

LOCATION, LOCATION, LOCATION! A UNIQUELY HAWAI‘I ECONOMIC DEVELOPMENT STRATEGY⁺

APRIL 9, 2021



UHERO BRIEFS ARE CIRCULATED TO STIMULATE DISCUSSION AND CRITICAL COMMENT. THE VIEWS EXPRESSED ARE THOSE OF THE INDIVIDUAL AUTHORS. WHILE BRIEFS BENEFIT FROM ACTIVE UHERO DISCUSSION, THEY HAVE NOT UNDERGONE FORMAL ACADEMIC PEER REVIEW.

By Steven Bond-Smith

Hawai‘i’s economy is in trouble. Unemployment is typically low in Hawai‘i and it was close to an all-time low in March 2020 at just **2.1 per cent**. But Covid-19 has ravaged the visitor industry. Business travel and tourism have dried up due to public health restrictions and the risk of contracting Covid while traveling in planes, enjoying tourist resorts, or having face-to-face conventions. In April 2020 unemployment was 21.9 per cent. In the 12 months to September 2020 employment in leisure and hospitality had declined **58.8 per cent**. While all US states have recovered somewhat since the start of the pandemic, Hawai‘i still has the highest unemployment rate of any state in the country at 10.2 per cent in January 2021.

It’s not the first time this has happened, even in recent times. Initially after 9/11, Hawai‘i’s tourism economy crashed as people avoided travelling in planes. Many of these impacts are short to medium term. The long-term prospect is for the visitor industry to recover. Vaccinations are rolling out. People are craving a return to normalcy after a year without travel. As with the period soon after 9/11, Americans might feel safer travelling to Hawai‘i than to more exotic locations (Bonham et. al., 2006). Hawai‘i’s economy has long been subject to multiple waves of specialization and volatility since traders first arrived, as different industries come to dominate the local economy. Starting with sandalwood, then whaling and then agriculture. While tourism has proven more stable than commodities and Hawai‘i made the transition to tourism fairly well, Hawai‘i’s economy is still always very specialized (La Croix, 2021). This intense industry concentration makes Hawai‘i’s economy vulnerable to external shocks, exposing its residents to economic volatility and risk. And these sharp shocks on the economy have lasting scars.

But these stories of concentration and volatility are not unusual for small and isolated economies like Hawai‘i. My research and experience in Western Australia and New Zealand explains why small isolated economies are naturally more concentrated (Bond-Smith et. al, 2018; Bond-Smith and McCann, 2020). Western Australia’s economy is dominated by exporting iron ore to China (Bond-Smith et. al., 2019). New Zealand’s economy is concentrated in Agriculture and Food (Destremau and Siddharth, 2018). Specialization enables industry scale that allows economies like Hawai‘i, Western Australia and New Zealand to prosper despite their small size and isolation. Due to the attraction of its climate, natural beauty, and host culture, Hawai‘i finds scale by specializing in the visitor industry. But specialization also amplifies exposure to external shocks and increases risk.

In response to the economic impact of the Covid-19 pandemic, policy-makers in Hawai‘i are placing an increasing emphasis on diversification. Alternative industries are asking for support.¹ Some economists are justifiably concerned that diversification policy will fund special interests rather than genuine policies to achieve diversification. Ultimately, policy-makers need to consider, is there a way to balance

⁺ For many helpful comments and suggestions, thank you to Carl Bonham and Sumner La Croix. Any remaining errors are my own.

¹ For example, recent UHERO research examines policies to support the agriculture (La Croix and Mac, 2021a) and Film and content industries (La Croix and Mak, 2021b).

concentration and risk while promoting diversification and growth? I have been having these discussions with local policy-makers, academics and communities in two other isolated, small economies of Western Australia and New Zealand for more than a decade and I am now turning my attention to Hawai'i.

To address concentration and diversification in Hawai'i we need a clear understanding why Hawai'i's economy is so concentrated and why it is concentrated in those particular things. It is important to consider why some business activities are just more difficult in Hawai'i. It is equally important to examine what helped in the past, what didn't and why these were successes or failures. Ultimately, the goal is to find *more and other* things that Hawai'i can be good at *and* that *remain* in Hawai'i through the shocks.

1. WHY SO CONCENTRATED?

Two key characteristics that are often left out of economic models explain a lot about Hawai'i's economy: isolation and scale. Hawai'i is a long way from the rest of America, or anywhere else for that matter. And Hawai'i is small. Geographically, Hawai'i isn't even part of the North American continent: it is in Oceania, or more specifically in Polynesia. Its isolation from the rest of the United States generates significant transaction and transport costs to trade goods and services with the wider US economy. But its inclusion in the United States also isolates Hawai'i to some extent from its other international neighbors. Its location and governance is as important as its climate for explaining its economic outcomes. As anyone in Hawai'i knows when they order products from Amazon or find out that their new sofa isn't "on-island", it isn't easy to buy and sell goods or services via thousands of miles of ocean. Nor is it easy to build business relationships that require trust and frequent interaction. Hawai'i's scale and isolation make business difficult. As a result, the industry base in Hawai'i has always been built on an immobile local factor of production—Hawai'i's climate—because those activities can only occur in Hawai'i.

But Hawai'i is still part of the biggest economy in the world.² Its small scale and isolation are a drag on Hawai'i's economy and increase the cost of doing business. At the same time, the large-scale US economy, access to an American tourist market and a mobile, competitive US labor market sustains Hawai'i productivity and economy. Tourism generates a large "export" income from both Asia and the continent. While each visitor to Hawai'i isn't as valuable as they used to be, accommodation options like Airbnb have opened up Hawai'i to record numbers of visitors before the pandemic, reaching 10.4 million visitors in 2019 (HTA, 2020). At the same time, the significant use of homes and apartments by visitors could be pushing up the costs of homes (Barron et. al., 2021) and contribute to a worsening housing crisis. Furthermore, tourism puts pressure on the infrastructure and ecosystems that host the amenities tourists come to visit.

The internet makes business possible from anywhere with a decent internet connection. But even as the internet enables greater communication with isolated places, the economic world is far from flat. Economic activity often relies on trust. This is especially so for skilled non-routine tasks, where measuring performance is increasingly difficult. And trust can often only be built by meeting face-to-face and talking story about which school your kids go to, how your local football team is performing this year or any other common interest. As a result, economic activity clusters together, firstly in businesses, and in supply chains, and in ever larger cities to increase trust and minimize transaction and transport costs. This is difficult in Hawai'i, when all other cities it might do business with are thousands of miles away. Like every city and state in America should do, Hawai'i is prioritizing broadband connectivity to support the economic participation of its population. But in a somewhat counter-intuitive way, reductions in spatial transaction costs due to the internet don't necessarily improve things in isolated places because the gains accrue disproportionately to the most well-connected places. For example, in 2002 Hawai'i switched dramatically from a state with net exports to a state with net imports (Liou, 2020). The change was caused by Amazon offering free shipping

2 When ranked by total GDP. When adjusted for Purchasing Power Parity, the USA is second.

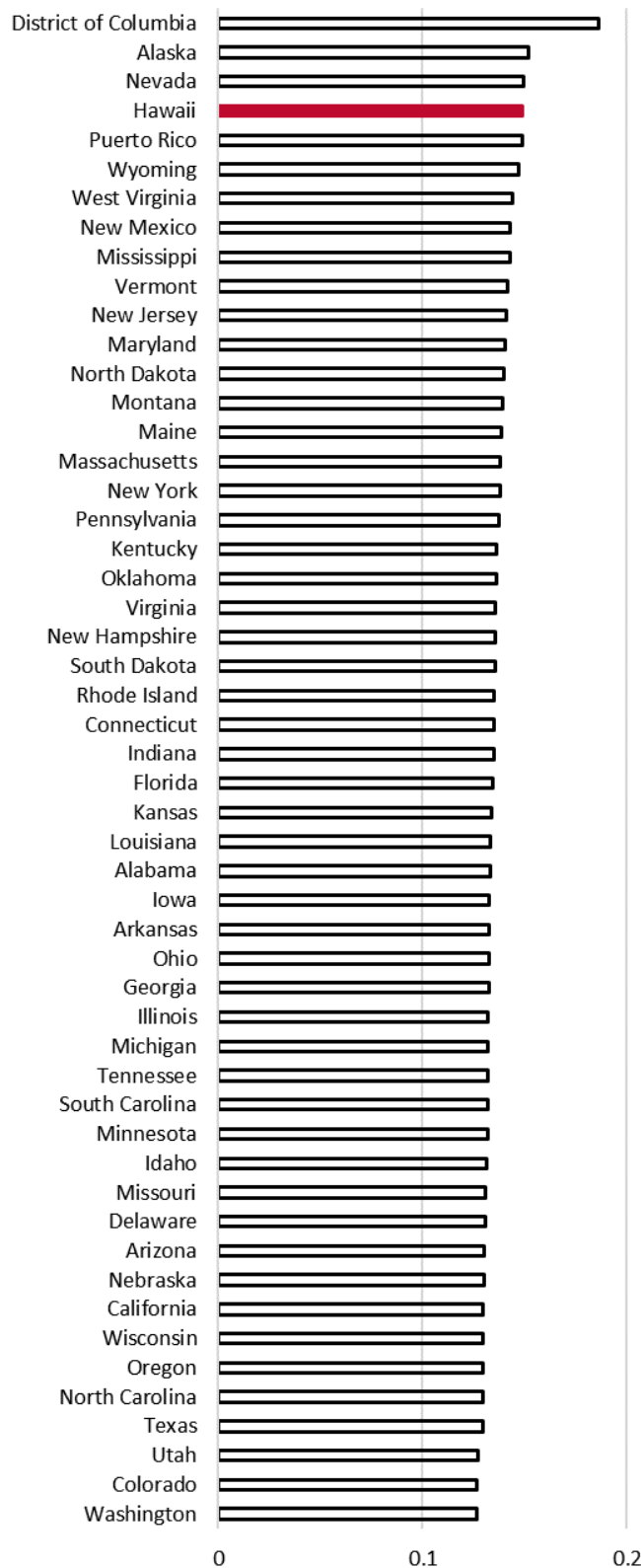
to Hawai'i for orders over a certain amount. E-commerce meant businesses could sell online from anywhere and that people could *buy* from anywhere. More crucially, only the most well-connected places can sell *everywhere*.

The internet also enables business and collaboration to occur remotely. University of Hawai'i academics and Hawai'i's businesses can now more easily team-up with US and foreign colleagues (Forman and van Zeebroeck, 2012; 2019). But new collaborations often require close proximity (Catalini, 2017) because innovations are often only spurred when people with part of an idea meet serendipitously. Serendipity doesn't occur easily over the internet. Furthermore, building the trust that is required for successful collaborations and business deals often requires initial face-to-face meetings. The internet can substitute some forms of face-to-face communication. But sometimes at least, the internet is *complementary* to face-to-face communication, particularly during the crucial trust-building and serendipitous stages of relationship building (McCann, 2007). As a result, the greatest advantages of the internet age accrue to places that most frequently connect the most people in person, and that isn't Hawai'i. Hawai'i's small scale and isolation makes collaborative economic activity more difficult and reduces serendipity, so the economic activity in Hawai'i is predominantly serving local interests and based on local resources where such businesses *have* to locate in Hawai'i.

As a result of all these characteristics of economics and geography, isolated and small economies tend to be much more concentrated in one or a few industries (Bond-Smith and McCann, 2020), typically based on natural resources (McCann, 2009). Businesses that use natural resources, such as Hawai'i's climate, cannot simply shift those resources elsewhere. These are industries that *have* to locate in Hawai'i. So, if scale and isolation are indeed the cause of industrial concentration in Hawai'i, then it should be expected that the industrial concentration of Hawai'i is similar to Alaska, Maine or Montana – isolated states with a small population. Given these states' major cities are less than half the size of Honolulu, better comparisons might be New Mexico or Nevada—states in less dense parts of the country with comparable (though relatively less isolated) major cities.

Shown in Figure 1, a Herfindahl index is used to compare industry employment concentration by state. An index value of 1 implies that all employment is in one industry only. In March 2020, prior to the impacts of the pandemic, Hawai'i was the third most concentrated state based on an HHI concentration index of employees on nonfarm payrolls by ten broad industry sectors, surpassed only by Nevada and Alaska (See Figure 1). There are many interesting stories to tell about industry concentration in different states but here I focus on scale and isolation. For the most part the concentration indexes in each state have been relatively stable over time, implying that the contributing factors to industrial structure and concentration, are also not changing, such as location. The one exception to this is in states that have cities with significant population growth, such as Las Vegas, such that industry concentration has declined significantly in Nevada over the last twenty years such that a larger internal city economy developed over time and reduced its extreme industry concentration in tourism.

FIGURE 1: HERFINDAHL INDEX OF NON-FARM EMPLOYMENT IN TEN INDUSTRY SECTORS BY STATE PLUS DC AND PUERTO RICO, IN MARCH 2020



Notes: Ten industry sectors are Mining, logging and construction; Manufacturing; Trade transportation, and utilities; Information; Financial activities; Professional and business services; Education and health services; Leisure and hospitality; Other services; and Government.

Source: Author analysis based on data from: U.S. Bureau of Labor Statistics, State and Area Employment, Hours and Earnings": All states and ten industry super sectors, Retrieved on 16 March 2021.

Yet Hawai'i has some unique advantages that states such as Alaska, Maine or Montana don't have. In normal times Hawai'i is highly connected with major U.S. cities, and with Asia, with frequent flights several times a day to global cities such as Tokyo, Seoul, and Los Angeles, even if it takes a little while to get there. In that sense, Hawai'i is not as isolated as its location implies. But its connectivity, may even imply greater industrial concentration than its size because there are productivity gains from greater scale in the dominant industry when it is *connected* to more markets and other needs can be fulfilled by imports. The role of connectivity depends upon *where* a place is connected in the network. Places connected to the outer ends of a network become more concentrated in their specialized industry while those with more central connectivity patterns can become diversified hubs of economic activity. In this way Hawai'i *could* share some characteristics with say Singapore or Hong Kong, so lessons about their development might also prove fruitful. But those places also feel inappropriate comparisons at the moment. Hawai'i is very unique. Perhaps better comparisons would be New Zealand or Western Australia.

New Zealand is also a tourism- and agriculture-based economy. Like Hawai'i, it is a string of volcanoes in the Pacific with a rich Polynesian heritage and natural resources predominantly based on its climate. Its Maori culture is viewed as a national treasure.³ It is highly integrated with, yet isolated from, a much larger nearby economy, Australia. And it has strong links to economies in Asia. New Zealand was once one of the wealthiest economies in the world first exporting Kauri for masts on tall ships and flax for making rope when it was the strongest fiber available at the time. In the middle of last century it mostly exported wool and lamb to its colonial parent, the UK. Its economy is now heavily reliant on Agriculture and Food (Destremau and Siddharth, 2018). New Zealand has also experienced waves of industrial concentration followed by economic shocks as technology or trading relationships went out of New Zealand's favor (McCann, 2009).

Instead of ocean, Western Australia is separated from the main population centers in Australia by thousands of miles of desert. It too has a concentrated economy based on multiple mining booms with shocks caused by volatile commodity prices. Starting with a gold-rush and most recently exporting massive amounts of iron ore to China (Bond-Smith et. al., 2019), Western Australia is now speculating on lithium. But like Sandalwood or sugar, commodities are often subject to global competition, changes in the trade or regulatory environment, exhaustion of a resource, or technology changes.

These stories of concentration and volatility are not unusual for small and isolated economies like Hawai'i, Western Australia, or New Zealand. These economies need tailored economic policies that account for scale, isolation, connectivity, local resources, economic geography and cultural riches.

2. WHY DOESN'T HAWAI'I HAVE MORE INNOVATION?

Innovation based growth can help to diversify economies because new ideas can generate new industries and productivity improvements. But innovation is even more clustered than businesses (Florida, 2005) in large part because much knowledge cannot be documented. Ricardo Hausmann at Harvard

3 Māori history, culture and language (Te Reo) also have many similarities with Kānaka Maoli history, culture and language (ʻŌlelo Hawai'i). In Maori oral history, Tangata Māori arrived in Aotearoa (Māori name for New Zealand) by waka (canoe) from the mythological place Hawaiiki, a cognate word of Hawai'i (the 'okina denoting a glottal stop that replaces the "k"). The hero Māui features in both Māori and Kānaka Maoli cultural mythology. In Hawai'i Māui is credited with fishing up various Islands and in Aotearoa he fished up the North Island while his waka formed the South Island. In both cultures Māui is credited with restraining the sun. The word "mana" holds almost the exact same meaning in both Te Reo and ʻŌlelo Hawai'i, similarly with "tapu" in Te Reo and "kapu" in ʻŌlelo Hawai'i, and the local people are referred to as "Tangata Whenua" in Te Reo or "Kānaka Maoli" in ʻŌlelo Hawai'i (the "k" replaces the "t" and "l" replaces the "r" in a number of otherwise similar Polynesian words). Other words are identical but with very different meanings, such as "kai" meaning food in Te Reo and sea in ʻŌlelo Hawai'i. The close similarities reflect that Polynesian migrations to both Hawai'i and Aotearoa occurred around the same time. I apologize unreservedly if there are any errors in my limited knowledge of both Māori and Kānaka Maoli.

University's Growth Lab calls it "know-how" (Hausmann, 2016). Know-how is very local. It is embedded in people, routines, and the businesses people work for. Innovation builds on existing know-how. Innovation combines know-how in new ways. Innovation clusters where people with know-how want to be, and people with know-how choose to go where other people with compatible know-how already are. These are the places to access knowledge, skills and ideas or know-how in order to be more innovative.

The most innovative places are highly connected, with large numbers of skilled workers, all trying to come up with the next big thing. Rarely does a tech entrepreneur have all the ideas. It's serendipity that yielded chance meetings with another engineer who has the compatible piece of know-how that generated each of the new products and improvements we witness every year in Silicon Valley. Serendipity is more likely if you're surrounded by other tech entrepreneurs, scientists and engineers with useful know-how. And just like how an aspiring actor goes to Hollywood, aspiring tech entrepreneurs go to Palo Alto because they are hoping to access other skilled people who have the last bit of "know-how" to make their idea work. Entrepreneurs also go to Silicon Valley to access venture capital. Investors in risky start-ups don't like to invest remotely either. They want to trust that the ideas are solid. So investors are either also located alongside entrepreneurs or they hire a manager they trust who is on the ground and face-to-face with start-up entrepreneurs. Even when Hawai'i generates new tech start-ups, they often end up relocating to Silicon Valley.

The so-called *tyranny of distance* is often used to describe how isolation has affected Australia's economic development.⁴ There is ongoing optimism that the internet age will create opportunities to overcome isolation and compete with global tech clusters. However, as I will explain, the tyranny of distance still applies in many ways, despite the internet, and is arguably stronger than ever *because* of the internet.

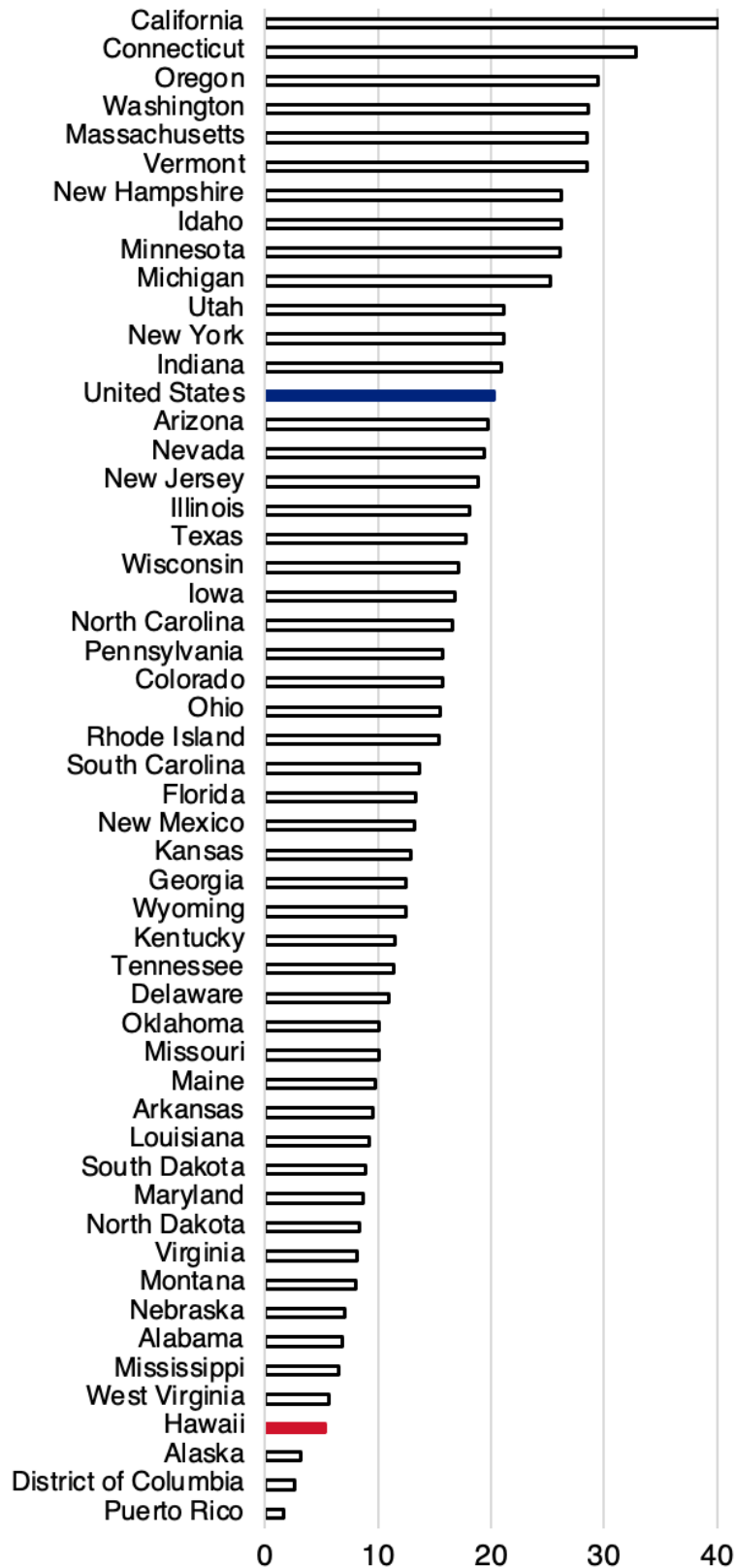
For various reasons often related to transport and transaction costs, productivity often depends on the scale of activity. This implies that larger firms are more productive than smaller firms, larger local industries relative to other places are more productive than smaller industries and larger cities are more productive than smaller cities. Globalization and internet technologies allows industries to leverage local scale (both firm scale and city scale) to now supply to the world from large, well-connected cities. This especially applies to any knowledge-based activities, such as innovation, where a large and dense urban environment provides benefits such as labor market pooling or knowledge spillovers. For both Australia and the United States, this has concentrated economic growth and innovation in only a handful of major cities. These trends are also global, with growth in Asia concentrated in mega-cities like Shanghai or Guangzhou.

Unfortunately, this phenomenon also explains the difficulty in Hawai'i to establish its own innovative tech cluster. For innovation, it is necessary for knowledge spillovers (and any transaction costs) to be sufficiently high (low) that a business prefers to be in the cluster than anywhere else (Bond-Smith and McCann, 2020). For tech, the transportation costs of distance are minimal. This intuitively appeals for Hawai'i because it seems easier for these activities to relocate in Hawai'i in spite of its isolation. But it's also easier for everywhere else to attract these activities. Unfortunately for Hawai'i, knowledge spillover externalities lead to greater advantages in those places that don't face the tyranny of distance. Hawai'i's small scale and isolation makes it particularly difficult for a tech industry because serendipitous meetings that combine know-how in new ways are less likely, so innovation in tech is less likely in Hawai'i. For many industries, the know-how required to build the next big thing is probably missing in Hawai'i, and the people with the know-how don't necessarily choose to do business in Hawai'i because they want to locate next to other people with know-how.

With this understanding of innovation, it is no surprise that Hawai'i has low rates of innovation. Figure 2 charts patents per 1,000 people employed in science and engineering occupations by state plus Puerto

⁴ Originally the term comes from a history book 'The Tyranny of Distance: How Distance Shaped Australia's History' by Geoffrey Blainey published in 1966.

FIGURE 2: PATENTS PER 1,000 SCIENTISTS AND ENGINEERS BY STATE 2018*



Notes: *2017 patents per 1,000 S&E occupations used for Alabama, Arizona, Indiana, Pennsylvania, and Utah due to missing data in 2018.

Source: Author analysis based on data from: National Science Board. "Patents Awarded per 1,000 Individuals in Science and Engineering Occupations." Science and Engineering Indicators: State Indicators. Alexandria, VA: National Science Foundation. <https://nces.nsf.gov/indicators/states/indicator/patents-per-1000-se-occupation-holders>. Accessed on 7 December 2020.

Rico and the District of Columbia. This normalization accounts for differences in the size of states and their industrial structures. Even allowing for its small science and engineering sector, Hawai'i is ranked 49th. While patents are not a perfect measure of innovation, the data implies that Hawai'i just isn't very appealing for science and engineering, nor is it productive for innovation and entrepreneurship within science and engineering.

Like Hawai'i, the other states ranked poorly for patents are small and isolated without significant cities, and often dispersed populations: Alaska, Puerto Rico, Montana, South Dakota, Maine etc. Small scale and isolation make innovation less likely. And as a result, fewer innovators or entrepreneurs choose to live in these places and the engineers and scientists who do tend to be less innovative because there is fewer knowledge spillovers and less opportunity for serendipity. These rankings are also very stable over time. With one exception, Hawai'i has ranked between 47 and 49 out of 52 (states plus Puerto Rico and Washington D.C.) in every year since 2003.⁵

3. WHAT HAS BEEN DONE TO DIVERSIFY HAWAI'I? AND WHY DIDN'T IT WORK?

The desire to diversify is not new, but it has become especially salient during the Covid-19 pandemic. Hawai'i's *Statewide Comprehensive Economic Development Strategy* for the 2016 to 2020 period already notes the importance of diversification (Economic Development Alliance of Hawaii and State of Hawaii Office of Planning, 2016). Unfortunately, it offers mostly broad-brush aspirations that could apply to almost everywhere in America, rather than unique local initiatives. Many of these aspirations are good, and would support the economy in any US state. Affordable housing, repairing infrastructure, rebuilding electricity networks and broadband connectivity are all essential for supporting modern economies. There are a few uniquely Hawai'i gems in the strategy too that make sense. Ensuring Hawai'i interconnects with trans-Pacific internet cables takes strategic advantage of Hawai'i's location between Asia and the continental United States. The cluster approach is also important. But a cluster policy cannot be so broad that it covers the entire economy. These types of broad-brush aspirations could apply anywhere and are good practice to support an adequate business environment, but they do not address Hawai'i's *unique* challenges.

The business environment matters. Hawai'i frequently ranks poorly for the ease of doing business. Of course, policy makers in Hawai'i should do what they can to improve traffic, ensure taxes are not too high, support R&D, reduce unnecessary regulatory burdens, make it easy to start a business and improve housing affordability. But improving the business environment and cost of living isn't the panacea for the economy that many think it is. The most successful state economies in the US aren't the ones rated the easiest for doing business or with the lowest taxes or with streamlined regulatory processes. Those things help, but they're not the main determinants of *where* business takes place. For example, Amazon didn't choose to put its second headquarters in the state offering the greatest tax breaks. It chose Virginia and New York primarily for access to talented workers (Smale, 2018). Tax competition is a loser's game, because the businesses that it attracts are mobile that can also leave the moment their tax incentives disappear. These are businesses that aren't particularly attached to any location so choose according to their tax rates and incentives. These are businesses that cost tax payers money more than they create sustainable, long-term sources of employment or tax revenues.

That's not to say taxes don't matter at all, they do (Moretti and Wilson, 2017). While Senate Bill 56—raising Hawai'i's top income tax bracket to 16%, the highest in the country⁶—appears unlikely to survive

5 And probably earlier, but this was the earliest year in the dataset. The exception is 2007 when Hawai'i ranked 44.

6 See https://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=SB&billnumber=56&year=2021. The proposed 16% rate would apply to incomes over \$200,000. The current highest state income tax is in California at 13.3% for incomes over \$1,000,000.

referral to four House committees, budget pressures remain. When assessing new revenue proposals, it is important to recognize that such high tax increases would act to discourage such workers from remaining in Hawai'i and contributing to its nascent recovery. While California and New York have high income taxes and sustain vibrant tech industries despite their high tax rates, it is a privilege that tech businesses want to locate there for other reasons in spite of taxes, which Hawai'i unfortunately doesn't have. Rather, tax reform, ease of doing business, and reducing the regulatory burden are all desirable policies in their own right, both in Hawai'i and elsewhere, to support local economies, existing businesses and the community. But such reforms are not a diversification policy and do not *transform* an economy.

Like many states, Hawai'i has also implemented R&D tax credit policies in various attempts to encourage a tech industry. Unfortunately, poorly designed policies can make tax credits ineffective. In the past, Hawai'i's 100% tax credit attracted businesses simply seeking the cashflow of a refundable credit, rather than making genuine promising investments in innovation. Although the policy has been significantly improved, it is currently too small to contribute substantially to economic growth and its first-come-first-serve rationing approach might even discourage tech firms from applying for the credit (La Croix and Mak, 2021c). While I also support the recommendation by UHERO economists to raise the size of the tax credit cap, high-tech might not be the best target for Hawai'i, as I will explain.

The best businesses to attract are ones that want to be there regardless. And the best performing states do well simply because many people want to do business there, almost regardless of its business environment. The business environment helps, but it is not the main factor determining the location of economic activity. Once the fundamental institutions are in place, and many already are in place in Hawai'i simply by being part of the United States, the places that perform well do so simply because they are doing well. It's a circular dynamic that reinforces existing advantages and disadvantages. Understanding this helps to explain why New York and California can have some of the highest tax rates in the country yet still have some of the most innovative tech businesses and highest wage jobs. They are not necessarily great states for doing business from an economic policy perspective, but they are the places where people are more innovative because other innovative people live there and investors want to be near opportunities. Tech especially clusters in these places to benefit from knowledge spillovers when there is greater density of other tech businesses. These are places where initial advantages led to greater economic activity which led to *persistent* economic activity. Sometimes changes in technology or the economic environment create some disadvantages that start to outweigh persistence, such as in America's rust belt, but initial advantages are often the reason why our business centers or tech clusters remain where they are.

Many countries and states seeking diversification opportunities offer generous incentives to attract footloose industries that could change location. Intuitively, these industries are thought of as opportunities because they seem possible to attract and bring demand to both up- and down-stream industries. For example in Hawai'i, the film industry is discussed as economic activity that can switch location easily (La Croix and Mak, 2021b). Similarly, aspirations for a tech industry frequently hope to attract a major business to relocate. Some cities offer incentives to host significant events that attract a large number of visitors while others offer generous incentives to support large stadiums and attract professional sports franchises. But any film makers or tech firms or NFL franchises that might come to Hawai'i for an incentive are also easily attracted somewhere else. Ultimately, as with other tax competition policies, these are a race to the bottom where any state playing the game loses and taxpayers foot the bill.

It may still be possible to develop these as long-term local clusters, but a resilient diversification policy, counterintuitively, develops the *less* footloose businesses in those industries. These are businesses that remain even if other places offer generous incentives because Hawai'i has something uniquely special to offer. For example, Hawai'i's spectacular scenery is a magnet for film makers so policies that protect Hawai'i's natural treasures and govern their sustainable use provides support for a resilient content industry.

Similarly, Hawai'i is strategically located on trans-Pacific internet cables so elements of the tech industry that require internet traffic between Asia and the United States is a resilient niche where Hawai'i could have a strategic advantage. A visitor industry based on the sustainable use of Hawai'i's natural amenities doesn't require Hawai'i to win hosting rights for big events. And a sports industry built on social capital in the University of Hawai'i community is a viable long-term franchise.

Policy-makers and others have long argued that Hawai'i's geographic position makes it a natural gateway between Asia and the United States. In some ways this is true, but it is also misleading. Hawai'i was once a natural gateway, providing a hub for crossing the Pacific when planes didn't have the range that they do today. For shipping Hawai'i has provided a strategic position for the US Navy since it became a US territory. But these characteristics have not recently worked in Hawai'i's favor.

US shipping tends to go to Long Beach before trade is rerouted to coastal shipping along the West Coast or back to Hawai'i. The antiquated regulation of the Jones Act requires shipping between US ports to use US-built ships that are far more expensive than foreign-built ships. The distortion of the Jones Act might even contribute to the distorted industry portfolio in Hawai'i by acting as a tariff on ship transport, but not air. However, even if ships were allowed to dock in Hawai'i without being required to switch to a US built ship and crew, I doubt shipping patterns would change much, if at all. Economies of scale in shipping and increasing returns to scale in the very large market in California would likely continue to draw the vast majority of shipping-traffic to Long Beach. Some ships might stop in Hawai'i, and the cost of some imported food might improve, but it would be unlikely to significantly facilitate trade elsewhere in the United States in the same way that Long Beach does (Olney, 2019). In any case, much trade has switched to just-in-time inventory systems that require rapid air transport, which is unaffected by the Jones Act. But air transport is also attracted to large hubs. Planes to most destinations in Asia already fly direct between LAX and major centers in Asia. Since the mid 1990s, Hawai'i is no longer a natural hub, surrounded by short-haul flights feeding into long-haul Jumbos. So Hawai'i was once a gateway to the United States but the global economy has since bypassed Hawai'i, except as a destination to have a holiday. And while Hawai'i is well connected, it is mostly at the ends of the network.

Hawai'i has been able to diversify its source of visitors. Servicing business and convention travel makes use of many of the same capabilities that tourist visitors require. Facilities like Airbnb allow low-budget travelers to visit Hawai'i. Recent trends in air transport could also provide new opportunities for further diversification *within* the visitor industry. As airlines continue to opt for smaller, longer-haul and more fuel-efficient twin engine planes there may be an opportunity for more point-to-point and very-long-haul routes to become commercially viable. Many airlines have retired their 4-engine planes during the pandemic, so the trend may soon accelerate. This could lead to new sources of visitors to Hawai'i. It could also lead to some reduction in the use of hubs globally but also allow new smaller hubs to emerge. Hawaiian Airlines and Daniel K. Inouye International Airport have already taken note of this trend with new destinations in Texas and Florida. Indeed, flights from Honolulu to as far as Buenos Aires, Rio de Janeiro or Sao Paulo would not even be pushing against the current length of the world's longest international flights.⁷ At the moment tickets between East Asia and major cities in South America tend to fly via Europe and/or the Middle East and may require two stops. As a result, Honolulu is strategically positioned to potentially emerge as a hub between Asia and South America. This is a new opportunity with faster growth in the BRICS countries⁸ and a shifting center of gravity for international business towards China. Alternatively, Hawai'i makes a very desirable meeting place for deals between the growing economies of China and Brazil.

7 The world's longest flight is currently Singapore to Newark at over 9,500 miles. Honolulu to Rio de Janeiro would be 8,300 miles.

8 The BRICS economies refers to Brazil, Russia, India, China and South Africa. Occasionally Indonesia is included with a double I. These are large population countries with high growth rates. I expand on this opportunity in the next section and in Box 1.

Remote work has accelerated with the pandemic. Attracting remote jobs is now touted as an opportunity that Hawai'i could take advantage of because who wouldn't want to live in paradise? While remote work was already increasing before the pandemic (Clancy, 2020), it is not yet clear how remote work will go in the long term. Covid-19 restrictions have shown that remote work certainly works *temporarily* for teams that have already established trust in person. But for many occupations, building trust with new staff remotely will be difficult. Hiring will still occur remotely, but the increases in productivity that occur as people build trust will take longer, or not happen at all if employees are entirely remote.

Any jobs with even a few tasks that require face-to-face interaction can be remote some of the time, but workers in those jobs probably won't move to Hawai'i because they will still need to commute on a regular basis. So, as with tax incentives for footloose industries, the people (and employers) willing to work remotely in Hawai'i, are also very mobile. Most remote work is probably suited to people who can commute frequently, but not every day, and Hawai'i is probably too far away for workers requiring a weekly commute to San Francisco. The places that benefit most from remote work will be those that are affordable, but within a reasonable drive (or affordable flight). Remote work in Hawai'i could further distribute economic activity within the state and assist with reducing traffic. For example, we might see an increase in locals living in Kahului or Hilo and regularly commuting to Honolulu, though not every day, but remote work is unlikely to attract significant activity from the continent. Remote work is much like e-commerce and its trends have accelerated with the pandemic. For remote work, the greatest advantages probably accrue to large metropolitan areas and significant commuter towns that are maybe a two- or three-hour drive away, but unfortunately not Hawai'i. As a result, the diversification opportunity of remote work is probably smaller for Hawai'i than for other states and cities. Or at least Hawai'i's remote work strategy must account for the unique nuance of Hawai'i's geography.⁹

4. WHAT CAN HAWAII DO BETTER?

I've written a lot about how Hawai'i's small scale and isolated location affect its economy. Unfortunately, it means Oahu will probably never be a "Silicon Island". It just isn't as attractive for tech businesses as Seattle, Portland, Palo Alto or San Diego. Hawai'i is probably not going to be a significant gateway for business, travel or trade between Asia and the United States. It will never compete with the scale of Los Angeles or its proximity to the continental states. And remote work combined with regular infrequent commuting will be impractical from Hawai'i. But there are ways to promote diversification and growth that builds on the same principles that otherwise explain industrial concentration (Balland et. al. 2019). Some characteristics of Hawai'i that are uniquely better, economically, than say, California. Hawai'i's proximity to Asia, its cultural and social networks to both the United States and Asia, key changes in technology, and importantly, recent changes in the global economy could be suitable for particular niche capabilities.

Below I sketch out four potential initiatives to support Hawai'i's diversification strategy and long-term economic development. These initiatives identify areas of potential that have uniquely Hawai'i characteristics where barriers can be addressed and support can be provided for the missing pieces to allow these opportunities to flourish. As with any economic policy, it is important that such initiatives are monitored with measurable targets and reviewed at regular intervals, refined and adjusted to ensure Hawai'i is on track to meet its aspirations.

1. Strategic geography

My first recommendation is to focus on how Hawai'i's geographic characteristics and factor endowments are uniquely good for particular activities. Don't try to be Silicon Valley, be Hawai'i! I have two initial

⁹ I expand on this opportunity in the next section.

suggestions: International internet hosting and traffic; and facilitating transactions (and potentially travel) between Asia and South America. While Hawai'i is a long way from many South American countries, it might make for an attractive meeting place between two of the fastest growing BRICS countries, with all the benefits of US institutions to support business activity (see Box 1). These are just initial ideas, and certainly not new. The idea to focus on internet hosting or data centers has been around for decades. However, the opportunity for Hawai'i's geography is for a very specific type of internet traffic that may be finally emerging: international data transit to Asia. There will be many more bold proposals that take strategic advantage of Hawai'i's location to carve out a particular niche. It requires outside-the-box thinking based on deep knowledge of industries, geography and Hawai'i itself. The crucial question to ask—how is Hawai'i's location strategically better than anywhere else?

2. Remote work

My second recommendation is a uniquely Hawai'i take on the rise of remote work. Remote work finally seems to be viable. Unfortunately for Hawai'i, remote work is accelerating many of the trends that were already occurring with e-commerce and the greatest advantages are accruing to the largest globally connected cities and their hinterlands. But there are various niches of remote work that might be advantageous in Hawai'i. Covid has highlighted how easy it is to work remotely and still be productive. Lots of people are now talking about “working anywhere”. And while remote workers won't be able to access cheaper housing in Hawai'i, the non-monetary benefits of living in paradise are obviously attractive. Hawai'i might be able to attract *temporary* remote workers, taking a kind of sabbatical, or so-called “workation”, who choose Hawai'i despite a potential negative impact on their business. This is kind of like diversification of visitors to Hawai'i, but they will come for longer periods, pay taxes and do business with locals.

But rather than offering incentives to attract *any* remote workers, Hawai'i should ultimately try to attract remote workers that could have compatible know-how. These are most likely to be workers in areas where Hawai'i already has existing capabilities, even if their clients or colleagues are currently thousands of miles away on the mainland. If these people work remotely for a while in Hawai'i, they're also likely to serendipitously meet others already in Hawai'i who they can collaborate or work with from similar or related industries. These are the people with knowledge they can share and transfer to locals. These are people who are more likely to stop working remotely and set up new businesses in Hawai'i, creating job opportunities where locals can work, rather than returning to the continent or back to Asia. Incentives to work remotely in Hawai'i could be offered in return for participating in community-based events that would increase serendipity. Combined with support for R&D in relevant industries and new business incubators, Hawai'i could develop a start-up culture in its niche areas of expertise by starting with remote work.

Again, these ideas are not completely new. The “Movers and Shakas” program¹⁰ is designed to achieve some of these goals. Since many of these discussions are already taking place in Hawai'i, my key recommendation is with respect to the governance and policy processes that determine a vision for Hawai'i's future, as I describe in the next two recommendations.

3. Support strengths

This ties into my third recommendation – support Hawai'i's strengths. Diversification initiatives often fail because there are reasons the economy is so concentrated: those industries that boom each time are booming for a reason: comparative advantage. Investors want to back the industry with the most local opportunity and highest productivity. Investors don't want to back something that isn't as profitable. And other more mobile industries are crowded out of Hawai'i. But diversification doesn't mean Hawai'i stops doing what it is already good at.

10 See www.moversandshakas.org.

It means finding ways to transfer the existing capabilities that Hawai'i is already good at to other industries. Rather than being concentrated in single industries, Hawai'i becomes concentrated in a range of capabilities that are transferable between multiple industries. This means identifying Hawai'i's strengths, beyond the tourism sector as well as the variety of tasks, skills or professions within tourism and making sure these are adequately supported. R&D and innovation in these areas will help to rebalance Hawai'i's economy and the dominance of tourism by finding new ways to make productive use of the things Hawai'i is best at.

This isn't picking winners; these are professions and capabilities that have already picked Hawai'i anyway. Industry policy isn't about sustaining declining industries too long either. Such policies should focus on activities, rather than particular industries, so that the entrepreneurial discovery process can flourish and capabilities can transfer between industries as the economy evolves.

4. Smart diversification

Finally, diversification initiatives need to be "smart". Think of all the capabilities that go into tourism and convention travel. Tourism is a surprisingly diverse industry to branch out from, requiring a wide range of occupations and this is an advantage for Hawai'i. The wide combination of capabilities required to serve visitors can be leveraged for producing in other industries.

This is the essence of the EU's "smart specialization" policy (Foray 2011, McCann and Ortega-Argilés 2015). Smart specialization recognizes that regions cannot do everything, so need to focus on their core strengths and diversify into *related* areas that can use *existing* capabilities (Balland et. al. 2019). A report by UHERO in 2017 identifies a number of industry clusters in Hawai'i (Bonham and Coffman, 2017). A strategy for Smart Specialization supports the capabilities that *bind* these clusters, targets industries that can leverage existing clusters, and pursues new industries that make use of similar capabilities. In my research I'm currently developing an economic growth model based on this concept of combinations of capabilities that will help to identify and disentangle the implicit capabilities that generate industrial structures. Such a model will be highly useful for understanding Hawai'i's economic and industrial structure and defining a successful diversification strategy.

Smart Specialization or diversification is also not "picking winners" but supporting areas of opportunity, and still letting the entrepreneurial discovery process determine the winning businesses (Foray, 2009). Selecting areas of strength and potential diversification industries requires a bottom-up process in which locals determine the vision for Hawai'i. Such a vision will also incorporate Hawai'i's cultural values of Malama 'aina, and Malama Kai. It will understand the skills, tasks and capabilities of Hawai'i's existing residents. I've explored some initial ideas (See box 2) but the process of locals designing a local vision for Hawai'i and identifying concrete initiatives to address barriers to new industries, is vital to support values, strengths, and future of Hawaii.

5. WHAT NOW?

Diversification is a gradual process. Even Hawai'i's transition to tourism took some time before it was the dominant industry. I do not expect any "next big thing" to provide an alternative to tourism. The visitor industry is likely to continue to dominate Hawai'i's economy well into the future. Prosperity does not come from hurting tourism, though sustaining the visitor industry also requires sustainable use of Hawai'i's natural attractions. Rather than an alternative to tourism, diversification aims for:

- i. *resilience* to balance the dominance of the visitor industry by providing for alternative sources of prosperity when external shocks affect visitor numbers; and
- ii. new pathways for *productivity growth* and economic expansion when record tourist numbers might be reaching visitor capacity limits.

It will be a process of finding many new, relatively small opportunities in which Hawai'i can develop a specific niche in which it has sufficient scale and a unique Hawai'i factor that enables resilience. Government, community, private and stakeholder initiatives can all contribute to this process. Identifying new opportunities builds on *deep local knowledge* of Hawai'i's human capital, location, industry structure, culture and communities. Such a vision will understand the values, skills, tasks and capabilities of Hawai'i's residents. A resilient diversification strategy requires finding niche industries that can remain in Hawai'i long-term by having lots of Hawai'i connections. These include suppliers, knowledge spillovers, unique skills and social capital. People and businesses that are *embedded* in Hawai'i's communities will last longer than volatile footloose industries. The diversification strategy will look for the little bit extra that is needed for ventures in *new domains* to get off the ground.

It might not be quick, but the pandemic could yield an opportunity to kick-start and accelerate diversification. One of the barriers to new industries is getting people to take risks in new jobs and activities that they wouldn't usually pursue. However, in the aftermath of the deep pandemic recession that we are now in, many people are out of work and looking for new opportunities or a sea change. UHERO economists last year noted the problem of out-migration from Hawai'i (Mak and Tyndall, 2020) and UHERO forecasts consistently predict an increase in net out-migration over the next two years as the continent is expected to recover faster.¹¹ It would usually take a while to transfer a variety of capabilities to a new industry, but there is a short window for Hawai'i to retain many skilled residents by offering new opportunities. With the right support, people might be much more willing to take risks on new ventures and industries or to retrain in a new field. The overall diversification policy can be a gradual implementation of thought-out plans based on a vision for Hawai'i's future, but there is value in some initiatives starting as soon as possible. Both short and long-term initiatives require measurable targets, adaptation and the possibility to abandon them if targeted outcomes are not achieved but these first initiatives may just require a little more uncertainty and adaptation.

Interestingly, the *Comprehensive Economic Development Strategy* (CEDS) initially reads like smart specialization policy for US counties. Like Smart Specialization (European Commission, 2020), a regional CEDS strategy is a prerequisite for regions to access funding (Economic Development Alliance of Hawaii and State of Hawaii Office of Planning, 2016). The CEDS has similar intentions to Smart Specialization, though it is currently too lite on analysis and consultation and too broad brush in its proposals. A rigorous local governance process in Hawai'i to revise and update more specific CEDS strategies with concrete proposals would be relatively straightforward to implement: Each county could develop a vision for economic development that supports its strengths and diversifies into related activities that make greater and broader use of its capabilities. The vision will identify potential opportunities and requirements for funding to address the reasons why certain industries do not yet exist. It will identify new activities, domains and capabilities that are common to more of its potential opportunities. Initiatives for R&D, training or critical infrastructure can then support those activities, domains and capabilities such that the entrepreneurial discovery process allows the market to determine the most productive ideas. And by mirroring the existing federal process, federal infrastructure funding can also be directed by Hawai'i's communities in a more strategic way. A long-term *smart* diversification strategy requires rigorous analysis, consultation and governance. A successful vision for a diversified Hawai'i is not a process that simply hands out support to the loudest voices, nor is it imposed top-down by governments. It's not a vision by outsiders from Hawai'i or new arrivals like myself nor is there a single charismatic leader who has all the answers. It is not a predetermined prescription of alternatives to tourism. Developing an effective vision and strategy requires a transparent and rigorous governance process that is designed for the purpose of *revealing and developing* this local vision for Hawai'i based on deep local and industry knowledge, without any prioritized notion of what that vision might be. Equally, the management of this process requires a *commitment to a well-defined objective process*, rather than specific outcomes or initiatives. By supporting such initiatives in the

¹¹ See UHERO Forecasts for the State of Hawaii here <https://uhero.hawaii.edu/category/forecast/>

communities that actively engage in the process and make concrete proposals, the strategy can help nudge Hawai'i towards the more diversified economy the community desires.

A *bottom-up* diversification process to create a vision for transforming Hawai'i's economy for a more resilient future while maintaining its strengths is something that all locals could get behind. It enables new opportunities, allows market processes to determine economic outcomes while sustaining existing strengths. It's a process that requires many local entrepreneurs, businesses, stakeholders, universities and communities to think beyond the activities that they are already passionate about and think about what else they are capable of. It leverages Hawai'i's existing capabilities and characteristics to Hawai'i's advantage. It asks "what could Hawai'i be really good at that is unique to Hawai'i?"

Box 1: Strategic geography

International internet hosting and traffic: Connectivity to multiple trans-pacific internet cables make it a potential location for data centers to host international web-based services. This not just any internet services. Most internet traffic in America is domestic so it doesn't need international transit across undersea cables in the Pacific. Hawai'i will be unlikely to host services provided to the continental states. But any American internet business wanting to serve markets in Asia can offer a better service, with all the trimmings of US institutions to protect its product, by hosting its service in Hawai'i. It would also provide a stepping stone with lower risk for US businesses to expand internationally. Broadband hasn't been advantageous in Hawai'i in the past because Hawai'i's location was not strategically better than California. But the expansion of Asia's tiger economies in recent decades means that Hawai'i is now strategically well placed for a focus on international internet traffic to Asia. Even when travelling at the speed of light on fiber-optic cables, distance still matters. It's not the full-blown tech industry that previous R&D tax credits failed to attract, it's a unique niche that leverages Hawai'i's location to its advantage.

In this way, Hawai'i could become a gateway to Asia for bits and bytes. For example, you could find Netflix and HBO hosting services in Hawai'i to supply streaming services to countries in Asia where the institutions are not sufficiently reliable or trustworthy to risk expensive investments. Start-ups could build on their expertise to set up new services to new places. As in the existing Comprehensive Strategy this should be supported by the Hawai'i government providing incentives to make sure that trans-Pacific cables connect with Hawai'i. But they should go further than only providing the necessary infrastructure for cables to land in Hawai'i and provide adequate incentives for co-investment in both landing cables and establishing data center sites. This only needs to be temporary, because once a significant internet traffic hub exists, those cables will want to stop in Hawai'i anyway, regardless of tax incentives.

One barrier to data centers has been the high cost of electricity in Hawai'i. But recent technological improvements mean Hawai'i can transition away from electricity generated by burning oil. The rapidly declining cost of renewable electricity sources such as solar, wind, and wave power are highly suited to Hawai'i's geography and climate with significant sunshine hours and consistent wind. While the Puna Geothermal power plant on the big island ceased to operate after a volcanic eruption, there is still likely to be significant potential for other cost-effective geothermal generation. And the deep ocean could provide an affordable cooling solution. Combined with the declining cost of battery storage, required due to fluctuating generation from some renewable sources, data centers in Hawai'i could become some of the most cost effective in the country with the right regulatory environment in both electricity and international broadband markets to support renewable generation, battery storage, and international connectivity.

Facilitating business transactions (and travel) between Asia and South America: Hawai'i might not be able to compete with the scale of Southern California to access the US market, but what about competing with Hong Kong, Singapore, Sao Paulo or Buenos Aires to support business between Asia and South America? China and Brazil are some of the fastest growing economies in the world. China buys vast quantities of iron ore from Australia but is looking to diversify its suppliers. And China is now a significant source of foreign direct investment in many developing countries. Hawai'i's professional services capabilities which support the large hotels and other tourism businesses, and a metro-area of almost a million people, could facilitate a share of business between South America and Asia.¹ Business requires trust, and this is especially true in Asia. Focusing on the South America-Asia link would also use Hawai'i's existing capabilities in convention travel to support face-to-face business deals. And sitting geographically central between two of the five BRICS countries,² there is significant time saved, less jet-lag and obvious other non-monetary benefits from facilitating the face-to-face portion of business transactions in Hawai'i—once again, with all the benefits of US institutions providing economic security to govern business deals. Hawai'i might be a gateway to Asia, but not necessarily for the continental United States. Instead Hawai'i could identify as a gateway between Asia and South America. Rather than ask "how can Hawai'i be more like Palo Alto?" We

1 For example, Oahu has a strong traded cluster in Insurance. See http://www.clustermapping.us/region-cluster/insurance_services/county/honolulu_county_hi.

2 The BRICS countries are a group of large middle income countries including Brazil, Russia, India, China and South Africa. Hawai'i could be in the center of 3 out of 6 if you include Indonesia as a 6th BRICS country.

could ask, “How can Hawai‘i be more like Singapore?”. In this scenario, Hawai‘i’s location is advantageous. Los Angeles doesn’t hold any geographic advantage, and Hawai‘i has unique capabilities to support the activity, provided it gets the regulatory regime right to combine financial and professional services with business travel, accommodation and amenities.

While there may be some required capabilities that are currently limited in Hawai‘i, such as Spanish or Portuguese language, and limited flights to South American cities, supporting the establishment of these capabilities is the proposed policy response required for the market to establish this new activity. This would start with Hawaiian Air expanding to new destinations, both as a potential visitor market and as a piece of infrastructure for Hawai‘i to connect with the world. The University of Hawaii already has the capacity to support training in language skills. And there is a growing Latino population (Davila, 2019). These countries are already and increasingly doing business between each other, but it might not take much for Hawai‘i to be the key facilitator in these transactions.

Box 2: Some (not necessarily new) ideas for *smart* diversification in Hawai‘i

Locals and specialists with far more local knowledge and specific industry experience than myself will determine the ultimate vision for Hawai‘i. These ideas are just conversation starters. Each diversification opportunity doesn’t have to be large. But it must be something Hawai‘i could be good at. Some possible ideas are as follows:

Remote international education: Hawai‘i’s time zone makes remote live classes for students in Asia possible. Combined with satellite campuses and occasional stays on campus at Mānoa, this is a more affordable option for international students to gain a degree from an American university than many mainland campuses. It leverages Hawai‘i’s R1 university reputation and the reputation of American tertiary education with Hawai‘i’s unique location. Existing capabilities in accommodation and hospitality would facilitate short term stays that would allow a mixed-delivery learning model that is very attractive. While past initiatives for remote international education to Hawai‘i have been met with difficulty, the Covid-19 pandemic offers new tools for serving remote students. That the idea is not new to Hawai‘i is also a strong sign of its potential. As a start, Hawai‘i should reexamine past failures and address specific issues.

New energy research: The unique combination of resources and small local electricity networks could make Hawai‘i the perfect location for electricity generators and network managers to try new energy technologies. By finding the right combinations of renewable generation, battery storage (maybe pumped hydro?), demand management and micro-grids, Hawai‘i becomes a proving ground for the clean energy transition. Many in Hawai‘i are already having this discussion. Recent policy provides support for green energy in Hawai‘i (Roberts, 2016). As the world shifts away from fossil fuels, Hawai‘i could be the world leader that everyone wants to learn from.

Remote logistics: While Hawai‘i isn’t an international trading hub, it has an advanced logistics capability for distribution throughout the islands. Combining these capabilities with international connectivity, Hawai‘i can offer services for remote supply chain management and logistics. Sophisticated systems are needed to manage logistics in challenging locations, and Hawai‘i is already good at this in its own back yard.

Fresh food: While agriculture is relatively small in Hawai‘i at the moment, land is scarce, and scale and isolation reduce the feasibility of large-scale agriculture, the climate and history of Hawai‘i suggest this could be a possible strength again. A revival in agriculture reduces Hawai‘i’s dependence on imports, but might also offer the potential for exports. The key to exports is finding ways to make it valuable given Hawai‘i’s location. I suggest three factors. The first is to target produce that must be delivered fresh, both locally to tourists and abroad. Frequent air transit would export fresh produce to Asian markets who pay a premium for fresh. Secondly, a focus on agriculture or fishing products that are unique to Hawai‘i. Hawai‘i already exports shrimp broodstock, but can Hawai‘i find products that are especially unique? For example, Australia exports fresh Tiger prawns and Moreton Bay Bugs. And thirdly, can Hawai‘i use sustainable production techniques that are unique to Hawai‘i? For example, Kānaka Maoli could, if they wish, design modern sustainable land, aquaculture and fisheries management systems based on traditional practices that could be branded as “Malama.” Produce that is certified as Malama could become known as the premier standard of fresh sustainable produce, both in Hawai‘i and in its export markets.

About the Author

Steven Bond-Smith is currently a Senior Research Fellow (Research Assistant Professor) at the Bankwest Curtin Economics Centre, Curtin University in Perth, Western Australia. Steven will join UHERO as an Assistant Professor in the fall.

REFERENCES

- Balland, P.-A., Boschma, R., Crespo, J., and Rigby, D.L. (2019) "Smart specialization policy in the European Union: relatedness, knowledge complexity and regional diversification," *Regional Studies*, 53:9, 1252-1268.
- Barron, K., Kung, E., and Proserpio, D. (2021) "The effect of home-sharing on house prices and rents: Evidence from Airbnb," *Marketing Science*, Vol. 40, Iss. 1., 23-47.
- Blainey, G. (2001) "The tyranny of distance: How distance shaped Australia's history," 21st century edition, Sydney, *Macmillan*. Original, 1968.
- Bond-Smith, S., and McCann, P. (2020) "A multi-sector model of relatedness, growth and industry clustering," *Journal of Economic Geography*, Vol. 20, Iss. 5, pp.1145-1163.
- Bond-Smith, S., McCann, P., and Oxley, L. (2018) "A regional model of endogenous growth without scale assumptions," *Spatial Economic Analysis*, vol. 13, no. 1, pp. 5-35.
- Bond-Smith, S., Dockery, A.M., Duncan, A., Kiely, D., and Salazar, S. (2019) "Future proofing the WA economy: A roadmap to industrial diversification and regional growth," *Bankwest Curtin Economics Centre, Focus on Industry Series*, No. 4.
- Bonham, C., Edmonds, C. and Mak, J. (2006) "The Impact of 9/11 and Other Terrible Global Events on Tourism in the United States and Hawaii," *Journal of Travel Research*. 45. 99-110.
- Bonham, C., and Coffman, M. (2017) A New Perspective on Hawaii's Economy: understanding the role of clusters," *University of Hawaii Economic Research Organization Report*, September.
- Catalini, C. (2017) "Microgeography and the direction of inventive activity," *Management Science*, Vol. 64, No. 9, 3971-4470.
- Clancy, M. (2020) "The case for remote work" *Economics Working Papers*: Department of Economics, Iowa State University.
- Davila, D. (2019) "Hawaii's growing Latino population", Honolulu Civil Beat, 2 Jan, available at <https://www.civilbeat.org/2019/01/hawaiis-growing-latino-population/>
- Destremau, K. and Siddharth, P. (2018) "How does the dairy sector share its growth? An analysis of the flow-on benefits of dairy's revenue generation," *NZIER final report to Dairy Companies Association of New Zealand*, New Zealand Institute of Economic Research, October.
- Economic Development Alliance of Hawaii and State of Hawaii Office of Planning (2016) Hawaii Statewide Comprehensive Economic Development Strategy: 2016-2020 Strategic Plan, *Prepared for U.S. Economic Development Administration*, October 31.
- European Commission (2020) "What is Smart Specialisation?," *S3 Platform*, available at <https://s3platform.jrc.ec.europa.eu/what-is-smart-specialisation->.
- Florida, R. (2005) "The world is Spiky," *The Atlantic Monthly*, October 48-51.
- Foray, D. (2011) "Smart specialisation: from academic idea to political instrument, the surprising destiny of a concept and the difficulties involved in its implementation" *Paper prepared for European integration process in the new regional and global settings*, Warsaw, October.
- Forman, C., and van Zeebroeck, N. (2019) "Digital technology adoption and knowledge flows within firms: Can the Internet overcome geographic and technological distance?," *Research Policy*, Volume 48, Issue 8, 2019, 1-16.

- Forman, C., and van Zeebroeck, N. (2012) "From wires to partners: How the internet has fostered R&D collaborations within firms," *Management Science*, Vol. 58, No. 8, 1549-1592.
- Hausmann, R. (2016) "Economic development and the accumulation of know-how," *Welsh Economic Papers*, 13-16.
- Hawai'i Tourism Authority (2020) Hawai'i Visitor Statistics Released for 2019, HTA Release (20-03), available at <https://www.hawaiitourismauthority.org/news/news-releases/2020/hawai-i-visitor-statistics-released-for-2019/>.
- La Croix, S. (2021) "Economic history of Hawai'i," *Oxford Encyclopedia for Business and Economic History*, (forthcoming).
- La Croix, S., and Mak, J. (2021a) "Reviving Agriculture to Diversify Hawaii's Economy," UHERO Research Brief, 21 January.
- La Croix, S., and Mak, J. (2021b) "Understanding the Role of the Hawaii Film/TV/Digital Production Tax Credit in Diversifying the Hawaii Economy," UHERO Research Brief, 15 March.
- La Croix, S., and Mak, J. (2021c) "The Hawaii research activity tax credit: Is it effective and how can it be improved?" UHERO Research Brief, 4 January.
- Liou, W. (2020) "Air Cargo in Hawaii's Economy 2020 Update," *Department of Business, Economic Development and Tourism, Research and Economic Analysis Division*, Government of Hawaii, December.
- Mak, J., and Tyndall, J. (2020) "Aloha 'Oe: Population migration between Hawaii and the U.S. mainland," UHERO Blog, available at <https://uhero.hawaii.edu/aloha-oe-population-migration-between-hawaii-and-the-u-s-mainland/>.
- McCann, P. (2007) "Sketching out a model of face-to-face interaction and economic geography," *Spatial Economic Analysis*, vol. 2, issue 2, 117-134.
- McCann, P. (2009) "Economic geography, globalisation and New Zealand's productivity paradox," *New Zealand Economic Papers*, 43:3, 279-314.
- McCann, P., and Ortega-Argilés, R. (2015) Smart Specialization, Regional Growth and Applications to European Union Cohesion Policy, *Regional Studies*, 49:8, 1291-1302.
- Moretti, E., and Wilson, D.J. (2017) "The Effect of State Taxes on the Geographical Location of Top Earners: Evidence from Star Scientists." *American Economic Review*, 107 (7): 1858-1903.
- Olney, M. (2019) Jones Act, UHERO Blog, available at <https://uhero.hawaii.edu/jones-act/>.
- Roberts, M. (2016) "Four years to improve renewable energy," UHERO Blog, available at <https://uhero.hawaii.edu/four-years-to-improve-renewable-energy/>.
- Smale, T. (2018) "5 Reasons Why New York and Arlington Were Amazon's Choice for HQ2," *Entrepreneur*, November, available at <https://www.entrepreneur.com/article/323478>.
- U.S. Bureau of Labor Statistics (2021) "State and Area Employment, Hours and Earnings: All states and selected industry supersectors," Retrieved on 16 March 2021.