands,” which is especially concerning in the wake of natural disasters such as roads being closed due to landslides, fire, and

flooding. Unpaved roads are also a significant contributor to particulate matter, and present an opportunity to improve air quality (*Climate Analysis*, p. 33).

Airports in Arcata and Crescent City offer crucial connectivity to the outside, and all the potential development opportunities that come with it. This critical infrastructure is coming due for runway rebuilds, modern energy efficient lighting, and safe, upgraded fuel storage facilities. Current funding for these airports coming from the state is more constrained, and the Federal Aviation Administration's Airport Improvement Program (FAA AIP) funding they receive wouldn't cover the cost of all the upgrades needed.

The need for enhanced public transit options was echoed in listening sessions throughout the region and in transit plans. More frequent availability, extended hours, increased destinations, and Sunday service would benefit the communities they serve. Particular concern was expressed for youth, elderly, and disabled residents.

To help achieve California's goals for a carbon-neutral future, infrastructure to support improved access for pedestrians and cyclists needs to be considered as roads and highways are improved. Based on feedback to the Caltrans interactive map, over 75% of comments mentioned that they were uncomfortable to walk or bike because of heavy traffic or high vehicle speeds (Caltrans, 2021).

Water Delivery and Sewerage: Good water infrastructure is a major issue mentioned by numerous jurisdictions across the region. Residents complained of the high rates; others that low revenue resulted in a lack of funds to update water and sewer infrastructure in their small communities. This was a primary concern in Orick, as with many other smaller and unincorporated communities who are worried about the risks of aged water infrastructure and the inability to fund wastewater treatment facilities and leech fields (see *Climate and Environment Analysis*). Special service districts attempting to maintain this crucial infrastructure struggle. In other instances, they noted that federal and county entities were not sufficiently meeting obligations to maintain critical water infrastructure, for example levees to prevent flooding. That so much of the housing constructed in these commodity boom towns was built informally is now creating problems- siting and layout makes it impossible in certain locations to upgrade the infrastructure to a system that Humboldt County can permit under current regulations. Not to mention the exorbitant cost- nearly \$30,000 to acquire the permit cited by a community leader.

Constraints related to the rural and remote geography: participants noted vulnerabilities related to limited infrastructure ("just one way in and out"), distance from major airports, difficulty in providing services with low population density, the aforementioned lack of broadband, distance to markets, lack of public transit infrastructure or transportation for moving goods and high costs associated with doing so, crumbling water infrastructure. Isolation creates

other undesirable social and economic outcomes. In general, outdated, and dangerous infrastructure was a very prevalent theme across the region. Transportation corridors are threatened by fires, landslides, and other climate related threats- Last Chance Grade in Del Norte County is one of the more startling examples of this risk.

Housing as a limiting factor to Economic Growth: Across all industries and sectors, workforce housing was cited as the primary constraint to growth and wellbeing in the region. Medical fields are particularly impacted, participants frequently mention that the difficulty recruiting and retaining medical professionals is in chief part due to lack of housing, though the education sector and more prospective industries like Offshore Wind were also frequently mentioned as constrained by lack of housing. This impacts large employers and small firms alike. Currently, housing and broadband are major constraints to attracting skilled workforce from outside the area in crucial fields like education and health. Housing costs continue to go up and not enough is being produced. While overall California's housing stock has increased by 7% since 2010, the Redwood Region reports only 1.3% growth in stock (see *Industry Cluster Analysis* p. 16). Aging housing stock is associated with the heightened risk for lead poisoning in children observed, and the emissions could be reduced by addressing residential wood burning (see *Public Health* and *Climate Analyses*, respectively).

“There's only so much developable land – could be a good time to try something at scale. We have teachers every year who accept jobs and turn them down because they can't find housing. This touches the medical field as well – anyone who tries to recruit anyone out of the area. Building homes creates jobs for builders and subcontractors but the trick is keeping them affordable in the long term.”

Housing Development Constraints and Challenges: Housing constraints were attributed to a host of factors. Single family zoning, and zoning restrictions specific to coastal communities, the complexities of the permitting process were all elevated as challenges. There are few large developers- “most everything is built by DANCO.” The prevalence of unincorporated rural communities contributes to this- counties are not as well positioned as municipalities to build housing. North coast municipalities are exploring annexing adjacent land as a strategy to get more units built on outlying areas. Many have made concerted efforts to incentivize owners to create an extra unit or two using ADU policies, or by subdividing slightly larger city lots. Listening session participants estimate that the time it takes to get a housing development project through a local permitting can be between two and five years- at an exorbitant cost to the developer. This imposes additional limits on financing as commercial capital will not fund these non-value generating predevelopment activities. Orthodox approaches which focus on subsidizing the homeowner (to whom the cost burdens are transferred) do not systematically address this issue. Housing policy in the state is dominated by urban concerns and is not doing enough to address the constraints faced in rural areas. This includes the increased burden on rural

developers of creating infrastructure “from scratch,” a key difference from their urban counterparts.

The climate crisis exacerbates the housing crisis in the Redwood Region, as in many parts of arid California. Lake County is a stark example of this, where 60% of the housing stock was lost in catastrophic wildfires in 2016.

“The valley fire was eight years ago- we are only NOW getting a couple of new houses up. We lost almost 2,000 homes.”

There are a lot of factors that delay rebuilding, for example changes in regulations and older construction- many families in Lake County were told that they had to revamp existing septic and sewerage connections in order to rebuild, creating delays and substantial added costs. Advocates there expressed the need for more funding for fire mitigation and home hardening programs, and a desire to partner with the local community colleges to add a workforce curriculum around fire adapted, affordable housing construction techniques. Municipalities there and across the region are focusing on big housing construction pushes and finding new ways to overcome constraints. Notably, the region’s northern Tribal Nations have succeeded in breaking down some barriers to producing housing- investing in tribal led construction firms, creating land trust models for building affordable housing, and taking advantage of a different regulatory environment to build housing on tribal lands- though much more is needed, respondents note.

The Housing Crisis in the Redwood Region: The region is disproportionately struck by the homelessness crisis in California, with the highest ratios of unhoused to housed residents in the state. Neighborhood issues arising from encampments are a major concern municipalities and health and human service agencies must contend with. One innovative environmental justice organization is framing this issue as such- helping advocate for dignity for those experiencing homelessness by providing basic waste management services, while organizing clean ups around encampments many of which are located in conservation or other natural areas.

“How do we make [housing] so that no one has to turn a profit [on the investment], people can just have a place to live?” -Environmental Justice advocate

“How do you create home ownership opportunities to establish roots, equity, and wealth?” -City manager

Recognizing that many housing policy prescriptions speak to the problem as it occurs in more urban contexts, Redwood Region housing advocates are exploring innovative solutions. There is increasing interest in land trust models of housing development that can help low income working families build wealth in addition to stabilizing their housing. Creating cooperatives and

subsequently developing mobile home parks is one method of interest that could benefit a lot of community members in the region. Community land bank model housing development has also been initiated in Mendocino county and by the Wiyot Tribe, and possibly elsewhere in the region. Research participants in Del Norte expressed interest in both land trust models and restricted deeds as a way to maintain housing affordability while providing home ownership opportunities.

Natural Environment

The region’s pride, and primary strength, is its beautiful, unique, and often pristine natural landscapes. With a diversity of ecosystems and clean air, the region’s environmental setting offers communities everything they need for economic wellbeing, physical, mental, and spiritual health.

<p>Strengths</p> <ul style="list-style-type: none"> ● Resurgence of cultural burns and Indigenous management practices. Locally mobilized fire safing initiatives and increased training opportunities for land management and ecosystem restoration careers. ● Diverse climates and ecosystems, year-round growing season, and ability to produce a wide range of crops and horticulture products. ● Natural beauty that draws millions of visitors each year. Wide range of outdoor recreation opportunities. ● Research setting for natural and life sciences, marine research. ● Oldest and largest lake in the state in Lake County, unique ecosystem with volcanic activity. ● Well positioned for renewable energy development. 	<p>Weaknesses</p> <ul style="list-style-type: none"> ● Scars of extractive economy, including disinvestment in certain areas. ● Remote, easily cut off from the rest of the state. ● Historic marginalization means priority populations are at higher risk for suffering the negative impacts of the Climate Crisis.
<p>Opportunities</p> <ul style="list-style-type: none"> ● Ecotourism, recreational trails, agritourism. ● Expand regenerative agriculture activities. ● Dam removal is anticipated to increase salmon populations- offering recreational fishing opportunities as well as restoring 	<p>Threats</p> <ul style="list-style-type: none"> ● Sea-level rise in Humboldt Bay (Sierra Business Council, p. 43) destroying housing, infrastructure, displacing communities and leading to economic losses. ● Coastal areas are all at risk under sea level

<p>access to traditional diets for Indigenous communities.</p>	<p>rise projections, particularly threatened is Humboldt Bay.</p> <ul style="list-style-type: none"> ● Inland areas face high risk from wildfire and extreme heat. ● Current and future impacts from climate change threaten native communities' access to traditional food such as fish, game, and wild and cultivated crops which have an impact on cultural, economic, and community health.
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Diverse Ecosystems create Economic Opportunities: These are covered in greater detail below in the discussion of the Working Lands and Blue Economy sector group.

Legacy of Extractive Industries: The economic prosperity of the Redwood Region was initially built on the abundant natural resources within the area. Although extensive logging significantly diminished the forested areas, the ecosystems have proven to be resilient, providing some of the highest-quality wildlife habitats in California. Over time, the extraction industries have waned, with government and social services now employing the majority of the region's workforce. Despite a surge in visitation and growth in the service industry, the Redwood Region remains economically weaker compared to most coastal regions in California.

Impacts of Climate Crisis: Throughout the region, various climate hazards are anticipated to impact key economic drivers. Rising temperatures are expected to reduce agricultural productivity, while increasing surface water temperatures may lead to tourism disruptions caused by harmful algae blooms. Furthermore, endangered fish populations are likely to decrease fishing opportunities. Altered precipitation patterns may result in prolonged dry spells and extreme precipitation events, leading to water shortages for crops and pastureland. Severe storms could induce flooding, infrastructure damage, and the ruin of agricultural lands. Very frequently mentioned are the impacts of climate change the region is facing: lack of adequate water, increased wildfire risk. The knock-on effects this has include limited access to electricity, huge economic losses to business, inability to insure properties, loss of housing stock, and more. Sea level rise threatens the coastal infrastructure and blue economy. The region is also prone to non-climate related disasters: proximity to fault lines means destructive earthquakes and tsunamis as well.

The heightened risk of wildfires, coupled with recent wildfire activity, has inflicted economic losses on the agriculture industry. Additionally, the historic Redwood forests along the inland boundary of the region face a looming threat from wildfires, further jeopardizing the economic landscape of the area. Sea-level rise in Humboldt Bay could lead to flooding and erosion which

would lead to severe infrastructure damage and could cause public health concerns. Sea-level rise projections indicate that communities around Humboldt Bay could become inundated, not only displacing residents and causing personal financial injury, but may also lead to lowered home values, a reduced tax base, and more poverty in the region. Public infrastructure like roads, water pipes, electricity towers, and wastewater treatment plants are within the inundation zone. (See *Climate Analysis*).

Tourism growth via natural attractions.

Research participants in both Eastern Humboldt and Mendocino County mentioned the positive development of local Firesafe Councils, and positive collaborations with CalFire.

Mendocino table: lack of climate readiness to deal with drought, flooding,

Lake County became the first in the Region to create a Climate Resilience Officer position.

Climate adaptation and resilience planning is happening in earnest– (Insert number of plans from our inventory).

Financial Capital

Throughout the listening campaign, institutions focused on the lack of resources and barriers to attaining them, while individuals and their advocates emphasized the lack of appropriate job opportunities and the high and rising cost of living- with essentials like housing, medical and childcare posing significant financial struggles. The Redwood Region is characterized as a place people stay for the love of its land and communities, at the sacrifice of building durable wealth and pursuing upward mobility.

<p>Strengths</p> <ul style="list-style-type: none"> • Lower income inequality when compared to the rest of the state. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Low income, across all ethnic groups and household types, when compared to the rest of the state. • Congruent with the rest of the state, people of color earn less than their white counterparts. • Institutions struggle with capacity to strategically pursue funding opportunities. • Jurisdictions have smaller tax bases and higher financial burden to maintain basic services and infrastructure.
<p>Opportunities</p> <ul style="list-style-type: none"> • The region’s one four-year university is tribal serving, Hispanic serving 	<p>Threats</p> <ul style="list-style-type: none"> • Macroeconomic policies continue to drive up inflation, particularly on food and fuel.

<p>institution. Strengthening pathways in secondary education to help bridge students of color into training opportunities. Working to make institutions of higher education more inclusive and reduce other barriers to students of color.</p>	<ul style="list-style-type: none"> ● Public funding opportunities offered in ways that are inaccessible to rural regions and tribal communities, perpetuating cycles of disinvestment.
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Public Investment and Institutional Development:

Respondents in public sector institutions were quick to elevate the challenges and barriers the region faces in accessing funding. These challenges include:

1. Shovel Readiness: *“We got \$2.6 million to do this [wastewater infrastructure project], but we were supposed to be shovel ready and we didn’t even have a plan”*. The necessary sequence of predevelopment activities is incongruent with risk-averse funding processes: *“The approach to funding should change – the county or state should reinvest tax money by making the decision about funding at the **beginning of project**.”* This is to say if a project is needed and approved- public entities should set aside the funds while pre-development takes place so it can be carried through to completion. Tribal partners also expressed challenges in getting projects to shovel readiness.
2. Funding for technical assistance and backbone support to partnerships- As one example, a resident of Willow Creek celebrated the work of local fire resilience groups, but noted that they weren’t sure if they would be able to continue given the lack of funding for backbone support to their partnership.
3. Counties are running budget deficits, few having capacity to write grants that could provide consistent funding for economic development initiatives, or maintain staffing to carry out the work. *“We are focused on keeping the lights on,”* one government respondent lamented.
4. Large swaths of land under state and federal conservation status impacts the tax base. This is particularly an issue in Del Norte county.
5. Having the capacity to be proactive vs. reactive to funding opportunities: *“[our county] is simply reacting to federal and state funding opportunities e.g., “we need a bridge, lest apply for this grant to do that.”*
6. Capacity traps, generally- Institutions struggle for the funds and staff hours- to pursue funds and hire staff. Special districts in rural and remote areas noted that there are resource barriers to even apply for grants- they have been turned down for resources to upgrade their infrastructure because they couldn’t demonstrate enough financial stability to maintain the new infrastructure were they to be awarded. These cycles of disinvestment and low capacity play out in different ways across all counties and tribal lands in the region.

Looking on the bright side of rural disinvestment, the region is eligible for many tranches of state and federal funding because of the income data and other socioeconomic factors. Innovative ideas community members put forward include establishing a Regional Public Bank and providing technical assistance for forming collaboratives and worker ownership.

Private Investment:

Many communities, firms, and individuals in the Redwood Region do not have ready access to capital. “Banking deserts” (rural areas with fewer financial service institutions) in the region make it more difficult for individuals and local businesses to get conventional startup or expansion loans. Research (Tolbert et al., 2014) suggests a relationship between the prevalence of independent local banks and increased business formation, higher wage and income levels, and lower poverty rates. Addressing financial inclusion and asset-building through programs that provide greater access to financial services (e.g., affordable loans, credit counseling, and investment opportunities) is thus a key priority of the Collaborative, as are investments that leverage local, regional, state, federal, and philanthropic dollars to maximize economic benefits and further the inclusive vision and plan for Redwood Region economic vitality established in the regional roadmap.

Household Income & Wealth:

Listening sessions with residents and service providers across the region emphasized the same point: working people are getting squeezed out of the local economy. Their perception is born out in the data: with wages far lower than the rest of the state and increasing cost of essentials, a family of four with two adults working full time will on average spend 97% of their income just covering the basic essentials of housing, food, healthcare, and childcare, five percentage points more than other comparable areas (see Figure 5).

Target Industries SWOT Analysis

The Redwood Region is characterized by a relatively diverse economic base spread throughout the four counties and tribal lands. Based on a quantitative analysis of economic performance, environmental impact, and available resources, 11 key industries were elevated as holding potential for job and wage growth. Additionally, a survey of 97 Collaborative and community members, and review of previous industry cluster studies (published in 2022), created four broad groups which form the Collaborative’s thematic working groups called Sector Tables:

1) Arts, Culture, and Tourism, 2) Health and Caregiving, 3) Resilient and Renewable Energy, and 4) Working Lands and Blue Economy.

A review of regional (county and Tribal) Comprehensive Economic Development Strategy (CEDS) documents confirms the importance of these sectors across the Redwood Region (with regional variability owing to geography, population, and other factors). Such targeted sectors, or industry “clusters,” are characterized by: 1) increased innovation activity and knowledge “spillover,” 2) more specialized (and educated) labor pools, 3) lower transaction costs (communication, transportation, coordination, etc.), and 4) stronger networks of specialized suppliers and service providers (Porter, 1998). Industry clusters tend to perform better in “thick” labor markets (many buyers and sellers of labor), have more skilled workers in nonroutine jobs (a more educated workforce), and better occupational matching (skill sets to employer needs), which often means greater worker productivity. Focusing on these sectors lends itself well to targeted workforce development programming addressing industry-defined skill needs and public sector industry support.

Weaknesses of the targeted sector approach include (but are not limited to): 1) the potential for reduced industry diversity (by focusing on specific sectors at the exclusion of others, such as emerging markets), 2) the potential for groupthink (at the expense of innovation), 3) barriers to entry for new firms (through an anti-competitive blocking effect), 4) increased fragility (less resilience) owing to reliance on more unitary sectors (Donahue et al., 2018). A less diverse economic base can be more vulnerable to economic downturns. This may be evidenced by the exclusion of industries pertaining to offshore wind development in the cluster analysis.

Working Lands and Blue Economy.

Favorable climate and potential for Regenerative Agriculture: The most often mentioned strength and source of opportunities for the region lies in the natural beauty and abundant natural resources. Participants noted high potential for innovation in the agriculture sector and blue economy. Some existing strengths include the wine industry, horticulture farms, regenerative livestock production models, and strong local food economies. The region is blessed with a climate that allows for year-round crop production. With varied ecosystems and microbiomes there are diverse opportunities including expanding regenerative agricultural practices on the grasslands. Advocates note that the region currently has more organic matter in its soils than 90% of the State, and there is a lot of potential to continue sequestering carbon in the grasslands and building organic matter into the soils. The region anticipates opportunities to further develop manufacturing industries linked to this sector.

Coastal and Lake-based Blue Economy: From the industry cluster analysis: there is potential for further developing science and research-based industries along the coast and limnology research in Lake County. There are challenges as well: all the region’s ports are in need of substantial infrastructure upgrades to realize blue economy opportunities.

Nature-based Solutions and Ecosystem Restoration: There are opportunities to invest in sustainable infrastructure and nature-based solutions- wetlands, forest restoration, and innovations like the Arcata Marsh were given as examples. Partnering with the State and National Parks to train a workforce in land and resource management careers is another opportunity contributors mentioned- for example, a heavy equipment regional training center which has been proposed for Orick, a small and struggling rural community close to the Redwoods park.

Cultures united by a love of the land: Cultural factors contribute to the strength in this domain. Community members expressed appreciation that the original stewards of this land are still living here, and that their traditional knowledge and practices are alive and can be used to manage the forests and lands more sustainably. Tribal governments and nations in the region are nationally and internationally recognized for their work to protect and restore the lands, forests, and rivers. Elevating their expertise as leaders in Redwood Region RISE is an opportunity area for the Collaborative. Dam removal occurring on the Klamath river and the other river restoration work that may bolster salmon populations is an incredible opportunity as are indigenous forest management techniques i.e., cultural burns, addressed below.

Additionally, cultural movements like the “Back to the Land” movement center low-impact, sustainable living. The connection and appreciation for the environment is strong across the region. Other cultural attributes that came up repeatedly for participants include resilience and “scrappiness,” a self-sufficient and independent spirit, tight knit communities, and a strong sense of place.

Traditional Ecological Knowledge: There is a major climate resilience, economic and workforce development opportunity to be had in reducing the fuel load in the forests and developing commercial uses for that biomass. Specifically for communities adjacent to forest conservation areas there is excitement for workforce training opportunities, for example a proposed heavy equipment training site in Orick. Controlled burns, cultural burns, and other fire and conservation activities are workforce development opportunities. The potential for “cooperative” forest management amongst smaller, private landholders is exciting. Find ways to hire firefighters in the off-season to process forest – dead trees – to provide firewood to those in need – and manage forests to manage risk of fires.

Climate Vulnerability: The Region is vulnerable to drought, fire risk, and sea level rise. Fire insurance is growing more costly, and some companies will no longer insure properties in the region (See Appendix for data on this issue). Vast natural landscapes are costly to manage, increasing that risk. These are compounded by a long history of poor forest management practices that have resulted in high fuel loads in heavily forested areas, driving catastrophic wildfire events. Agricultural industries are particularly vulnerable, the severe economic losses

faced by the wine industry in Lake and Mendocino due to smoke and other wildfire effects are a stark example of this. Water rights are often contentious, this was noted as particularly impacting communities near Clearlake. Commercial fish stocks are trending downwards, sea level rise and acidification from climate change are an issue. There are elevated mercury levels in local fish stocks, posing a risk to Blue Economy industries (see *Climate Analysis*). It is important to note that while data on emissions sources are limited; these data suggest that industries within the *Working Lands and Blue Economy* group have higher emissions relative to economic value created.

Boom and Bust Cycles:

The economic history of the Redwood Region is one of commodity boom and bust cycles of natural resource extraction. After the gold rush came waves of timber extraction. The housing boom of the 1960s decimated 90% of the old growth redwood forest, followed by a decline in coastal fisheries by the early 1990s and most recently a collapse in the newly legalized cannabis industry in 2022. That industry is no longer considered a major driver for the region. “The Redwood Coast region lost agricultural jobs, gained construction and manufacturing employment, and lost services” (Industry Cluster Analysis). The collapse of the cannabis industry is having a significant negative impact in rural small towns across the region.

Projects and Initiatives Highlighted by the Community

From CEDS and Tribal strategic plans, listening sessions, local table meetings, and surveys

- Kelp, fungi, and abalone farming; hemp and hempcrete;
- Local foods economy: food hubs, farm-to-table, dockside fish markets, local meat processing facilities;
- Eco-tourism, outdoor recreation.
- Doing more to monetize forest carbon sequestration could be an opportunity- for forested and grassland ecosystems.
- Ecosystem Restoration and other Natural Resource Management careers
- Aquaculture Innovation Hub
- Noyo Harbor Collective
- Tribal EcoRestoration Alliance

Renewable and Resilient Energy

High Potential for Renewable Energy Development. Lake County has a special advantage with their geothermal energy production - one of only three sites in the world where it is possible to tap into this source so close to the surface. The coastal counties all have the advantage of hosting good sites for offshore wind development⁶⁴. Solar projects are of interest as well (see

⁶⁴ Schatz Energy Center Offshore Wind Feasibility Study: <https://schatzcenter.org/2019/07/oswstudy2/>

Hoopa's Comprehensive Economic Development Strategy (CEDS), as are opportunities to use biomass for energy.

There is a lot of anticipation related to the development of offshore wind in Humboldt Bay- "the biggest in the country!" However, pessimism was also frequently expressed; noting that it will be many years before the project can get off the ground, and that "cultural attitudes" could get in the way. A respondent from a Labor organization noted that it will be six years before the wind project starts hiring laborers. "A huge challenge will be patience, hanging in there until things get off the ground," said an environmental activist. Another concern is the sustainability of those jobs after major construction is completed, and the opportunities that will be afforded to local laborers (who are still majority non-union) during the port redevelopment phase. It's clear from their frequent mentions that the companies involved- Crowley, Vineyard Offshore- are already notable presences in the local community.

A more prospective project mentioned is the idea of a "hydrogen highway" for the Redwood Region, an idea that is aligned with fleet conversion for transport in the region. A respondent put forward that biomass to hydrogen conversion has become a more commercially viable technology than it was in the past, and there are successful hydrogen fuel projects in other parts of the country and world. The concept behind this is still in the preliminary feasibility stage, but interest has been expressed throughout the region and by tribal planners. Facilities could be co-located near forestry operations/mills where biomass is produced. Currently a feasibility study is being conducted, commissioned by the Sonoma County and Mendocino County Economic Development District (SMEDD), to explore a trucking route from Eureka to Oakland supported by hydrogen fueling.

Dissatisfaction with public utility PG&E is resounding. Deferred maintenance of their above ground infrastructure continues to be a dangerous fire risk. Inability to get electricity hookups to new residences and businesses is a major constraint reported throughout the region. But the infrastructure problems that need to be resolved are bigger- during listening sessions participants in Del Norte spoke of how many had been without electricity for ten days or more in the wake of fires there- relying on emergency diesel generators. Inland communities wonder if the grid has the capacity to keep critical institutions cool during the heat waves projected to come.

Energy Sovereignty Initiatives: Driven by these concerns about the conventional grid, a project of major interest to the region is Blue Lake Rancheria's microgrid- this was brought up repeatedly by tribal partners and those from rural and remote areas of the region. The Redwood Coast Airport Microgrid launched in 2022- "the first 100% renewable energy, front-of-meter, multi-customer microgrid".

“We need PG&E to do their job better – removing and installing electrical drops is frustrating – a big problem for the county if we’re ever going to meet housing and other goals. PG&E is a huge problem.”

At present there isn’t adequate transmission capacity and connection to transportation corridors for the anticipated wind energy generation. One partner noted that for there to be sustainable local benefits beyond the construction of that infrastructure, they should seize the opportunity to synergistically expand electricity and broadband access. This would make it easier for new businesses to establish along rural corridors and to places like Round Valley. The three corridors the state has already identified are Fairhaven to Kneeland and down highway 36, along the 299, and then through Southern Humboldt along the 101.

Energy provision in Lake County looks a little different than the rest of the region- the grid is sectioned, transmission lines aren’t all under threat, though they are supported by megawatt diesel generators similar to Del Norte and other parts of the region. An important aspect of their energy sector is geothermal energy coming from the geysers (Calpine). The infrastructure was established for this in the 1970s or 1980s but there are environmental issues that need to be better addressed. The county received funding through the “Full Circle Project” which uses secondarily treated wastewater and injects into the steam fields of the geysers- this is delivered in partnership with Calpine and Northern California Power Authority, and now Open Energy. While this saves on tertiary treatment of wastewater it also results in 10 million gallons of water leaving the Clear Lake watershed basin, which supplements the wastewater used. The community is unclear, over time, what impact this will have on the lake.

Projects and Initiatives Highlighted by the Community

From CEDS and Tribal strategic plans, listening sessions, local table meetings, and surveys

- Energy careers curriculum, solar arrays on brownfield redevelopment sites in Hoopa
- Blue Lake Rancheria Microgrid
- Fort Bragg Oneka Seawater Desalination Pilot Study
- Toma Resilience Campus
- Offshore wind development

Health and Caregiving

Medically Underserved Region: To put it simply- *“there is no medical care around here.”*

People from all walks of life find themselves in the position of having to travel long distances to see a specialist- though of course this creates significant barriers for transportation limited and time and resource poor families. Community members elevated how senior populations who often have increased medical needs are particularly burdened by having to drive upwards of three hours to see a doctor. Being a medically underserved area was one of the most frequently

mentioned weaknesses of the region. In addition to the acute shortage of providers; community members also noted the quality-of-care available leaves something to be desired, high turnover in medical staff and especially a lack of specialists. The cost of care, when one can access it, is also a huge barrier. One participant posited that Del Norte is one of the most expensive places in the country to give birth. The proportion of fixed income residents, and those on Medicaid and Medicare, have implications for reimbursement rates and the business models used by healthcare providers.

Behavioral and mental health (especially for youth), and trauma (particularly historical) was emphasized across all counties and tribal lands- substance use, lack of medical providers for these issues, and adverse childhood experiences came up repeatedly. The opioid epidemic is acute in the region.

For those suffering from substance use disorder, or are in the tough position of having a child in need of behavioral healthcare, many must go outside the area to find in-patient facilities. There is fear that funding for important youth programming is drying up as a result of the all but collapse of the cannabis industry (Prop 64 funding).

Medical and Public Health Innovations: Positively, respondents observed a growing movement in the region around Blue Zones (areas of the world where people routinely live to old age and chronic disease rates are low) and the health drivers that create them. Another cultural strength which relates to health and wellbeing for residents is the presence of strong mutual aid networks. Practitioners expressed that expanding telehealth could be an opportunity to improve access to services and the region already has several mobile providers who can meet folks where they are at to provide care.

Leadership on economic development constraints: Leaders in the healthcare industry are taking on the housing crisis; exploring innovative solutions to alleviating this constraint to recruiting necessary personnel. Destination healthcare, for things like lasik surgery for example, could offer a boon to rural communities who have clinics in place- Southern Humboldt respondents emphasized this potential.

Critical need for Child and Elder Care: The lack of childcare providers remains a huge barrier for working families. At its worst in Humboldt County, childcare as a proportion of median earnings reached 37%. There is also a lack of therapists and service providers to support families with kids that have special needs, as highlighted in the behavioral health workforce statistics above.

Projects and Initiatives Highlighted by the Community

From CEDS and Tribal strategic plans, listening sessions, local table meetings, and surveys

- Supportive housing developments for people with disabilities.
- Support to childcare businesses and providers in Humboldt County.
- Housing initiatives for medical staff.

Arts, Culture, and Tourism

Creative Placemaking Initiatives: Several rural, remote, tribal, and unincorporated communities are in fact the gateways to the region for visitors arriving from the North, South, and East. Given that these are some of the most disinvested parts of not only the region but the entire state, there is a strong call to invest in upgrading tourism infrastructure in those specific communities. Better relationships with State and National Parks, including strategic placement of visitors centers and other park infrastructure, was frequently brought up in those communities. For many coastal communities, tourism became the backbone of the local economy once fisheries went into decline (highlighted by respondents from Mendocino but relevant in Del Norte and Humboldt as well).

Downtowns across the region bear the scars of a long history of commodity boom and bust cycles and natural disasters. In Crescent City, the capital city of Del Norte which was destroyed by a tsunami in 1964 and then subsequently built back within a year- planning practitioners, business advocates and others noted the need for creative placemaking which would uplift the community and draw visitors. The perception of downtown areas lacking charm is a challenge for marketing. That city's plans for revitalizing its waterfront areas highlights how more can be done to celebrate the region's original stewards by promoting education of Indigenous cultures. Working together with the Tolowa Dee-ni Nation and other local tribes, the City has created a plan for an interpretive trail that centers those cultures. Tribal collaborators note how allowing tribal people to tell their stories makes a difference in the community. The acknowledgment, collaboration, and celebration is a hopeful indication of more tribal inclusion in planning. Tribal members indicated that they hope to see more representatives on commissions, committees, and other forms of government led work moving forward.

Arts and Culture is a source of healing and resilience: The Arts and Culture sector was highlighted by community members as a key enabler for helping youth thrive. Given the region's troubling statistics with respect to mental health, substance use, and other wellbeing issues associated with isolation and alienation- the arts provide a powerful avenue to expression, connection, and belonging especially for young people. Additionally, the institutions in the sector have played a key role in establishing and/or fiscally sponsoring other organizations and initiatives that celebrate cultural identities- for Latinos, Indigenous community members, and other peoples of color. Arts advocacy groups across the region play a key part in making these special communities visible and celebrated on the North Coast.

Capitalizing on the Region’s Rich Cultural History: Cultural heritage is an incredible and immeasurable strength of the region. There are aspects of the region's history that could be better celebrated and might help draw new visitors. One example, the aesthetic culture of the Back to the Land movement. As those artists are now aging and many unable to continue living off grid as they did when they arrived in the 1960s and 70s, some investors from Bay Area have started to acquire these architecturally unique eco-homes and preserve them as b&bs and retreats- *“while telling the story of that movement intentionally”* (in Mendocino). *“Artists create that rising value [that draws people to the region].and we need population coming in, we’re not replacing ourselves.”* A popular idea from partners in the Arts and Culture sector is the creation of a regional Cultural Plan or Arts and Culture “trail”- a central brand that can make all the richness here more visible in one cohesive informational product.

Agricultural and Eco-Tourism Development: There is a recognition of the region's potential for agricultural tourism. Alexandre Family farm located in Del Norte county is a leader in the regenerative agriculture movement. In Southern Humboldt and Northern Mendocino, industry advocates have helped create cannabis centered agri-tourism opportunities and marketing campaigns to support them. Collaborative marketing initiatives, including shared efforts with neighboring counties and funding from Visit California, were mentioned as desirable. Recreational, multi-use trail development is also embraced by the region, with the Great Redwood Trail on its way and Del Norte county planning other opportunities to draw in hikers, bikers, equestrians, and others.

Hospitality as a Key Industry: In areas where traditional industries like logging and fishing have declined, tourism and hospitality are identified as the economic drivers that took their place. Tourism revenue, including Transient Occupancy Tax (TOT), contributes substantially to local economies. This was highlighted especially in communities on the Mendocino Coast. The seasonal nature of tourism can be a pain point, and jurisdictions are exploring strategies to focus on year-round productive activities and attractions. With respect to resilience in the face of shocks, COVID-19 posed challenges, it also brought opportunities, with increased tourism after restrictions lessened. The development of attractions like the Redwood Skywalk, for example, contributed positively to local tourism. There are budding career pathway programs for helping connect youth to opportunities in this industry, for example the “E3” Pathway Program in Del Norte.

Projects and Initiatives Highlighted by the Community

From CEDS and Tribal strategic plans, listening sessions, local table meetings, and surveys

- Crescent City Harbor Revitalization
- Lake County Tourism Improvement District
- Redwood Experience Center

Economic Development Opportunities:

Driving forces of economic change and opportunity in the Redwood Region include economic impacts of from structural changes in the regional and global economies that shape supply and demand, including the regional shift from an extractive to more mixed-industry model, disruptions such as the Great Recession and the pandemic, economic globalization and liberalization of trade, and natural disasters, among others. Driving forces such as climate change impact all factors of economic growth and both limit and provide openings for new forms of economic activity (e.g., circular economic systems). An important driving force for RRRISE are regional efforts to counter inequity and disinvestment through initiatives in affordable childcare, healthcare, transportation, and housing, among others.

To this end, strengthening the regional “enabling environment” (physical and human capital) with strategies that build on the assets, defined needs and equity gaps, and desires of each community can help drive more equitable wealth distribution and greater prosperity region wide. Supporting resilient economic activity through initiatives that incentivize robust and adaptive responses to disruptive changes can also create demand for more resilient products and services. Notably, technological advancements in communication, transportation, and e-commerce have opened new markets, reduced barriers to remote work, altered business models, and made rural areas more accessible and attractive for businesses and individuals.

An impactful driving force in many rural regions is out-migration (brain drain) and population decline, with impacts on consumer demand, labor force availability and participation, and business growth and sustainability. This is particularly the case for the younger workers, suggesting that attention to workplace norms and generational (Millennial, Gen Z) dynamics will be important (e.g., differences in approach to work, life, and work-life balance, the rise of gig and remote work, and desire for greater workplace flexibility, among others). Business management that increases firm innovation and productivity through employee engagement and improvements to workplace culture are likely needed as part of efforts to stem worker outmigration and make the region more attractive to younger workers.

Equity is a key goal of RRRISE and as such constitutes a driving force impacting the selection of economic development strategies and a hoped-for new path for economic prosperity. The Collaborative acknowledges that achieving greater equity will require “flipping the script” about who gets to generate, interpret, and hold the data that informs economic change, and to work to identify and prioritize community-developed opportunities that push the structural changes in economic and industry dynamics needed to build more equitable wealth and prosperity region-wide. An issue of vital importance is to define pathways out of poverty for tribal and at-risk youth impacted by behavioral and mental health issues, historical trauma, substance use, and high Adverse Childhood Experience (ACE) counts.

Critical Economic Development Objectives (see *Opportunities Report*):

1. Ensure that economic development opportunities benefit all areas of the region, including remote small towns and tribal areas.
2. Ensure local engagement and that economic development priorities reflect community needs and values, including disinvested communities.
3. Create economic opportunities while eliminating barriers to economic opportunities.

Looking to Regional Plan Part Two:

Sector Opportunities:

Health and Caregiving. Several opportunities in Health and Caregiving have been identified, including (among others): attracting and retaining healthcare providers (e.g., loan repayment programs, improving compensation and benefits, etc.), expanding the scope of practice so that nurse practitioners, physician assistants, and other qualified professionals can provide a wider range of services), training community health workers, providing greater telehealth and mobile services, and developing K-18 pipeline career programs. Grow health care enterprises.

Working Lands and Blue Economy: Agriculture, forestry, ranching, and economic activities related to oceans, coasts, and marine resources form a significant economic base for the Redwood Region, with opportunities including (among others) diversifying production (including food crops, dairy, cannabis, wine, fisheries, etc.), exploiting the combined benefits of resource extraction, recreation, and environmental preservation, and development of emerging industries (e.g., aquaculture, seaweed cultivation, and farmed fish). Expand specialty foods cultivation, processing, distribution and sales. Develop new forest industry/biomass/timber products. Expand programs applying Traditional Ecological Knowledge, including those preserving aquatic resources, traditional diets, and wildfire management.

Arts, Culture, and Tourism: The sector has many opportunities, including (among others) museums, theaters, and art galleries, cultural events (festivals, concerts, art exhibitions), including traditional arts and Indigenous cultural practices, and development of heritage sites. Develop culinary, cultural, eco-, experiential, and other niche brands of tourism.

Resilient and Renewable Energy : The energy sector (primarily focusing on renewable energy and energy efficiency) provides many opportunities, including (among others): 1) geothermal energy production (Lake County), 2) offshore wind development, and 3) development of distributed energy resources (e.g., solar arrays, microgrids) and energy-efficiency programs.

Cross-cutting opportunities: The Collaborative also identified opportunities that cut across all economic sectors, including: 1) governance and collaboration, 2) creativity, innovation, and entrepreneurship, 3) the move toward a digital economy, and 4) integration of traditional ecological knowledge into economic activities. Applying circular economy principles was a

common theme heard among the Collaborative discussions and represents an approach that applies to all economic sectors.

Turning barriers into opportunities

The Collaborative SWOT analysis identified several Redwood Region-wide barriers that can be turned into economic development opportunities:

- The region's limited skill pool for emerging industries tends to reflect education levels. Opportunity: provide education and workforce training matched to job opportunities inside the region, and work to plug the "brain drain" that exacerbates the skills gap.
- The lack of industry diversity can increase vulnerability to economic fluctuations. Opportunity: foster entrepreneurship and business incubation and train a skilled workforce more capable of supporting new, diverse industries across a range of sectors.
- Inadequate infrastructure can impede economic growth by hindering business operations and limiting access to markets. Opportunity: develop policies and plans to improve infrastructure.
- Limited entrepreneurship, including skills, entrepreneurial culture, and access to capital, can inhibit business creation and growth, dampening innovation, customer creation, and job creation. Low median incomes mean limited disposable income, which can discourage businesses from investing in a region as they foresee insufficient demand for their products and services. Opportunity: create business incubators and work to develop a culture of entrepreneurship and a region-wide entrepreneurship ecosystem.
- Resistance to change can make it difficult to introduce new businesses or technologies. Opportunity: work to build a new narrative incorporating emerging ideas about economic growth into existing narratives.
- Invest in connection: incubate new organizations, create more forums like RRRISE for cross sectoral connection, get intentional about relationship building.
- Invest in building a climate adaptation workforce starting with restoring forest health. Wildfire risk can be mitigated through preventative measures such as prescribed burns and forest thinning, making use of traditional ecological knowledge.

Mitigation plans to address weaknesses

- The shortage of skilled healthcare and mental health professionals creates an opportunity to fill high wage occupations in the Redwood Region. These professionals can be home grown at the region's community colleges and Cal Poly Humboldt.
- A better understanding of the barriers to employment that contribute to lower prime age labor force participation may yield insights that lead to effective solutions to increase the labor force and prosperity of the region. Increasing the availability of workers may make the Redwood Region a more attractive place for business.

References

- Ballester, F., Corella, D., Pérez-Hoyos, S., Sáez, M., & Hervàs, A. (1997). Mortality as a function of temperature. A study in Valencia, Spain, 1991-1993. *International Journal of Epidemiology*, 26(3), 551–561. <https://doi.org/10.1093/ije/26.3.551>
- Basu, R., & Samet, J. M. (2002). Relation between Elevated Ambient Temperature and Mortality: A Review of the Epidemiologic Evidence. *Epidemiologic Reviews*, 24(2), 190–202. <https://doi.org/10.1093/epirev/mxf007>
- Bull, G., & Morton, J. (1978). ENVIRONMENT, TEMPERATURE AND DEATH RATES. *Age And Ageing*, 7(4), 210–224. <https://doi.org/10.1093/ageing/7.4.210>
- Bull Bennett, T. M., Cochran, P., Cozzetto, K., Gough, R., Lynn, K., Maldonado, J., Maynard, N. G., Voggesser, G., & Wotkyns, S. (n.d.). *Climate Change Impacts in the United States, chapter 12:Indigenous Peoples, Land, and Resources*. https://nca2014.globalchange.gov/downloads/low/NCA3_Full_Report_12_Indigenous_Peoples_LowRes.pdf
- Cal-Adapt. (n.d.). <https://cal-adapt.org/data/download/>
- CAL FIRE. (n.d.). *Current Emergency Incidents* <https://www.fire.ca.gov/Incidents>
- CAL FIRE. (n.d.-b). *Rocky Fire*. <https://www.fire.ca.gov/incidents/2015/7/29/rocky-fire>
- CAL FIRE. (n.d.-c). *Statistics*. <https://www.fire.ca.gov/our-impact/statistics>
- CAL FIRE. (2019, April). *Wildfire Activity Statistics*. https://34c031f8-c9fd-4018-8c5a4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2017_redbook_final.pdf?rev=c5d1d4b58bf743c8ab6e462e227b9534&hash=46E3FF1EAF0358A49A206E23EEF691DE
- Cal Poly Humboldt. (2023, June). *Addressing the North Coast’s Behavioral Health Worker Shortage*. https://drive.google.com/file/d/1NoigoFTO64pw5gDgiINS_jUaJjaKz5qb/view
- Caltrans. (2021). *Active Transportation Plan District 1*. <https://drive.google.com/file/d/1X7P3KwRvBaNZo4vpapFkpaCzPpysLAy7/view>

- California Department of Insurance. (2018, September 6). *Insured Losses from the 2018 Mudslide and the 2017 7 2018 Wildfires*. <https://www.insurance.ca.gov/0400-news/0100-press-releases/2018/upload/nr106Insuredlosses090618.pdf>
- California EDD. (n.d). *California LaborMarketInfo, The economy*.
<https://labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=Lake+County&selectedindex=17&menuChoice=localareapro&state=true&geogArea=0604000033&countyName=&submit1=View+Local+Area+Profile>
- California EDD, Labor Market Information Division. (n.d). *Redwood Coast Targets of Opportunity Report 2004-2014*.
<https://acac.humboldt.edu/sites/default/files/Targets%20of%20Opportunity%20%20Report.pdf>
- California Energy Commission, California Natural Resources Agency, & OPR. (n.d.). *California's Fourth Climate Change Assessment: North Coast Region Report*.
https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-001_NorthCoast_ADA.pdf
- California Environmental Protection Agency & California Department of Public Health. (2013, October).
https://www.google.com/url?q=https://abag.ca.gov/sites/default/files/2013_cph_preparing_california_for_extreme_eat.pdf&sa=D&source=docs&ust=1703116564504522&usg=AOvVaw08oARnsnUsCTJKFaFC-p_x
- California Proposition 215, Medical Marijuana Initiative. (1996) - Ballotpedia. (n.d.).
Ballotpedia.
[https://ballotpedia.org/California_Proposition_215,_Medical_Marijuana_Initiative_\(1996\)](https://ballotpedia.org/California_Proposition_215,_Medical_Marijuana_Initiative_(1996))
- California, S. O. (n.d.). *Valley Fire General Information*.
https://web.archive.org/web/20151022083932/http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=1226
- California, S. O. (n.d.-a). *Valley and Butte fires cause an estimated \$1 billion in insurance losses*. <https://www.insurance.ca.gov/0400-news/0100-press-releases/archives/release009-16.cfm>
- California State Parks. (n.d). *History*. https://www.parks.ca.gov/?page_id=29403

Carah, J., Howard, J. K., Thompson, S., Gianotti, A. G. S., Bauer, S., Carlson, S. M., Dralle, D., Gabriel, M. W., Hulette, L. L., Johnson, B. J., Knight, C. A., Kupferberg, S. J., Martin, S. L., Naylor, R. L., & Power, M. E. (2015). High time for conservation: Adding the environment to the debate on marijuana liberalization. *BioScience*, 65(8), pp. 822–829. <https://academic.oup.com/bioscience/article/65/8/822/240374>

Centers for Disease Control and Prevention. (2022, June 17). *QuickStats: Percentage Distribution of Health-Related Deaths, by Age Group—National Vital Statistics System, United States, 2018–2020*. <https://www.cdc.gov/mmwr/volumes/71/wr/mm7124a6.htm>

County of Mendocino. (2023, October 6). *In Commemoration of the 2017 Redwood Complex Fire*. <https://www.mendocinocounty.org/Home/Components/News/News/6829/>

Del Norte County Historical Society. (2021, August 6). *Del Norte History, More Precious than Gold*. <https://delnortehistory.org/>

Del Norte County Historical Society. (2021b, August 6). *Del Norte History, Del Norte's Economic History*. <https://delnortehistory.org/del-nortes-economic-history/>

Donahue, R., Parilla, J., & McDearman, B. (2018, July). *Rethinking Cluster Initiatives*. Metropolitan Policy Program at Brookings. https://www.brookings.edu/wp-content/uploads/2018/07/201807_Brookings-Metro_Rethinking-Clusters-Initiatives_Full-report-final.pdf

Economic Forensics and Analytics, Inc. (n.d.). *The Economic Impacts of Water and Agricultural Industries: Inland Mendocino County*. <https://www.google.com/url?q=https://www.pottervalleywater.org/files/Water%2520Storage%2520Impacts-Final-121815.pdf&sa=D&source=docs&ust=1703118141049792&usg=AOvVaw14b5NA5PrL4yJWX69JoFAX>

Fair Access to Insurance Requirements (FAIR) plans. (n.d.). <https://content.naic.org/cipr-topics/fair-access-insurance-requirements-fair-plans>

Garret, G. E. (1962). *The Destruction of the Indian in Mendocino County 1856-1860*. Sacramento State College.

Humboldt County, California. (2017, October 23). *Humboldt County General Plan, chapter 9*. <https://humboldt.gov/DocumentCenter/View/61985/Chapter-9-Economic-Development-Element-PDF>

Humboldt County Historical Society. (n.d.). *A Brief History of Humboldt County*.
<https://www.humboldthistory.org/a-brief-history>

IMPLAN. (2020, December 17). *Government-Administrative Government versus Government Enterprises*. <https://support.implan.com/hc/en-us/articles/115009505787-Special-Industries-for-Employment-Data#:~:text=%22Administrative%22%20or%20%22general%22,similar%20to%20those%20of%20industries>.

Jerrett, M., Jina, A., & Marlier, M. E. (2022). Up in smoke: California's greenhouse gas reductions could be wiped out by 2020 wildfires. *Environmental Pollution*, 310, 119888.
<https://doi.org/10.1016/j.envpol.2022.119888>

Kelly, E., McIver, C., Standiford, R., & Haggerty, M. (2016). *Socioeconomics of the Redwood Region*.

Kirsch, S. (2023). *California's Redwood Region: Exploring the Roots of Health Disparities*. California Center for Rural Policy at Cal Poly Humboldt.

KRON. (2015, August 9).
https://www.google.com/url?q=https://web.archive.org/web/20150924182058/http://kron4.com/2015/08/09/jerusalem-fire-burns-in-lake-county/&sa=D&source=docs&ust=1703113801640955&usg=AOvVaw0vhVO_pdownzKveP8L2FqTa

Lake County. (n.d). *History of Lake County Pomo Indians*.
<https://www.lakecountyca.gov/1524/History-of-Lake-County-Pomo-Indians>

Lake County. (2016). *Lake County Comprehensive Economic Development Strategy (CEDs) 2016* <https://lakecountycaedc.org/wp-content/uploads/2023/04/2016-lake-county-comprehensive-economic-development-strategy.pdf>

Lake County. (2019). *General Plan Housing Element Administrative Draft 2019-2027*.
<https://www.lakecountyca.gov/DocumentCenter/View/1684/Lake-County-2019-to-2027-Housing-Element-PDF>

Lake County, California. (2020, December 2). *The history of Lake County California*. Lake County. <https://lakecounty.com/explore/history-of-lake-county-california/>

Lake County, California. (2022, November 11). *The history of Lake County's Mineral Springs - Lake County*. Lake County. <https://lakecounty.com/blog/history-of-lake-countys-mineral-springs/>

Lake County Community Health Needs Assessment. (2016, June 1). *Rehabilitation of Clear Lake (AB 707)*. <https://clearlake.ucdavis.edu/data-publication/lake-county-community-health-needs-assessment>

Lancet Countdown. (2023, November 15). *1.1.4 Change in labour capacity*. <https://www.lancetcountdown.org/data-platform/health-hazards-exposures-and-impacts/1-1-health-and-heat/1-1-4-change-in-labour-capacity>

Lara, R. (n.d.). *Impact of Wildfires on Insurance Non-Renewals and Availability*. [Fact sheet]. https://www.insurance.ca.gov/0400-news/0100-press-releases/2019/upload/nr063_factsheetwildfire.pdf

Li, M., Shaw, B., Zhang, W., Vásquez, E., & Lin, S. (2019). Impact of Extremely Hot Days on Emergency Department Visits for Cardiovascular Disease among Older Adults in New York State. *International Journal of Environmental Research and Public Health*, 16(12). <https://doi.org/10.3390/ijerph16122119>

MEDBOX. (n.d.). *Heat Exposure and Cardiovascular Health: A Summary for Health Departments*. <https://www.medbox.org/document/heat-exposure-and-cardiovascular-health-a-summary-for-health-departments#GO>

Mendocino Council of Governments. (n.d.). *2018 Regional Housing Needs Plan*. <https://www.mendocinocog.org/2018-regional-housing-needs-plan>

NBC News. (2015, August 4). “Unprecedented” wildfire forces forces thousands to evacuate. <https://www.nbcnews.com/storyline/western-wildfires/california-wildfires-13-000-under-evacuation-orders-rocky-fire-rages-n402916>

The North Coast Region. (2022, December 3). *ArcGIS StoryMaps*. <https://storymaps.arcgis.com/stories/41afaa41b99146c8b581c937b174c2a4>

OEHHA. (n.d.). *CalEnviroScreen 4.0 Indicator Maps*. <https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Solid-Waste-Sites>

OEHHA. (n.d.-a). *CalEnviroScreen 4.0 Indicator Maps*.
<https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Groundwater-Threats>

OEHHA. (n.d.-b). *CalEnviroScreen 4.0 Indicator Maps*.
<https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Hazardous-Waste>

OEHHA. (n.d.-c). *CalEnviroScreen 4.0 Indicator Maps*.
<https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Drinking-Water-Contaminants>

OEHHA. (n.d.-d). *CalEnviroScreen 4.0 Indicator Maps*.
<https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Impaired-Waters>

Pacific Institute. (2012, July). *Social vulnerability to climate change in California - Pacific Institute*. <https://pacinst.org/publication/study-maps-social-vulnerability-to-climate-change-in-california-and-identifies-need-for-adaptation-planning/>

Pomeroy, C., Thomson, C., & Stevens, M. (2010). *California's North Coast Fishing Communities Historical Perspective and Recent Trends*. Scripps Institution of Oceanography, University of California San Diego.

Porter, M. (1998). *Clusters and the New Economics of Competition - Article - Faculty & Research*. Harvard Business School.
<https://www.hbs.edu/faculty/Pages/item.aspx?num=46852>

Proposition 64: The Adult Use of Marijuana Act - criminal_justice_prop-64. (n.d.).
<https://www.courts.ca.gov/prop64.htm>

Redwood Coast Energy Authority. (2023, March 22). *Redwood Coast Offshore Wind - Redwood Coast Energy Authority*. Redwood Coast Energy Authority - Home of Community Choice Energy and Energy Efficiency Programs in Humboldt County.
<https://redwoodenergy.org/redwood-coast-offshore-wind/>

Reveal. (n.d.). *How fire feeds*. <http://fire.revealnews.org/>

Rodriguez, C. (2023, June 27). The health care costs of extreme heat. *Center for American Progress*. <https://www.americanprogress.org/article/the-health-care-costs-of-extreme-heat/>

- Sierra Business Council. (2023). *Climate & Environment*, pp. 20-21.
<https://docs.google.com/document/d/1rol-DfzYr3LabMFOerVpVB51tO3kzS96qYWTnrBiCTc/edit#heading=h.kth08cue12ai>
- StatsAmerica: Download Center. (n.d.). <https://www.statsamerica.org/downloads/default.aspx>
- Stenger, R. (2018, May 7). Humboldt Tourism Industry Tops \$440M. *Visit Redwoods*.
<https://www.visitredwoods.com/articles/post/humboldt-tourism-industry-record-impact/>
- Submitted. (2022, September 13). Visit Mendocino County reports on 2021/2022 fiscal year. *The Ukiah Daily Journal*. <https://www.ukiahdailyjournal.com/2022/09/13/visit-mendocino-county-reports-on-2021-2022-fiscal-year/>
- Tolbert, C. M., Mencken, F. C., Riggs, T. L., & Li, J. (2014). Restructuring of the financial industry: The disappearance of locally owned traditional financial services in rural America. *Rural Sociology*, 79(3), 355–379. <https://doi.org/10.1111/ruso.12037>
- UCLA, Native Nations Law & Policy Center. (2022, September). *Tribal Broadband*.
https://law.ucla.edu/sites/default/files/PDFs/Native_Nations/245939%20UCLA%20Law%20publications%20broadband_R4.pdf
- U. S. Census Bureau. (n.d.). *Explore Census data*.
https://data.census.gov/table/ACSDP5Y2021.DP05?q=population%20characteristics&g=040XX00US06_050XX00US06015,06023,06033,06045
- U. S. Department of Commerce. (n.d.). *Redwood Coast Community Spotlight Report*.
<https://economicdevelopment.business.ca.gov/wp-content/uploads/Regional-FDI-Spotlight-Redwood-Coast.pdf>
- USDA Climate Hubs. (n.d.). *Climate vulnerabilities of California Specialty crops*.
<https://www.climatehubs.usda.gov/hubs/california/topic/climate-vulnerabilities-california-specialty-crops>
- Union of Concerned Scientists. (2021, August 17). *Too hot to work*.
<https://www.ucsusa.org/resources/too-hot-to-work>
- University of Oxford. (2019). *The Boom and the Busts: Mendocino County's Agricultural Revolution*. <https://globalcapitalism.history.ox.ac.uk/files/case08-theboomandthebustspdf>

Yu, W., Mengersen, K., Hu, W., Lee, H., Pan, X., & Tong, S. (2011). Assessing the relationship between global warming and mortality: Lag effects of temperature fluctuations by age and mortality categories. *Environmental Pollution*, 159(7), 1789–1793.
<https://doi.org/10.1016/j.envpol.2011.03.039>

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APPENDIX

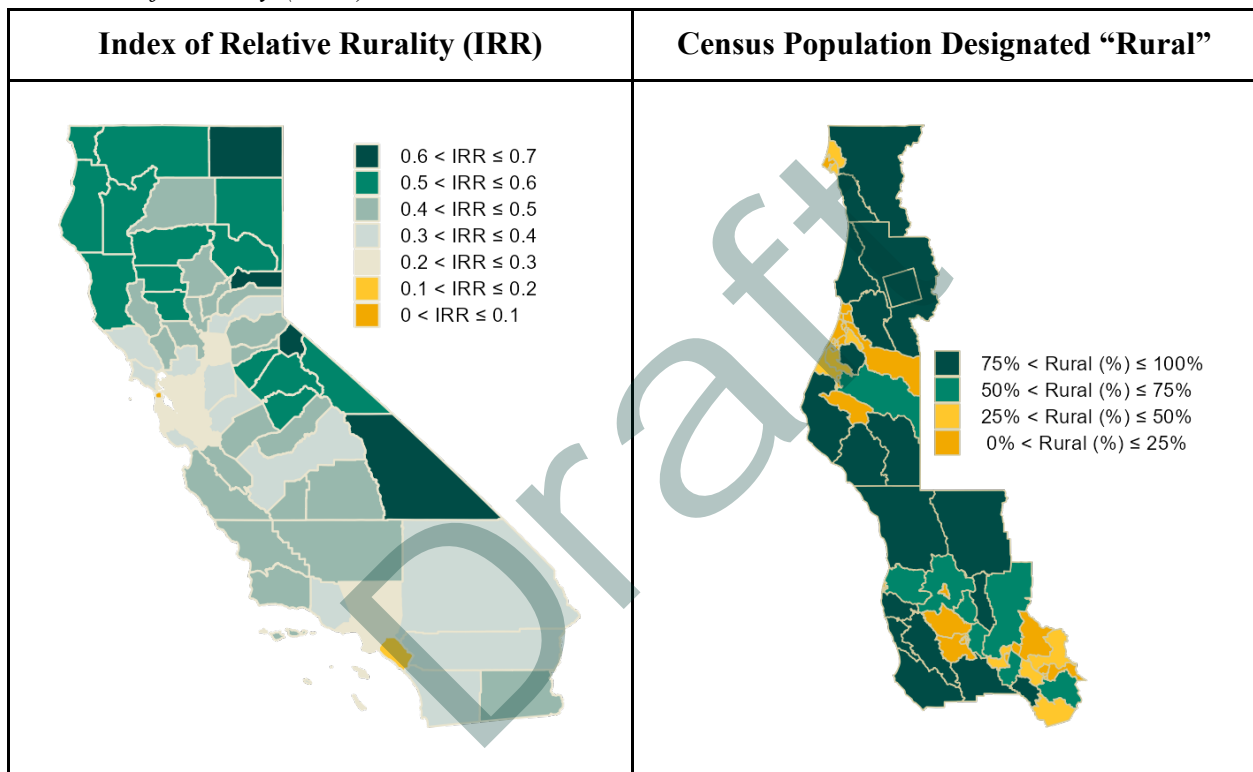
Redwood Region Supplementary Data and Analysis

Demographics

Measures of Rurality

Figure A.1

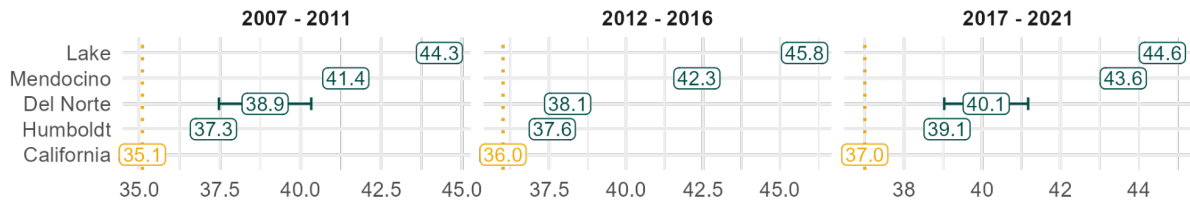
Measures of Rurality (2010)



Note. Left Panel: IRR scale ranges from 1 (most rural) to 0 (least rural). Data sourced from Kim and Waldorf’s 2018 data set titled “The Index of Relative Rurality (IRR): US County Data for 2000 and 2010.” Right Panel: Data sourced from 2010 Decennial Census variables P002001 - P002006.

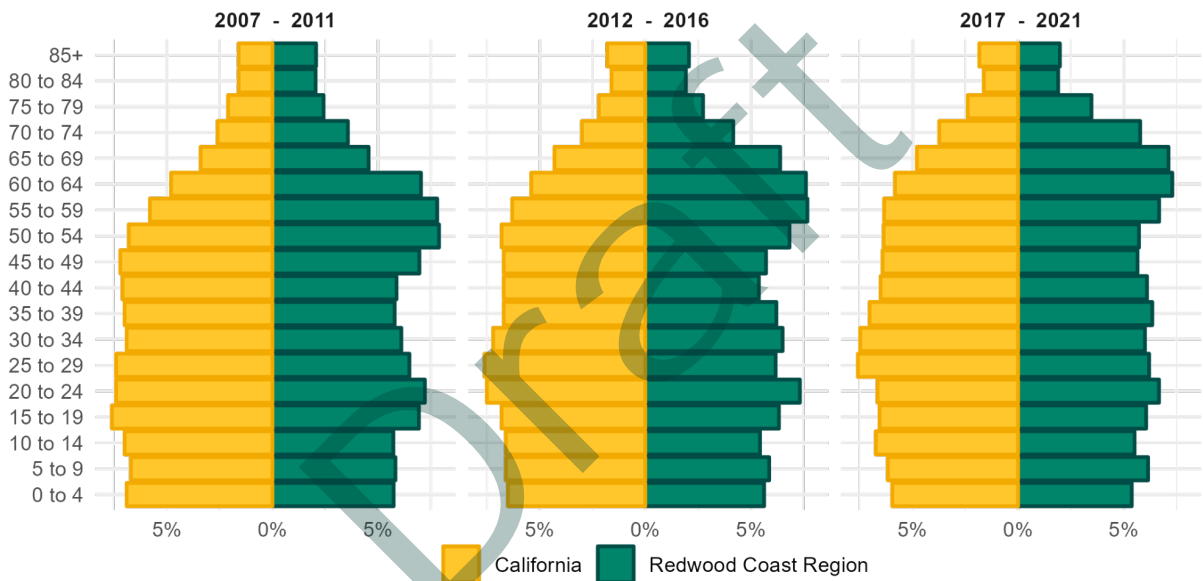
Age Distribution and Median Age

Figure A.2
Median Age



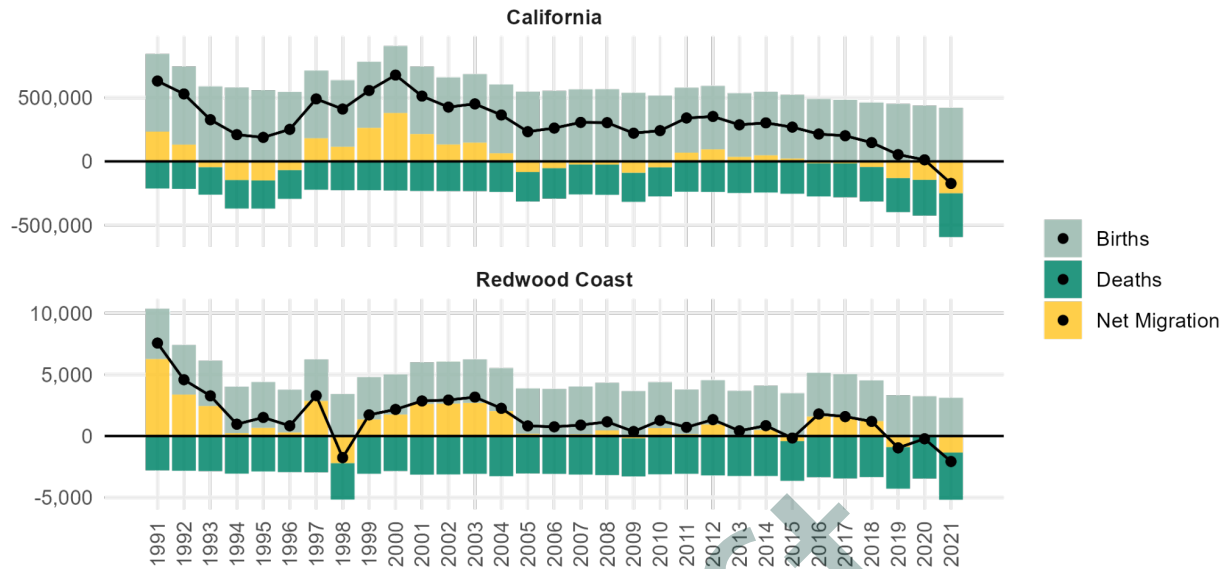
Note. Data Source sourced from the American Community Survey’s 5-year estimates. Bars indicate 95% confidence intervals.

Figure A.3
Age Distribution (2007 - 2021)



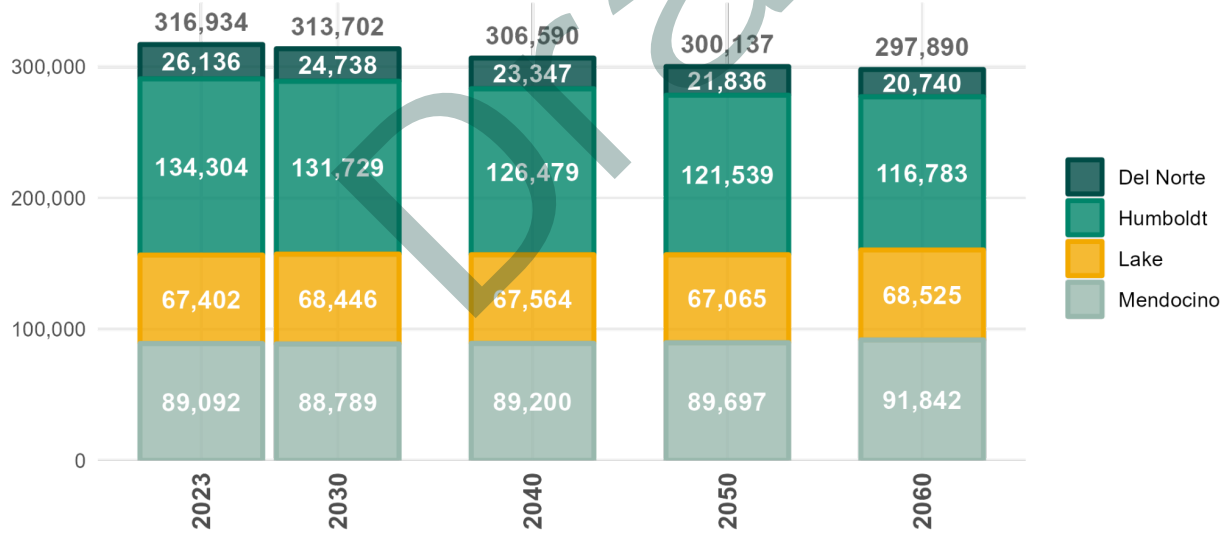
Note. Data sourced from the American Community Survey.

Figure A.4
Population Growth and Components of Change



Note. Data sourced from the California Department of Finance

Figure A.5
California Department of Finance Population and Projections



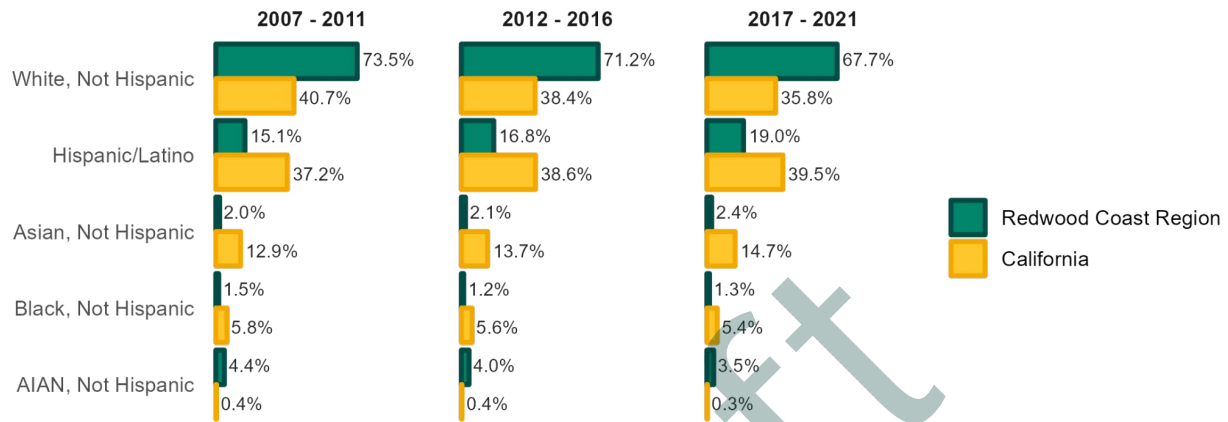
Note. Data sourced from the California Department of Finance.

Race and Ethnicity

As shown below, the region is primarily populated by white, non-Hispanic individuals, who constitute 67.7% of the total regional population— almost double the statewide proportion of 35.8% for this group. Hispanic or Latino individuals constitute a further 19.0% of the population,

a share that is growing but small relative to the state population. While other minority groups are underrepresented compared to the state population, the American Indian and Alaskan Native (AIAN) population is proportionately higher than the state population, representing 2.4% of the Redwood Region population as opposed to only 0.3% of the statewide population.

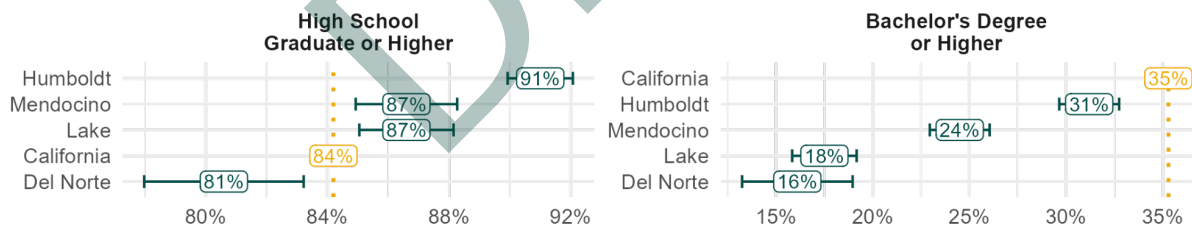
Figure A.6
Race and Ethnicity (2007 - 2021)



Note. Data sourced from the American Community Survey.

Educational Attainment

Figure A.7
Educational Attainment, Population 25 Years or Older (2017 - 2021)



Note. Data sourced from the American Community Survey.

Additional Indicators of Economic Well-being

Income Inequality

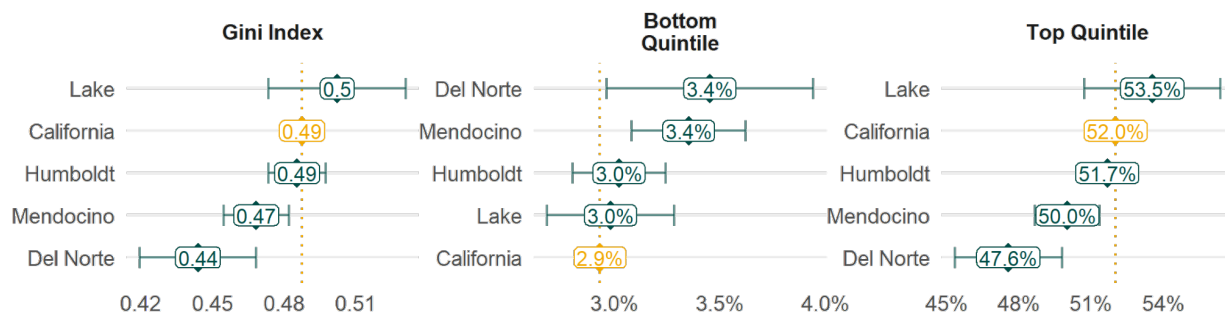
The degree of income inequality in the Redwood Region is comparable or lower than statewide indicators, an outcome that may be influenced by the substantially lower income of high wage and high skilled workers in the region. As indicated by the Gini Index⁶⁵, two counties

⁶⁵ A measure of income inequality ranging from 0 (most equal) to 1 (most unequal).

(Mendocino and Del Norte) have significantly lower income inequality compared to the state. In these two counties a greater percentage of total income is earned by the bottom 20% of income earners and a smaller percentage of total income is earned by the top 20% of income earners.

Figure A.8

Income Inequality (2017 - 2021)



Note. Data sourced from American Community Survey’s five-year estimates.

Housing Availability and Affordability

As shown above, housing cost in the Redwood Region is lower than the statewide averages. However, these costs are substantially higher than similar rural areas nationwide. Moreover, because of the region’s lower wages and income, affordability is substantially worse compared to similar rural regions. Moreover, a related indicator below suggests segments of the population may be more *severely* impacted by affordability. Statewide, 44.8% of renters spend more than 35% of their household income on housing expenses, while regional figures are as high as 54.0% in Humboldt.⁶⁶

There are challenges with both the quantity and quality of the available housing supply. As shown below rental vacancy rates are lower than the statewide average, indicating far more competitive conditions for renters. Moreover, much of the region’s housing supply is older and in need of repair. In Lake, for instance, a majority of housing units are in need of rehabilitation (Lake County, 2019). The scarcity of quality housing units is particularly difficult for low-income individuals, where property owners tend to favor potential tenants with higher income. As a result, lower income people may be pushed into substandard housing. A critical risk being childhood lead exposure. As discussed in the *Public Health Analysis*, deteriorating lead paint on older housing is the leading risk factor for lead poisoning and young children in the Redwood Region have some of the highest blood concentrations of lead in the state.

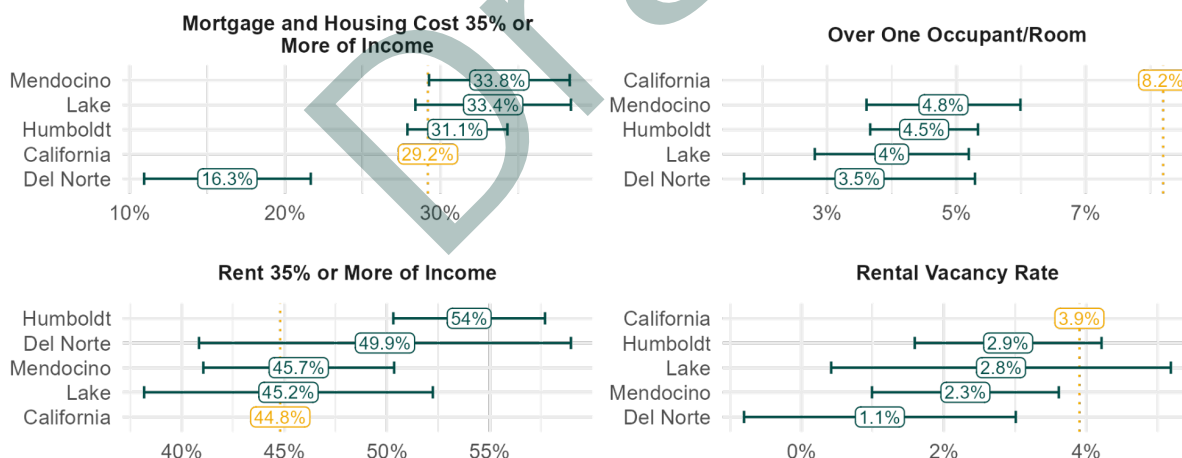
⁶⁶ Humboldt’s figure is likely distorted by the presence of Cal Poly Humboldt’s student population.

While over time, current trends of net population loss and out migration of high-income workers may reduce demand for housing and ease prices, there are current forces restricting or even destroying the supply of housing.

Recent wildfires have destroyed thousands of structures throughout the region, particularly in Lake and Mendocino counties and Tribal Lands. As discussed in the *Climate Analysis* wildfires are expected to increase sharply in the coming decades. These wildfires have also had a widespread effect of increasing home insurance cost and availability, impacting the total cost of housing for homeowners, but also renters who will ultimately shoulder much or all this additional cost through higher rents. Since 2018, there has been a sharp increase in the number of residents in Lake and Mendocino counties forced into higher cost last resort FAIR plans.⁶⁷

There is also a lack of skilled trades workers to construct housing units needed to satisfy demand or replace housing units lost to wildfires. However, this lack of skilled trades workers also presents an opportunity to develop high wage jobs that meet a genuine economic need for the region. As discussed below, the construction industry as a whole pays higher than average wages and does not require a university degree. In particular, the Employment Development Department (EDD) projects carpentry to be one of the most in-demand occupations in the region through 2030.

Figure A.9
Housing Affordability, Conditions, and Availability (2017 - 2021)



Note. Data sourced from the U.S. Census Bureau’s 2021 American Community Survey’s 5-year estimates. Bars indicate 95% confidence intervals.

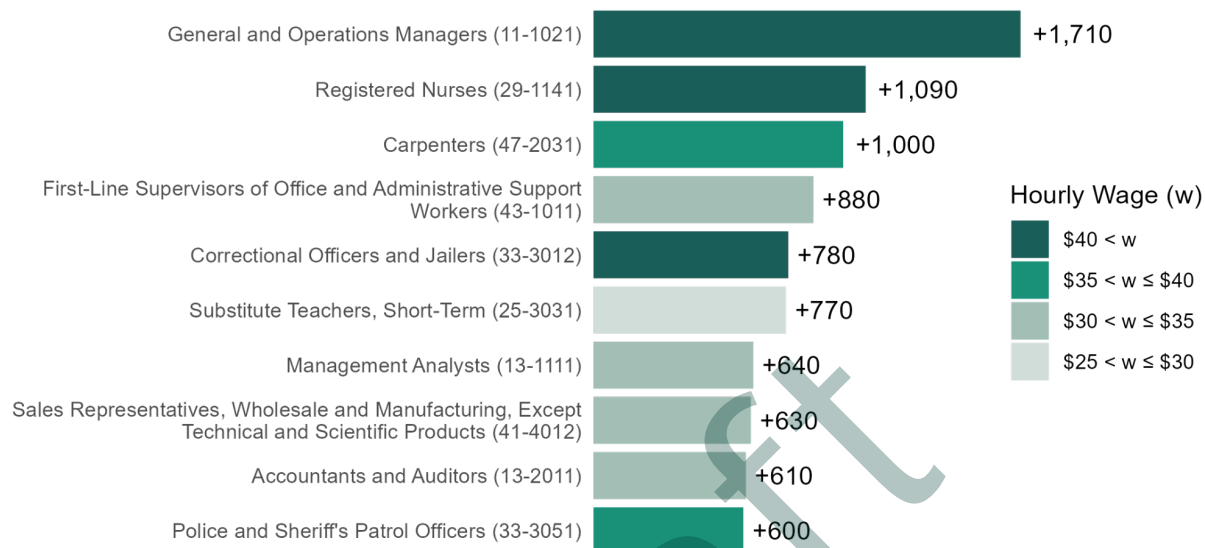
⁶⁷ Fair Access to Insurance Requirement (FAIR) plans are state-mandated property insurance plans for individuals and businesses unable to secure insurance in the standard, voluntary market)Fair Access to Insurance Requirements [FAIR] Plans, n.d.).

Additional Industry and Labor Market Data and Analysis

Top 10 High Wage Occupations by Projected Growth

Figure A.10

Top 10 Occupations by Projected Job Openings 2020-2030 with Wages > \$25 per Hour (2022)



Note. Data sourced from California EDD. SOC codes in parentheses.

Labor Force Participation Rates

Another clear contributing factor to the region's higher poverty rates is lower labor force participation⁶⁸ (see below). The overall labor force participation rate is lower due to the region's aging population. However, even among prime age workers (ages 25 through 54) labor participation is significantly lower. Thus, barriers to employment appear to be particularly relevant to those who should be in their prime earning years. The Redwood Region's higher disability rates among these age ranges⁶⁹ may play a role as individuals with disabilities often experience barriers to employment.

⁶⁸ This is the percentage of the population 16 years and older who are either working or looking for work.

⁶⁹ See the *Public Health Analysis*.

Figure A.11
Labor Force Participation Rate by Age (2018 - 2022)

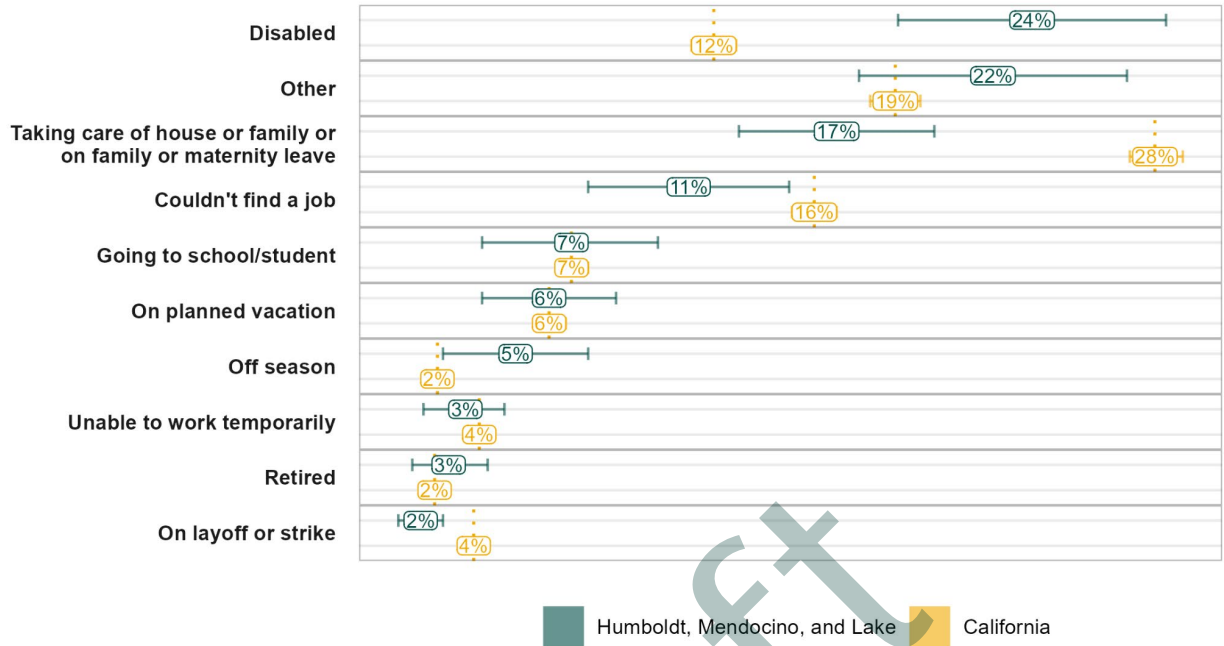


Note. Data sourced from the 2022 American Community Survey 5-year estimates. Del Norte figures are artificially low due to the effect of the prison population. Bars indicate 95% confidence intervals.

Data from the California Health Information Survey (CHIS) reveal that disability is a key factor behind the region’s lower prime age labor force participation rates. Nearly twice as many CHIS respondents aged 25 to 54 who are not currently employed cited disability as the reason compared to the equivalent group statewide. Moreover, this trend is not unique to Humboldt, Lake, Mendocino counties and Tribal Lands. CHIS data indicate that across rural northern and northeastern Sierra counties in California, out of work prime age adults are far more likely to cite disability as a reason for being out of the workforce compared to the state average.

Figure A.12

Main Reason not Working Among Prime Age Workers (2011 - 2022)



Note. Data sourced from CHIS. Del Norte data is unavailable. Includes only respondents aged 25 to 54 who are not currently employed. All available years are used to improve statistical reliability of the estimates. Restricting the years to 2017 - 2021 reveals an even sharper disparity in disability between the region and the state (23.4% compared to 10.6%).

Figure A.13

Innovation Index Ranking Among Similarly Rural U.S. Counties

	Del Norte	Lake	Mendocino	Humboldt	
Headline Innovation Index	670	323	192(T)	102	Headline Innovation Index
Business Dynamics	536(T)	132	394	170	Establishment Dynamics
	652(T)	170	312(T)	196(T)	Business Dynamics
	719(T)	265	229	278(T)	Establishment Formation
Business Profile	183	288(T)	6(T)	219	Proprietorship
	434(T)	507	22(T)	65(T)	Business Profile
	463	463	83	83	Venture Capital Dollar Measures
	463	463	116	122(T)	Venture Capital Count Measures
	526	526	230	228(T)	Foreign Direct Investment Attractiveness
Economic Well-Being	353(T)	89	82(T)	265(T)	Compensation
	340	401	435(T)	176(T)	Residential Internet Connectivity
	643	543	402	352(T)	Economic Well-Being
Employment and Productivity	362(T)	171	152(T)	261	GDP
	542(T)	172(T)	209	226(T)	Patents
	522(T)	257	251(T)	232(T)	Employment and Productivity
	70	666	87	790(T)	Industry Cluster Performance
	770(T)	635	428	317(T)	Industry Performance
Human Capital and Knowledge Creation	446(T)	135	131	5	Educational Attainment
	580(T)	259(T)	426	77	Human Capital and Knowledge Creation
	761	764	250(T)	186(T)	STEM Education and Occupations
	660(T)	518(T)	626	335(T)	Knowledge Creation and Technology Diffusion

Rank / 805 Top 25% (Strength) Middle 50% (Fair) Bottom 25% (Weakness)

Note. Data sourced from StatsAmerica. For each indicator, the Redwood Region is ranked out of 805 U.S. counties with a similar Index of Relative Rurality (IRR) compared to the Redwood Region.⁷⁰

Additional Climate and Environment Indicators

Wildfire Risk Assessment

The threat of wildfires is a growing problem in California, especially in the northern region of the state. Figure A.14 provides a visual mapping of wildfires across the state from 2018 to 2022 using data from the California Department of Forestry and Fire Protection (CAL FIRE). The data indicate recent wildfires have been larger and more common in the northern part of the state compared to the southern region. (StatsAmerica: Download Center, n.d.)

⁷⁰This includes counties with an IRR such that $0.5 \leq \text{IRR} \leq 0.53$. For a detailed description of each indicator visit <https://www.statsamerica.org/ii2/reports/Driving-Regional-Innovation.pdf>

Figure A.14

Wildfires, Burned Area (2018 – 2022)

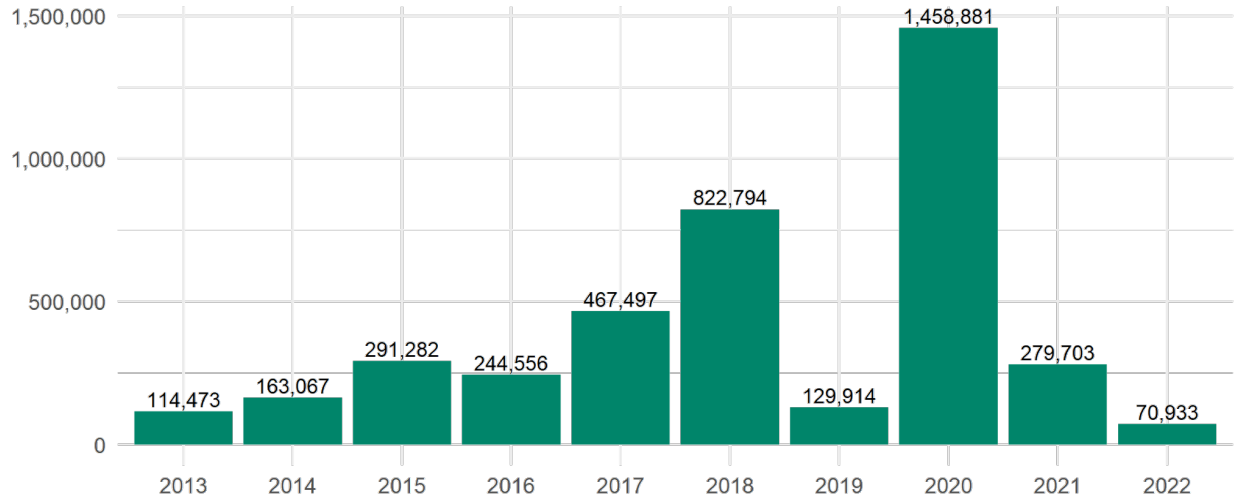


Note. Data sourced from CAL FIRE.

Wildfires will be a prominent challenge for California, as climate change continues to contribute to the number and magnitude of fires across the state, including northern counties like Mendocino and Lake (California Energy Commission et al., n.d.). CAL FIRE data show the number of acres burned due to wildfires in California have increased over the years (see Figure A.15); so too has the number of destroyed structures (see Figure A.16).

Figure A.15

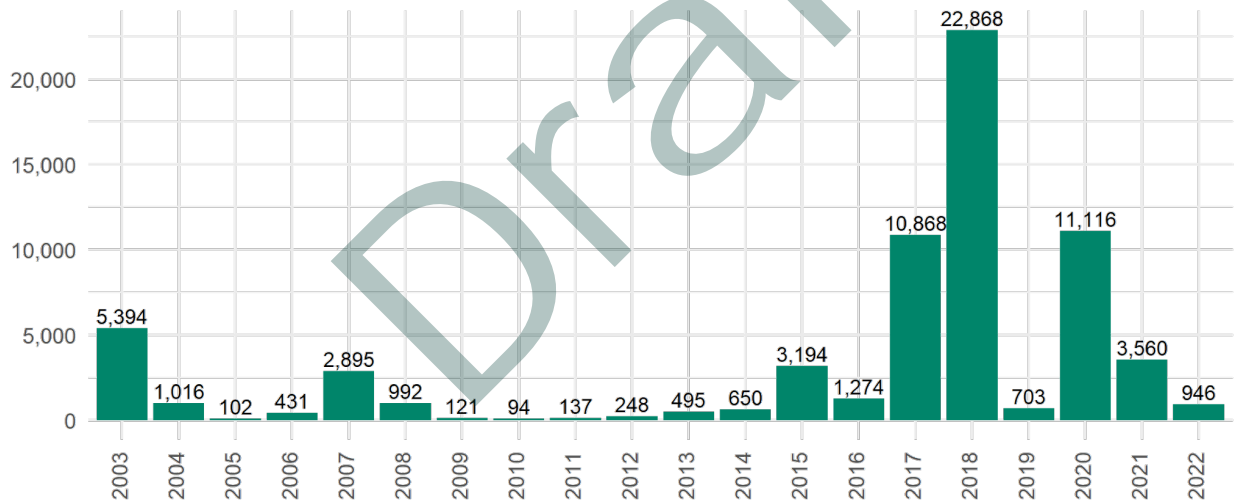
Number of Acres Burned by Year



Note. Data sourced from CAL FIRE.

Figure A.16

Number of Structures Destroyed by Year

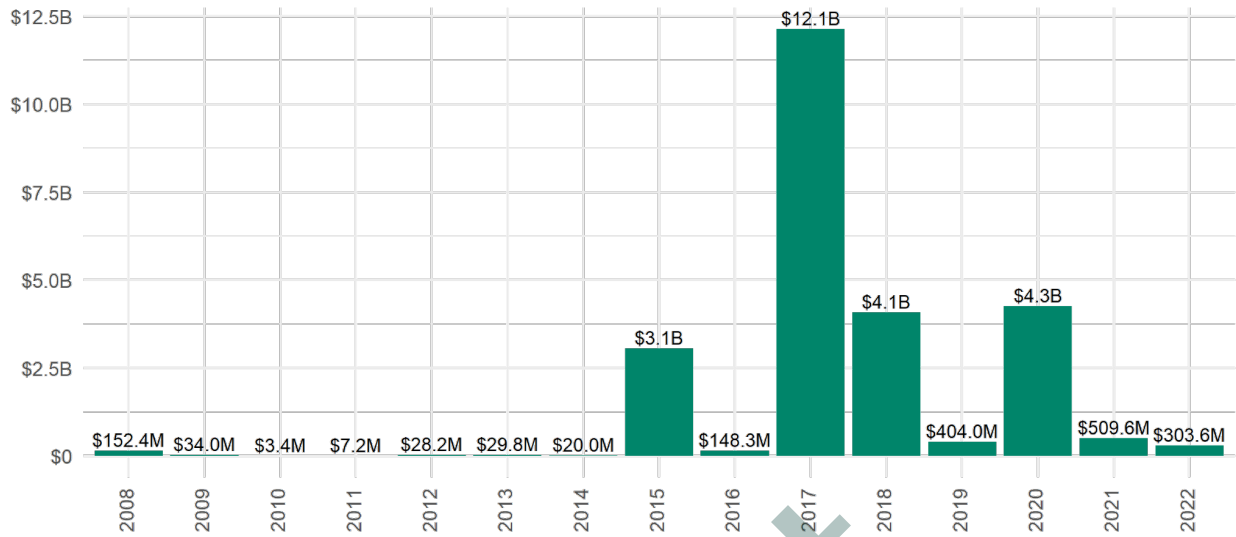


Note. Data sourced from CAL FIRE.

The increase of total dollar costs due to wildfire damage has been concurrent with rates of burned acres and destroyed properties (see Figure A.17).

Figure A.17

Total Dollar Cost from Wildfire Damages by Year



Note. Data sourced from CAL FIRE.

As wildfires continue to be an economic and social burden on California, insurance companies are denying homeowners insurance to many residents. Residents within zip codes affected by 2015 and 2017 wildfires experienced a 10% increase in insurer-initiated non-renewals between 2017 and 2018. The number of new and renewed policies in the voluntary insurance market fell by 8,700 in 10 counties with the most homes in high or very high-risk wildfire areas.⁷¹ Thus, insurance in the voluntary market for California homeowners in areas at risk of wildfires is becoming increasingly difficult to obtain (Lara, n.d.).

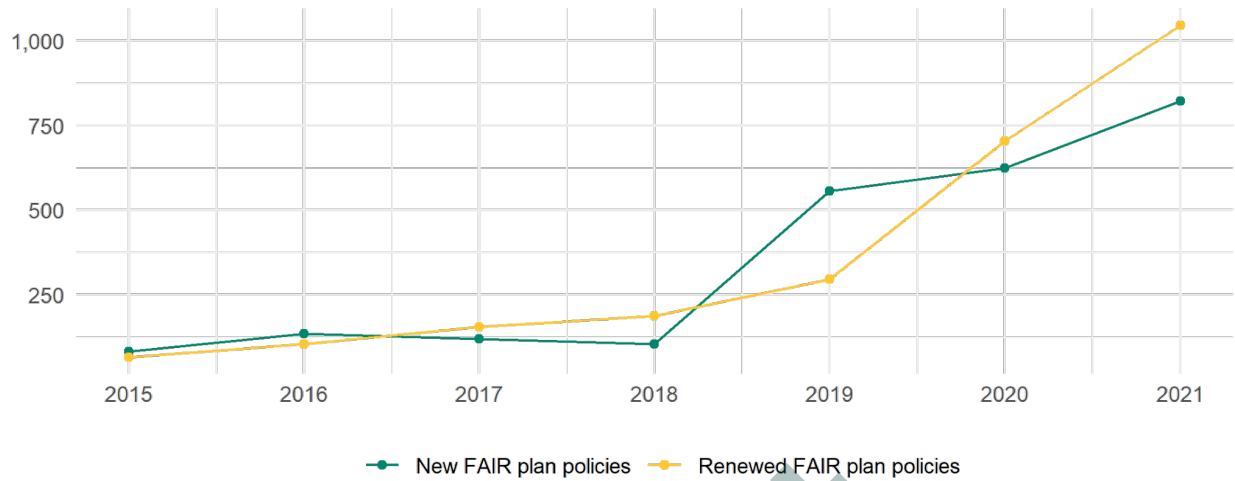
Many homeowners and business owners in high-risk wildfire areas are forced to secure insurance outside the voluntary market through surplus lines or under the FAIR plan,⁷² often at higher costs. Ten counties with the most homes in high or very-high risk areas show a 177% increase in new and renewed FAIR plan policies between 2015 and 2018 (Lara, n.d.). New and renewed FAIR plan policies have increased in both Lake County and Mendocino County (see Figures A.18 and A.19).

⁷¹ These counties include Tuolumne, Trinity, Nevada, Mariposa, Plumas, Alpine, Calaveras, Sierra, Amador, and El Dorado.

⁷² Fair Access to Insurance Requirement (FAIR) plans are state-mandated property insurance plans for individuals and businesses unable to secure insurance in the standard, voluntary market (Fair Access to Insurance Requirements [FAIR] Plans, n.d.).

Figure A.18

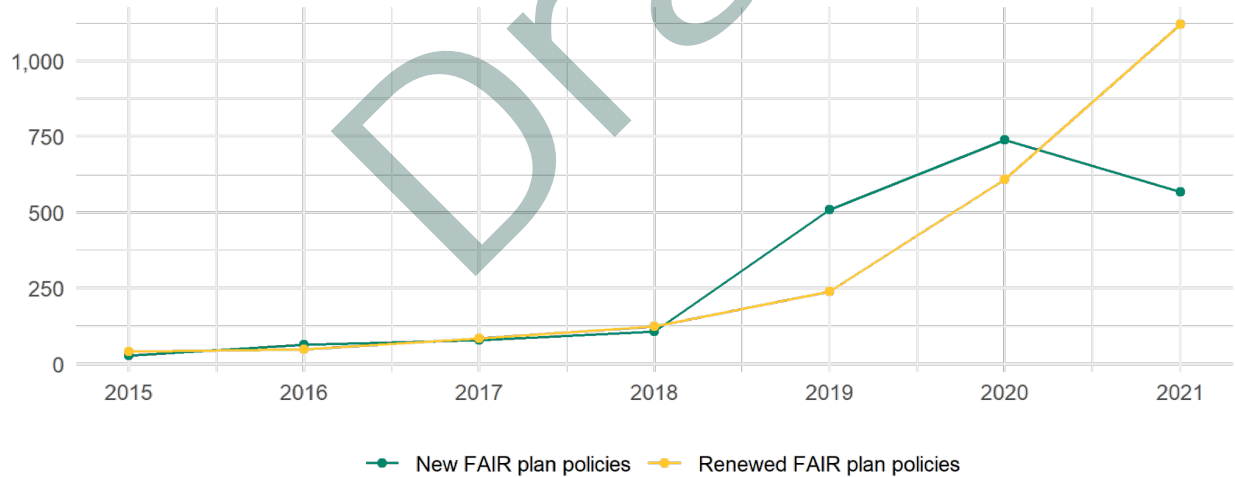
Number of New and Renewed Fair Access to Insurance Requirement (FAIR) Plan Policies in Lake County by Year



Note. Data sourced from the California Department of Insurance.

Figure A.19

Number of New and Renewed FAIR Plan Policies in Mendocino County by Year



Note. Data sourced from the California Department of Insurance.

Major 2015 Lake County Fires: Rocky, Jerusalem, and Valley Fires

Three fires occurred in Lake County and adjacent Tribal Lands during the summer of 2015 that burned over 170,000 acres, damaged or destroyed thousands of structures, and resulted in four fatalities (CAL FIRE, n.d.). Initiating this disaster was the *Rocky Fire*, which started southeast of

Clearlake on July 29 and was active for 16 days (CAL FIRE, n.d.-b), resulting in the evacuation of 13,000 residents by early August (NBC News, 2015). A second fire, named the *Jerusalem Fire*, started near the community of Hidden Valley Lake on August 9 while fire response personnel were still focused on containing the Rocky Fire that was just north and adjacent to the Jerusalem Fire (Reveal, n.d.), eventually merging into one major fire on August 12 (KRON, 2015). Both the Rocky and Jerusalem fires burned nearly 100,000 acres, damaged eight structures, and destroyed 123 structures before being fully contained by mid-August.

A third fire started outside the community of Cobb on September 9 and was named the *Valley Fire*, which currently is the 6th most destructive wildfire in California history (CAL FIRE, n.d.-c) and was the most destructive California wildfire in 2015 (CAL FIRE, n.d.-c).⁷³ About 20,000 residents were evacuated in advance of the fire that burned 62,000 acres within the first 48 hours since starting (Reveal, n.d.). The Valley Fire was the largest of the three fires, burning over 76,000 acres and remaining active for 33 days. The Valley Fire was also more destructive than the Rocky and Jerusalem fires, damaging 93 structures and destroying 1,958 structures, including 1,280 homes, 27 multi-family structures, 66 commercial properties, and 585 minor structures (California, S. O., n.d.).

Table A.1

Major Lake County 2015 Fires, Acres Burned, Days Active, and Structure Damage or Losses

Fire Name	Acres Burned	Days Active	Structures Damaged	Structures Destroyed
Rocky Fire	69,636	16	8	96
Jerusalem Fire	25,118	16	0	27
Valley Fire	76,067	33	93	1,958

Note. Data sourced from CAL FIRE.

The California Department of Insurance reports approximately \$700 million in insurance losses due to the Valley Fire (California, S. O., n.d.-a), and preliminary estimates on total economic losses exceeded \$1.5 billion (Reveal, n.d.). The 2016 Lake County Comprehensive Economic Development Strategy (CEDS) noted 2015 wildfires had a considerable impact on the local economy, hindering development projects due to several community infrastructure systems being destroyed in the fires (Lake County, 2016). The 2016 Lake County Community Health Needs Assessment (CHNA) also noted the impact on community members' wellbeing due to the 2015 fires. Overall findings indicate the 2015 fires attributed to challenges with poverty and mental illness. About one in five residents reported property loss due to the Valley Fire. Results from a focus group conducted for the 2015 CHNA noted some residents have experienced long-term trauma caused by their experiences during the fires. These findings assisted the county in

⁷³ Destructive is defined by CAL FIRE as *structural loss*. "Structures" include homes, outbuildings (barns, garages, sheds, etc.) and commercial properties destroyed.

identifying a need for more mental health services to address residual trauma within the community (Lake County Community Health Needs Assessment, 2016).

2017 Redwood Valley Fire (Mendocino Lake Complex)

On October 8, 2017, a fire started northeast of Potter Valley, merging with a second fire in Redwood Valley a day later, creating what is known as the *Redwood Valley Fire*. The Redwood Valley Fire eventually merged with a fire that started in Lake County, named the *Sulphur Fire*, formally naming this set of fires the *Mendocino Lake Complex Fires*. The Redwood Valley Fire burned over 36,000 acres, forced 8,000 residents to evacuate, damaged or destroyed nearly 600 structures, including approximately 350 homes, and claimed nine lives (CAL FIRE, n.d.-c; Mendocino Council of Governments, n.d.; County of Mendocino, 2023).

Table A.2

Redwood Valley Fire, Acres Burned, Days Active, and Structure Damage or Losses

Acres Burned	Days Active	Structures Damaged	Structures Destroyed
36,523	18	41	543

Note. Data sourced from CAL FIRE.

For Mendocino County, residential and commercial property losses from October 2017 wildfires were over \$180 million dollars (California Department of Insurance, 2018), much of this amount likely attributed to the Redwood Valley Fire. 2017 was a particularly devastating year for California wildfires, with the total number of acres burned that year (467,497) almost doubling the five-year state average (256,150). Nearly 11,000 structures were destroyed by California wildfires in 2017, more than previous years, and over two times more than the state’s second most destructive wildfire year (2003, 5,394) (CAL FIRE, 2019). The California Department of Insurance reports California wildfires in October 2017 alone resulted in nearly \$10.5 billion in residential and property losses (California Department of Insurance, 2018). The estimated total dollar amount in property loss due to wildfires in 2017 is over \$12 billion (CAL FIRE, 2019).

Extreme Heat Days and Events

Extreme heat days and events are expected to increase in the region, particularly within inland zones, posing a threat to individuals, health care systems, and economies (California Energy Commission et al., n.d.; Pacific Institute, 2012). Table A.3 shows historical (1950-2013) and projected average number of days with extreme heat for each county in the Redwood Region.

Table A.3*Historical and Future Projections for Number of Days with Extreme Heat*

County	1950-2013		
	(Observed Historical)	2025-2039	2040-2054
Del Norte	5.2	8.6	13.4
Humboldt	3	11.6	18.2
Lake	3.6	13.6	17.7
Mendocino	4.2	14.8	17.4

Note. Data sourced from (Cal-Adapt, n.d).

Extreme heat events are associated with higher rates of mortality (Bull & Morton, 1978; Ballester et al., 1997; Basu & Samet, 2002; Yu et al., 2011) Individuals with certain health conditions, such as heart disease, are susceptible to the dangers of extreme heat. Exposure to extreme heat is associated with higher rates of cardiovascular mortality (MEDBOX, n.d.). Rates of heart disease are elevated in the region compared to the state (Kirsch, 2023), suggesting an increase in the number of projected days with extreme heat may lead to higher rates of heat-related deaths. Excessive heat can also trigger health conditions, such as heat cramps, heat exhaustion, and heat stroke (California Environmental Protection Agency & California Department of Public Health, 2013).

Certain populations within the region are more susceptible to extreme heat. As much as 45% of the region’s population is moderately to highly vulnerable to the effects of climate change, including extreme heat (Pacific Institute, 2012). Children (all ages), those with medical conditions (e.g., diabetes), disabilities, or are on certain medications, households without air conditioning, those with low-income, ethnic minorities, and outdoor workers are all disproportionately susceptible to the threat of extreme ambient temperatures (Pacific Institute, 2012; Union of Concerned Scientists, 2021). The population likely most at risk from extreme heat is individuals 65 years of age and older (Pacific Institute, 2012). The region’s median age is skewed older compared to the state. An aging population and an increase in the number of days with extreme heat may result in higher rates of heat-related mortality and hospitalizations (Centers for Disease Control and Prevention, 2022; Li et al., 2019).

Economic wellbeing can also be threatened by extreme heat. One effect of rising temperatures is a loss of occupational productivity. Nationwide, exposure to heat led to a loss of nearly 500 billion potential labor hours in 2022, nearly a 42% increase from 1991 to 2000 (Lancet Countdown, 2023). Outdoor workers in the region may experience diminished productivity due to extreme heat events, which could ultimately affect revenue for companies.

Extreme heat may be an economic challenge for the Redwood Region’s agricultural industries. The wine industry, for example, is an important economic component for certain parts of the

region, particularly Mendocino County, which contributes nearly \$46 million in state and local tax revenue annually (Economic Forensics and Analytics, Inc., n.d.). Wine grapes are sensitive to ambient temperature, which can affect the quality and flavor of final products. With the number of days with extreme heat expected to increase over time, the Mendocino wine industry could experience economic losses (USDA Climate Hubs, n.d.).

An increase in the number of days with extreme heat could also be a challenge for local healthcare systems. Extreme heat events are positively associated with healthcare utilization. Nationwide, extreme heat events during the summertime cost \$1 billion in excess emergency department visits and hospitalizations (Rodriguez, 2023). Growing rates of heat-related illness and mortality could put further administrative and economic strain on the region's healthcare systems that are already inundated and insufficient.

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