The Impacts of Transportation and Travel Access on Rural Health in Hawai‘i

Part 1: Literature Review

University of Hawai‘i (UH) Rural Health Research and Policy Center

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Project Overview

The University of Hawaiʻi (UH) Rural Health Research and Policy Center (RHRPC) was established in 2022 to translate community health needs into policy solutions. Key partners in our work have included the Hawaiʻi State Rural Health Association, Office of Primary Care and Rural Health at the Hawaiʻi State Department of Health (HI DOH), the Hawaiʻi/Pacific Basin Area Health Education Center, Provider Shortage Crisis Task Force, and the Pacific Basin Telehealth Resource Center. Some of the community health needs identified to date that have formed the basis for RHRPC's work include the appropriateness of federal formulas for Hawaiʻi, such as in determining Medicare reimbursement rates and Health Professional Shortage Area (HPSA) designations and loan/scholarship awards, as well as the need for exemption of certain medical services from the state's General Excise Tax (GET).

Additionally, RHRPC has heard loudly and clearly from the community that transportation/travel access is one of the most important barriers to adequate health care, particularly in rural areas. Transportation is an important economic and social determinant of health (SDOH), impacting both individual and community health.[1] Upstream policy decisions in this area significantly impact downstream health outcomes.[2] For example, patients' access to reliable transportation can impact the ability to attend doctors' appointments or reach an emergency room, thereby impacting acute, primary/preventive, and specialty care. In a non-contiguous state like Hawaiʻi, where those on neighbor islands must often travel on airplanes across the ocean to access care, long travel times, airline unreliability, and travel/financial burdens challenge health care access and negatively impact health outcomes.

In 2024, RHRPC embarked on a multi-part project to study these issues through conducting a literature review; hearing directly from stakeholders about how transportation challenges impact rural health in Hawaiʻi; and then leveraging these insights to develop policy options to address the challenges. The completion of this project, entitled "The Impacts of Transportation and Travel Access on Rural Health in Hawaiʻi," is presented in four parts. Part 1 is a literature review regarding the impacts of travel and transportation access on rural health, both nationally and in Hawaiʻi. Part 2 is a report of our Stakeholder Insights from 40 interviewees in such fields as health care, transportation services, and insurance. Part 3 is a compilation of policy options to address transportation and travel access barriers and improve rural health in Hawaiʻi. Finally, Part 4 is a sub-report outlining specific issues and policy options regarding maternal-fetal telehealth.

[1] Lane, Leigh, Brandy Huston, and Chris Danley. *Connecting Transportation and Health: A Guide to Communication and Collaboration.* National Cooperative Highway Research Program, April 2019. https://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25Task105/NCHRP25-25Task105Guidebook.pdf.
[2] Ibid.

Executive Summary

Hawaiʻi is comprised of six publicly inhabited islands with the most rural islands being Molokaʻi (population = 7,404) and Lānaʻi (population = 3,193).[3] Many neighbor island residents travel to the most populated island of Oʻahu to seek any type of healthcare service, especially specialty care.[4] While there are healthcare services offered on neighbor islands, the capabilities and capacity may be insufficient due in part to the provider workforce shortage, small number of facilities, and limited technology. Given these challenges, rural communities tend to have higher rates of morbidity and mortality.[5]

While it is typical for neighbor island residents to fly to Oʻahu for emergency and non-emergency healthcare services, many people face issues when it comes to transportation. Transportation issues are exacerbated for the islands of Molokaʻi and Lānaʻi who only have 1-2 commercial airlines servicing the islands; one airline which has frequent delays and cancellations. When flights are delayed or canceled, neighbor island residents are not able to receive their highly needed care and must reschedule with their Oʻahu-based provider, which can take up to several months, and can cause additional health issues.

Over the course of this project, four topic areas were defined as key categories when discussing transportation and healthcare access which included Emergency Medical Services (EMS), Non-Emergency Transportation (NEMT), insurance coverage, and maternal fetal (MF) health.

Oʻahu is the only Hawaiian island with a Level 1 Trauma Center.[6] As such, many patients must be transported via air ambulance to Oʻahu in emergent cases. In addition to air ambulance transportation issues, ground ambulances must often traverse extended distances to reach patients in more rural and remote areas and then return back to medical centers, potentially compromising the timeliness and effectiveness of emergency medical care delivery and related patient outcomes. The limited number of ambulances across the state may be due to funding limitations, which further underscores the vulnerability of these communities to prolonged response times during critical incidents.

Patients who need to travel for routine appointments from the neighbor islands of Hawaiʻi to Oʻahu most often need to fly as there is no inter-island ferry system (except limited services between Maui and Lānaʻi). Flights are expensive (approximately $120 to $320) and are often unreliable, particularly on Molokaʻi and Lānaʻi, leading to decreased transportation access. To minimize patient travel, healthcare providers have been flown to neighbor islands to provide care, however, this solution is expensive and unsustainable as costs almost always fall onto the receiving facility. In addition, the traveling providers typically fly commercially and deal with

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[3] Hawaii Visitors and Convention Bureau. "Eight Major Islands." Hawaii Visitors and Convention Bureau. https://www.hvcb.org/school-report/eight-major-islands/.
[4] Health Resources and Services Administration, Maternal and Child Health Bureau. "Hawaii – 2024 – III.B. Overview of the State." Title V Information System. https://mchb.tvisdata.hrsa.gov/Narratives/Overview/55b1857c-5786-45c3-901c-ee0fca78c901.
[5] Rural Health Information Hub. 2024. "Rural Health Disparities." https://www.ruralhealthinfo.org/topics/rural-health-disparities.
[6] Queen's Medical Center. "Emergency Services." https://www.queens.org/locations/hospitals/qmc/services/emergency/.

frequent cancellations and delays, therefore resulting in cancelled appointments with their back-to-back scheduled patients and unnecessary time at the airport.

Typically, Hawaiʻi residents do not have NEMT benefits through their insurance, or are significantly undercovered. Medicaid is one of the only insurers that fully covers NEMT; those without Medicaid are often left to pay for all transportation-related costs. These costs are often burdensome for those whose income is too high to qualify for Medicaid but too little to be able to afford direct transportation costs and related costs. In addition to expensive flight costs for neighbor island residents, patients also have incurred costs for ground transportation, food, and lodging while on Oʻahu. While these incurred costs may be covered by Medicaid plans generally, other insurance plans have yet to cover these types of transportation-related costs.

MF routine care services and delivery is highly limited in rural areas of Hawaiʻi (Lānaʻi mothers are unable to give birth in a medical setting on island except for rare emergency situations), with many specialists only residing on the island of Oʻahu and some on the island of Maui. High-risk pregnancies are highly encouraged to relocate to Oʻahu or Maui, otherwise they might have to be medevacked during labor. In addition, given the limited prenatal services, many pregnant women forgo early and adequate prenatal care when pregnant or receive care from a PCP as opposed to an OB specialist. In Hawaiʻi, pregnant women are covered under Medicaid plans for up to 12 months after birth or pregnancy termination. However, for those that are forced to relocate to another island to complete their pregnancy, lodging and other costs are not covered by all insurances, with the expenses falling on the patient.

It is clear that rural residents in Hawaiʻi face unique transportation challenges including long EMS response times, limited trauma and maternity care facilities, unreliable NEMT, and inadequate insurance coverage for travel-related expenses. Addressing these transportation barriers will require multi-faceted policy options that improve EMS and air transport infrastructure, improve NEMT processes and increase airline reliability, expand insurance coverage for NEMT, enhance MF care access, and invest in telehealth services to reduce the need for travel.

Introduction

Access to transportation is a critical social determinant of health, particularly in rural communities where distance and infrastructure challenges often limit healthcare access. In Hawaiʻi, where many residents live on remote islands, transportation barriers significantly impact health outcomes by affecting many areas, including emergency medical services (EMS), non-emergency medical transportation (NEMT), and insurance coverage for travel-related healthcare costs. Rural residents frequently face long travel times, high financial burdens, and unreliable airline services when seeking essential and specialized care, particularly for maternal-fetal (MF) health needs.

This literature review examines the intersection of transportation and travel access on rural health in Hawaiʻi, highlighting the ways in which these challenges contribute to disparities in healthcare access.

Literature Review

Hawaiʻi is composed of eight separate islands, some of which are quite small (i.e., the populations of Molokaʻi and Lānaʻi are 7,404 and 3,193, respectively[7]). Certain critical healthcare services are primarily located only on the most populous island of Oʻahu. In Hawaiʻi, when compared to urban areas, rural areas have worse overall health outcomes,[8] higher rates of mortality,[9] and higher shortages of primary and specialty healthcare providers.[10]

Anecdotally, residents in Hawaiʻi often hear reports of patients and health providers facing challenging situations with regard to transportation and travel access and health care, particularly in rural areas. News articles abound with heartbreaking stories of the impacts that limited transportation and travel access have had on patients and providers. For example, some recent news articles have been titled as follows: "*Hawaii's Struggle To Provide Health Care For Rural Islands Nearly Turned Tragic For This Expectant Mom*" (Honolulu Civil Beat),[11] *"Unreliable Transportation Decreases Dental Services"* (The Molokai Dispatch),[12] *"Transportation Tribulation"* (Ka Wai Ola),[13] and *"[Airline] Flight Disruptions Highlight Service Vulnerabilities."* (Honolulu Star Advertiser).[14]

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[7] Hawaii Visitors and Convention Bureau. "Eight Major Islands." *Hawaii Visitors and Convention Bureau.* https://www.hvcb.org/school-report/eight-major-islands/.

[8] University of Hawaiʻi Economic Research Organization. Rural Health Disparities in Hawaiʻi. Honolulu: University of Hawaiʻi, August 2024. https://uhero.hawaii.edu/wp-content/uploads/2024/08/RuralHealthDisparitiesInHawaii.pdf

[9] Ibid,

[10] Hawaiʻi/Pacific Basin Area Health Education Center. 2024. *Hawaiʻi Physician Workforce Assessment 2024 Annual Report.* John A. Burns School of Medicine, University of Hawaiʻi at Mānoa. https://ahec.hawaii.edu/_docs/2024-physician-workforce-report.pdf.

[11] Lyte, Brittany. "Hawaii's Struggle To Provide Health Care For Rural Islands Nearly Turned Tragic For This Expectant Mom." Honolulu Civil Beat, June 18, 2023. https://www.civilbeat.org/2023/06/hawaiis-struggle-to-provide-health-care-for-rural-islands-nearly-turned-tragic-for-this-expectant-mom/.

[12] Chung, Boki. "Unreliable Transportation Decreases Dental Services." The Molokai Dispatch, August 2, 2023. https://themolokaidispatch.com/unreliable-transportation-decreases-dental-services/.

[13] Fernandez-Akamine, Puanani. "Transportation Tribulation." Ka Wai Ola, July 1, 2023. https://kawaiola.news/cover/transportation-tribulation/.

[14] Schaefers, Allison. 2025. "Mokulele Flight Disruptions Highlight Service Vulnerabilities." Honolulu Star-Advertiser, January 16, 2025. https://www.staradvertiser.com/2025/01/16/hawaii-news/mokulele-flight-disruptions-highlight-service-vulnerabilities/.

Over the course of this project, four topic areas emerged as key categories in the conversations and research: EMS, NEMT, insurance coverage, and MF health, in addition to other topics woven through these areas, such as telehealth and workforce shortages. These four main themes were created deductively and were informed by site visits and community meetings, field observations, and in-depth research of existing literature and data.

The following sections provide context for the challenges faced by rural communities with regard to transportation and travel access within the categories outlined above–EMS, NEMT, and insurance coverage–with a focus on MF health woven through each category. A further literature review of telehealth can be found in Part 4 of this report series. Each category gives an overview of the challenges at a national level, then delves into issues specific to Hawaiʻi.

We incorporated further details on MF care throughout this project as it is a critically important service with regard to rural health across the nation. There were over 37.9 pregnancy-related deaths per 100,000 in U.S. rural areas in 2020, compared to 31.2 deaths per 100,000 in micropolitan areas.[15] Rural women have higher rates of maternal morbidities such as acute renal failure, pulmonary edema, and sepsis compared to urban areas, and the gap continues to grow over time.[16] These health outcomes are due in part to lack of access to MF care in rural areas, requiring increased travel for access to care, which can be dangerous to both mother and fetus, as well as being costly and overwhelming for the mother. When transportation access is limited, appointments might be skipped, delayed, or eliminated entirely, which can lead to negative and costly outcomes such as postpartum depression, premature births, and increased maternal morbidity and mortality. At this time, about half of rural counties in the U.S. do not have access to local hospital obstetric (OB) services, as rural hospitals with OB services continue to close their doors across the country.[17]

In Hawaiʻi, MF healthcare access is an important issue, as 23.4% of women in the state have no birthing hospital within 30 minutes of where they live, compared to less than 10% nationally.[18] Additionally, over 22% of those in need of such services have either inadequate or no access at all to prenatal care, compared to less than 15% nationally.[19] The small neighbor island of Lānaʻi has no birthing facility, and almost all complex cases across other neighbor islands must be transported via airlines or emergency air evacuation to Oʻahu or Maui,[20] or, if necessary, transferred to a hospital in the continental United States.

[15] Centers for Disease Control and Prevention (CDC). "Pregnancy Mortality Surveillance System." https://www.cdc.gov/maternal-mortality/php/pregnancy-mortality-surveillance/#cdc_survey_profile_how_the_information_is_used-pregnancy-related-deaths-by-urban-rural-classifications.
Katy Backes Kozhimannil, Julia D. Interrante, Carrie Henning-Smith, and Lindsay K. Admon
[16] Admon, Lindsay K., Henning-Smith, Carrie, Interrante, Julia D., Kozhimannil, Katy Backes. "Rural-Urban Differences In Severe Maternal Morbidity And Mortality In The US, 2007–15." *Health Affairs* 38, no. 12 (December 2019): 798–805. https://doi.org/10.1377/hlthaff.2019.00805.
[17] Rural Health Information Hub. "Maternal Health." https://www.ruralhealthinfo.org/topics/maternal-health
[18] March of Dimes. "Where You Live Matters: Maternity Care in Hawaii." 2023. https://www.marchofdimes.org/peristats/assets/s3/reports/mcd/Maternity-Care-Report-Hawaii.pdf.
[19] Ibid.
[20] Ibid.

Emergency Medical Services (EMS)

In the United States, access to EMS (including ground and air ambulances) depends greatly on where someone lives. Those in rural areas of the country often experience higher delays in transportation and care for emergency medical situations.[21] A 2017 study evaluating emergency services in rural areas of the United States found that in the first 24 hours after an injury requiring emergency transportation, rural patients experienced higher mortality rates compared to their urban counterparts.[22] This disparity in time required for EMS units to reach the scene of the emergency has a significant impact on the rates of survival.[23] In general, data shows that shorter travel times to care are associated with improved outcomes for patients that required emergency care.[24]

Access to and distance from major trauma centers is another significant divide in emergency services between rural and urban areas. Less than 30% of rural patients needing life-saving medical treatment are initially transported to major trauma centers, compared to almost 90% of urban patients, as indicated by 911 calls.[25] On average in the United States, the time from a 911 call to the arrival of EMS to the scene is seven minutes; however, for rural areas, this time jumps to 14 minutes, and one in every 10 calls takes 30 minutes.[26] These data illustrate that for rural patients, EMS is not as adequate when compared to urban areas, and change is needed to provide more timely healthcare access.

EMS in Hawaiʻi

The geographic context in which emergency services operate in the state of Hawaiʻi is critical to understanding the needs of the population. There are seven Hawaiian islands inhabited by people. Of those, only one island (Oʻahu) has a Level 1 Trauma Center (The Queen's Medical Center), indicated by the red dot in Figure 1. Patients on neighbor islands who require care at a Level 1 Trauma Center must be medically evacuated by air to Oʻahu. Currently, most inter-facility aeromedical emergency transports are conducted by Hawaiʻi Life Flight (HLF), a private for-profit air ambulance organization.

The State of Hawaiʻi hosts one of the only 911 EMS and Trauma Systems in the country that does not have a state-funded Emergency/Trauma Transfer Center that ensures patients receive emergency transport between facilities. This type of centralized emergency medical operations communication center is a vital part of any EMS system. Instead, in Hawaiʻi,

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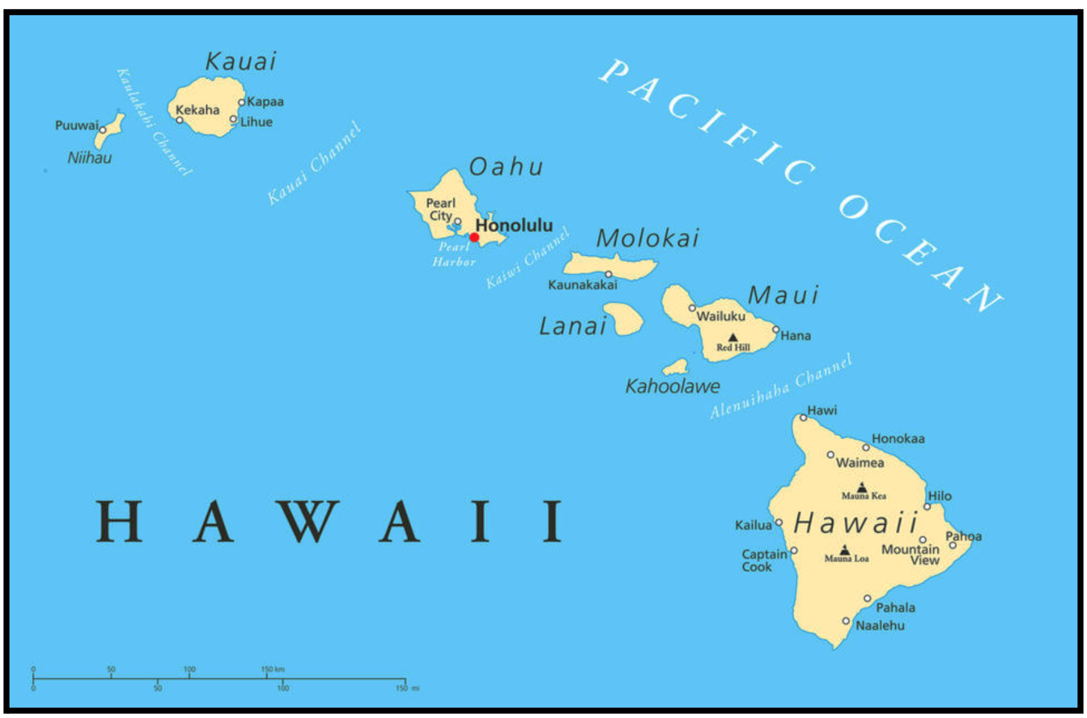
[21] Newgard, Craig D., Robert Fu, Edward Bulger, Brian Johnson, James Smith, and Laura Adams. "Evaluation of Rural vs. Urban Trauma Patients Served by 9-1-1 Emergency Medical Services." *JAMA Surgery* 152, no. 1 (2017): 11–18. https://doi.org/10.1001/jamasurg.2016.3329.
[22] Ibid.
[23] He, Zhi, Xueqin Qin, Yufeng Xie, and Jian Guo. "Service Location Optimization Model for Improving Rural Emergency Medical Services." *Transportation Research Record* 2672, no. 32 (2018): 83–93. https://doi.org/10.1177/0361198118794431.
[24] Clark NM, Hernandez AH, Bertalan MS, et al. Travel time as an indicator of poor access to care in surgical emergencies. JAMA Netw Open. 2025;8(1):e2455258. doi:10.1001/jamanetworkopen.2024.55258
[25] Newgard, Craig D., Robert Fu, Edward Bulger, Brian Johnson, James Smith, and Laura Adams. "Evaluation of Rural vs. Urban Trauma Patients Served by 9-1-1 Emergency Medical Services." *JAMA Surgery* 152, no. 1 (2017): 11–18. https://doi.org/10.1001/jamasurg.2016.3329.
[26] Johnson, Arianna. "Rural EMS Patients Face Worse Health Care – And Too Many Sirens, Study Finds." *Forbes Innovation*, February 13, 2024. https://www.forbes.com/sites/ariannajohnson/2024/02/13/rural-ems-patients-face-worse-health-care-and-too-many-sirens-study-finds/.

hospitals and private air medical companies coordinate transfers, which ultimately results in less streamlined communication.

Currently, each county operates 911 systems differently. For Maui County, there is a cost-sharing agreement between HI DOH and the county to contract with REACH Air Medical Services, a private air ambulance company, to provide emergency helicopter aeromedical ambulance transport services for Maui County. Honolulu County is serviced by HLF but does not have a specified 911 helicopter response. This means ground ambulances are first to the scene for 911 calls. This often results in delays transporting critical injured patients from the scene of injury or acute illness to the final trauma level hospital. Hawaiʻi County Fire Department operates one 911 helicopter, but this is often not in service due to crew and staff shortages. Hawaiʻi County is also serviced by HLF, but only for inter-facility transfers. Kauai County does not have an aeromedical 911 provider, so almost all 911 calls are responded to by ground ambulances and then subject to inter-facility transfer if a higher level of care is needed.

The Hawaiʻi State Department of Transportation (HI DOT) also interacts with Hawaiʻi's EMS systems. While HI DOT is not a direct provider of emergency medical services, its Airports Division plays a key enabling role in supporting inter-island air ambulance operations such as through: facilitating emergency landing access and prioritization at rural airports, coordinating with HI DOH and HLF for logistical needs and airport operations, and investing in infrastructure to accommodate additional or future EMS providers.

Figure 1: Level 1 Trauma Center Location in Hawaiʻi[27]



Red dot in Honolulu represents the location of Level 1 Trauma Center

[27] National Institute of Standards and Technology (NIST). "Hawaiian Islands." 2025. https://www.nist.gov/image/hawaiian-islands.

Inter-island Emergency Transport and Air Ambulance Providers

HLF operates both fixed wing and rotor wing ambulances, and has vehicles stationed on all islands except for Lānaʻi. However, only Hawaiʻi Island and Oʻahu have multiple vehicles stationed on-island.[28] This leads to issues experienced with surge capacity, for if two critical injuries happen on the same island, the second patient must wait for the first to return, which can take hours and delay critical care. There have been multiple attempts in recent years to contract with additional air ambulance providers, but none have come to fruition at this time.

The reliance on a single provider of air ambulances for inter-facility transports limited capacity of air vehicles in Hawaiʻi. This limited capacity may translate to a lack of available air ambulances when higher needs occur.[29] Such limited capacity was amplified after a tragic accident in December 2022, when a HLF air ambulance crashed on a flight from Maui to Hawaiʻi Island, killing the pilot and two healthcare providers. After the crash, HLF grounded all planes and temporarily stopped services. The Army National Guard and Coast Guard were called in to provide emergency medical air transportation in the meantime.[30] Currently, the National Guard can still be activated as a stopgap measure in case of dire emergencies, although this is an expensive and inefficient system to implement.

Additional strain on inter-facility transports is due to the State of Hawaiʻi being a Certification of Need (CON) state for EMS inter-facility transports, meaning that formal state approval is needed for organizations to operate EMS inter-facility transport services, ensuring that such services are deemed necessary before being established or expanded. This has also caused issues with bringing in competitors into the market to assist with non emergency transports and inter-facility transports.

Section §11-72-17 of the Hawaiʻi Revised Statute (HRS) states that adequate EMS service would constitute the average response time for an air or ground ambulance in Hawaiʻi being: urban (10 minutes); urban/rural (15 minutes); and rural (20 minutes).[31] In 2024, Senator Ronald Kouchi of the Hawaiʻi State Legislature introduced SB3126, a bill that would create a partnership between HI DOH and the counties of Hawaiʻi, Kauaʻi, and Maui to share the costs of purchasing and operating helicopters capable of inter-island emergency medical transportation.[32] While the bill did not pass, proponents have shared the need for such a program given the challenges that come from just one air ambulance provider and limited capacity.[33]

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[28] Hawaii Life Flight. *Hawaii Life Flight*. https://www.hawaiilifeflight.com/locations
[29] Lyte, Brittany. "Hawaii's Struggle to Provide Health Care for Rural Islands Nearly Turned Tragic for This Expectant Mom." *Honolulu Civil Beat*, June 18, 2023.
https://www.civilbeat.org/2023/06/hawaiis-struggle-to-provide-health-care-for-rural-islands-nearly-turned-tragic-for-this-expectant-mom/.
[30] Star-Advertiser Staff. 2022. "U.S. Coast Guard Responding to Report of Downed Aircraft in Maui Channel." *Honolulu Star-Advertiser*, December 15, 2022.
https://www.staradvertiser.com/2022/12/15/breaking-news/u-s-coast-guard-responding-to-report-of-downed-aircraft-in-maui-channel/.
[31] Hawaiʻi State Department of Health. "Emergency Medical Ambulance Services." *Emergency Medical Services & Injury Prevention System Branch*, 1985.
https://health.hawaii.gov/ems/home/chapter-72-state-comprehensive-ems-systems-rules-and-regulations/subchapter-3-system-component-standards/emergency-medical-ambulance-services/.
[32] Hawaii State Legislature. "SB 3126 (2024)." *Hawaii State Legislature Archives*.
https://www.capitol.hawaii.gov/session/archives/measure_indiv_Archives.aspx?billtype=SB&billnumber=3126&year=2024.
[33] DeMasters, Tiffany. "State Legislature Discusses Funding Air Ambulance Program." *Kaua'i Now*, March 17, 2024.
https://kauainownews.com/2024/03/17/state-legislature-discusses-funding-air-ambulance-program/#:~:text=The%20new%2.

EMS and Primary Care

The need for adequate air ambulance services is amplified by the lack of adequate primary care in rural areas. Currently, there is a shortage of over 160 full-time equivalent primary care providers in the state of Hawaiʻi,[34] with those in rural areas facing the most severe consequences of those shortages. When rural areas lack sufficient access to clinical care, public health services, and primary care physicians (PCPs), the role and importance of emergency services becomes significantly amplified. PCPs are crucial for providing routine and preventive healthcare, managing chronic conditions, and addressing non-life-threatening medical issues promptly. The scarcity of PCPs in rural areas exacerbates several healthcare challenges for patients, but also puts a large burden on the few available local PCPs as they must care for a larger number of patients and also provide non-primary care services. Emergency services in rural areas must often fill the gap left by the inadequate primary care infrastructure. Residents may experience delays in receiving essential medical attention for conditions that, if left untreated, could escalate into emergencies. Conditions such as diabetes or hypertension require ongoing management and monitoring, which PCPs and other primary care providers typically provide through regular check-ups and consultations. Without access to these services, individuals may neglect their health until symptoms worsen, potentially leading to emergency situations that require prompt intervention by EMS, further emphasizing the need for a robust EMS system for these underserved areas.

Intra-island Emergency Services

In 1978, the Hawaiʻi State Legislature enacted legislation mandating the HI DOH to establish and oversee EMS across the state.[35] Licensing of EMS personnel operating ambulances is managed by the Hawaiʻi Department of Commerce and Consumer Affairs (DCCA), while the Hawaiʻi Medical Board defines practice scopes, levels, and required supervision.[36] HI DOH's EMS and Injury Prevention Systems Branch is required by statute to provide EMS education curricula for licensure and continuing medical education (CME), designate and certify trauma and specialty centers, license ambulances, oversee communications, coordinate 911 emergency transportation contracts, and facilitate emergency medical and critical care services.[37] They are also required to maintain the EMS Electronic Patient Care Record (ePCR) / Electronic Health Record system for all 911 EMS providers.

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[34] University of Hawaii. *Physician Workforce Annual Report 2023*. https://www.hawaii.edu/govrel/docs/reports/2023/act18-sslh2009_2023_physician-workforce_annual-report_508.pdf.
[35] Hawaii Department of Health, Emergency Medical Services Division. "§11-71-8 Development Criteria and Plans." *State Comprehensive EMS Systems Rules and Regulations.* https://health.hawaii.gov/ems/home/chapter-72-state-comprehensive-ems-systems-rules-and-regulations/subchapter-2-system-development-criteria-administration-and-components/%C2%A711-71-8-development-criteria-and-plans/.
[36] "State of Hawaii: A Reassessment of Emergency Medical Services." October 18, 2024. National Highway Traffic Safety Administration. https://health.hawaii.gov/opppd/files/2021/02/NHTSA-Report-with-letter.pdf
[37] Ibid.

Under statutory authority (321-223, HRS), HI DOH is empowered to administer and maintain the state's comprehensive EMS system.[38] Statewide ambulance services are contracted for 911 Advanced Life Support Services, with single providers designated per county:

1. City and County of Honolulu: City and County of Honolulu EMS
2. County of Hawaiʻi: Hawaiʻi County Fire Department
3. County of Kauaʻi: International Life Support Inc. (American Medical Response)
4. County of Maui (serving Maui, Lānaʻi and Molokaʻi): International Life Support Inc. (American Medical Response)[39]

These contracts ensure full cost recovery for the contracted providers, with Hawaiʻi employing a billing and collection system for all emergency ambulance transports based on a state-mandated fee schedule. The state also mandates a unified pre-hospital electronic patient care reporting system to streamline medical data management across EMS providers.[40]

In rural areas of Hawaiʻi, the distribution of ambulances often aligns with the geographical spread of population centers. Distribution of ambulances are ultimately approved by the Hawaiʻi State Legislature, although the counties collaborate with HI DOH and others to request ambulances in certain areas. The current geographic distribution of ambulances in Hawaiʻi presents significant challenges due to the absence of proximate emergency transportation services in certain remote areas. Consequently, ambulances must often traverse extended distances to reach patients in more rural and remote areas and then return back to medical centers, potentially compromising the timeliness and effectiveness of emergency medical care delivery and related patient outcomes.

For instance, in certain expansive regions on Oʻahu such as Waiʻanae, Nānākuli, and Kahuku (spanning Sunset Beach to Kāneʻohe Town), each area is served by only one ambulance. This limited coverage extends along entire coastlines, exacerbating delays in emergency response when ambulances are engaged in active calls. Molokaʻi and Lānaʻi each only have a single EMS resource covering 911 and inter-facility transports on-island.[41] The absence of additional ambulances stationed nearby as backup, which may be due to funding limitations, further underscores the vulnerability of these communities to prolonged response times during critical incidents.

EMS and Maternal-Fetal (MF) Health

MF care delivery is highly limited in rural areas of Hawaiʻi, with many specialists only residing on the island of Oʻahu and some on the island of Maui. For pregnancies that are deemed high-risk, relocation from neighboring islands to Oʻahu or Maui for a period of time is often

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[38] Hawaii State Legislature. "§ 321-223. Definitions." *Hawaii Revised Statutes.* https://www.capitol.hawaii.gov/hrscurrent/Vol06_Ch0321-0344/HRS0321/HRS_0321-0223.htm.
[39] "State of Hawaii: A Reassessment of Emergency Medical Services." October 18, 2024. National Highway Traffic Safety Administration. https://health.hawaii.gov/opppd/files/2021/02/NHTSA-Report-with-letter.pdf
[40] Ibid.
[41] Ibid.

necessary to receive adequate care. For those that do not relocate, or for births that have unexpected complications, emergency air evacuation to Oʻahu or Maui must often take place during labor to ensure proper care can be taken for the pregnant woman and her baby.

If the nearest hospital for a patient does not provide labor and delivery services, a pregnant woman will often need to travel to a different area to give birth. In urban areas, the travel time to a hospital offering these services is typically under 20 minutes. However, in rural areas, it is often at least 30 minutes, and can frequently exceed 50 minutes.[42] Communities lacking local maternity care services face increased risks of complications and mortality for both mothers and babies.[43] Additionally, when maternity care is not available locally, women are less likely to receive adequate prenatal and postpartum care.[44]

On the islands of Molokaʻi and Lānaʻi in particular, MF care is characterized by limited local resources and OB infrastructure. With only one hospital serving each island (with the hospital on Lānaʻi being designated a Critical Access Hospital [CAH] and not providing any OB services), the range of maternity services available on these islands is constrained. On Molokaʻi, the one primary hospital, Molokaʻi General Hospital, can accommodate uncomplicated vaginal deliveries but does not offer advanced procedures such as cesarean sections (C-sections) and is limited in its capacity to handle high-risk or complicated deliveries. Expectant mothers with medical complications or those requiring specialized care must relocate to a larger medical center on Oʻahu or Maui, which involves navigating unreliable air transport, limited lodging options,[45] and being away from family, children, and work.

On Lānaʻi, any pregnant woman wanting to deliver in a medical setting must travel off-island. This requirement can create a precarious situation for pregnant women, particularly in emergencies or when early intervention is critical. It is important to compare these challenges on the neighbor islands of Hawaiʻi for pregnant women with similar challenges in rural areas of the United States. For pregnant women in the continental United States, staying at home in rural areas, while having its own risks, means that any complications require getting in the car and driving to the nearest medical facility; however, for those on the neighbor islands of Hawaiʻi, the situation becomes more complex as air travel is usually necessary. Such challenges are compounded by the issues of capacity for air ambulances in Hawaiʻi, as discussed above. Often, when multiple cases require medevac concurrently on a neighbor island, triage usually puts trauma patients and other high-risk medical emergencies ahead of those in labor requiring transport to Oʻahu or Maui. Additionally, the receiving hospital must have a bed available for the patient, which is not always the case immediately. This means that often pregnant women must wait for medical evacuation to Oʻahu or Maui,[46] sometimes waiting over two hours.

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[42] Center for Healthcare Quality and Payment Reform. "Addressing the Crisis in Rural Maternity Care." April 2024. https://ruralhospitals.chqpr.org/downloads/Rural_Maternity_Care_Crisis.pdf.
[43] Ibid.
[44] Ibid.
[45] Lyte, Brittany. "Hawaii's Struggle to Provide Health Care for Rural Islands Nearly Turned Tragic for This Expectant Mom." *Honolulu Civil Beat*, June 18, 2023. https://www.civilbeat.org/2023/06/hawaiis-struggle-to-provide-health-care-for-rural-islands-nearly-turned-tragic-for-this-expectant-mom/.
[46] Ibid.

Figure 2: Table Reflecting RHRPC Analysis of The Current State of OB Services on Hawaiian Islands

Island Service Available	Vaginal Delivery	Assisted Vaginal Delivery	Cesarean Birth	Vaginal Birth After Cesarean (VBAC)
Kauaʻi	✓	✓	✓	
Oʻahu	✓	✓	✓	✓
Maui	✓	✓	✓	
Molokaʻi	✓			
Lānaʻi				
Hawaiʻi	✓	✓	✓	

Non-Emergency Medical Transportation (NEMT)

NEMT is a term utilized to define services that transport patients for medically necessary healthcare in a non-emergent setting. These services could include situations such as travel from a patient's home to a clinic for an annual checkup, patient transfers from hospital to hospital, air travel for specialist appointments, and more.

In the United States in 2017, 5.8 million people (1.8% of the U.S. population) delayed receiving medical care due to a lack of transportation.[47] Transportation challenges in the rural contiguous United States can resemble those found in urban areas, yet they present unique difficulties due to the reliance on limited infrastructure such as rural roads and highways. Unlike urban residents who often have access to a variety of transportation options, including rideshare services and public transit, rural residents predominantly rely on personal vehicles of their own or those owned by friends or family, or on limited public transportation services that may not adequately serve their needs. This heavy reliance on personal vehicles can be particularly challenging for individuals who do not own a car, or for those who do not have access to friends or family who can help with transport.[48] That reliance is also challenging for those that cannot access reliable, affordable public transportation, such as elderly residents, those with disabilities, or those living in remote areas.[49]

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[47] Wolfe, Mary, Noreen McDonald, and Gregory Holmes. "Transportation Barriers to Health Care in the United States: Findings From the National Health Interview Survey, 1997–2017." *American Journal of Public Health* 110 (2020): e1–e8. https://doi.org/10.2105/AJPH.2020.305579.

[48] National Transportation Research Nonprofit. "Rural Connections: Challenges and Opportunities in America's Heartland." Washington, DC: National Transportation Research Nonprofit, May 22, 2019. https://tripnet.org/wp-content/uploads/2019/08/Rural_Roads_TRIP_Report_May_2019.pdf.

[49] National Transportation Research Nonprofit. "Rural Connections: Challenges and Opportunities in America's Heartland." Washington, DC: National Transportation Research Nonprofit, May 22, 2019. https://tripnet.org/wp-content/uploads/2019/08/Rural_Roads_TRIP_Report_May_2019.pdf.

Individuals with developmental and intellectual disabilities (DD/ID) often face significant barriers to accessing medical care due to transportation challenges, including the need for inter-island travel to reach specialized services, the lack of accessible transportation for those with physical disabilities, and the difficulties that individuals with intellectual disabilities may experience in navigating complex transit systems, all of which place substantial logistical and financial burdens on individuals and their caregivers. Similarly, elderly individuals, particularly those in rural areas, face transportation-related obstacles due to mobility limitations, a lack of specialized transit services, and the complexities of coordinating long-distance travel for medical care, further exacerbating healthcare access disparities.

Lower population density in rural areas often results in decreased ridership for fixed public transit routes and a smaller tax base to support the maintenance and repair of transportation systems. Additionally, the lack of investment in rural infrastructure, combined with the increasing use of rural roads over time, has had a detrimental impact on transportation safety.[50] According to the U.S. Department of Transportation's Federal Highway Administration, in 2017, approximately 40% of rural roads were deemed "inadequate for current travel," and nearly 50% of rural bridges over 20 feet long were classified as "structurally deficient."[51]

The absence or unavailability of transportation in rural areas can lead to reduced use of healthcare services, irregular medical care, and missed appointments, especially among individuals from lower socioeconomic backgrounds.[52]

Across the nation, telehealth has rapidly expanded across a variety of sectors. Telehealth can include 1) video conferencing and consultations, 2) remote patient monitoring, and 3) tele-imaging. Real-time telehealth involves phone or video calls, which can replace many face-to-face interactions. Providing telehealth as an alternative to in-person care is especially important for rural communities, where patients may be more likely to consider a televisit over an in-person visit due to convenience and lower costs. This flexibility using digital means enables patients to interact with specialized physicians who may not be available locally and allows clinics to prioritize in-person access for those with acute needs.[53] Additionally, hybrid approaches with in-person and telehealth visits can be equally effective to in-person visits without compromising the quality of care.[54] Part 4 of this report series will delve into how telehealth, specifically related to MF care, can have specific impacts on improving access to care regarding transportation barriers.

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[50] Rural Health Information Hub. "Transportation Barriers to Health Care." *Rural Health Information Hub*. https://www.ruralhealthinfo.org/toolkits/transportation/1/barriers.

[51] Federal Highway Administration. "Planning for Rural Areas: Page 3." *Federal Highway Administration*. https://www.fhwa.dot.gov/planning/publications/rural_areas_planning/page03.cfm.

[52] Syed, Sarah T., Brian S. Gerber, and Laurie K. Sharp. "Traveling Towards Disease: Transportation Barriers to Health Care Access." *Journal of Community Health* 38, no. 5 (October 2013): 976–93. https://doi.org/10.1007/s10900-013-9681-1.

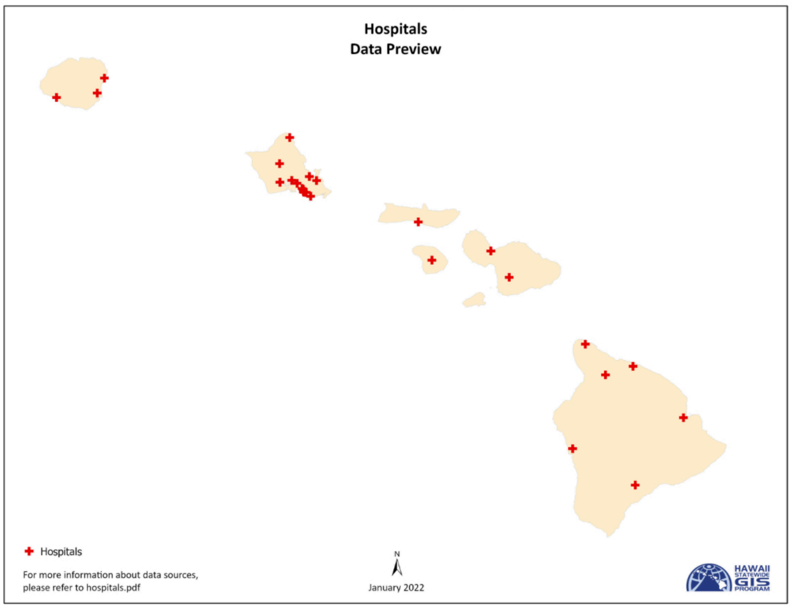
[53] Udegbe, Beverly C., Mark A Clapp, Allison S. Bryant "Disparities from bedside to "webside": barriers to achieving equity in telemedicine in obstetrics." *AJOG Global Reports* 3, no. 1 (Jan 2023): 100159. https://doi.org/10.1016/j.xagr.2022.100159

[54] Ghimire, Sarala, Santiago Martinez, Gunnar Hartvigsen, Martin Gerdes. "Virtual prenatal care: A systematic review of pregnant women's and healthcare professionals' experiences, needs, and preferences for quality care." *International Journal of Medical Informatics.* https://doi.org/10.1016/j.ijmedinf.2022.104964

NEMT in Hawai‘i

There are a limited number of medical facilities in the state of Hawai‘i. Figure 3 shows the geographic distribution of hospitals across the islands. In most rural and remote areas of the state, patients must travel long distances to access care. For example, some residents on Hawai‘i Island travel over 60 miles, equating to over a 175-minute drive on winding mountain roads, to receive routine dialysis treatment, oftentimes multiple times per week. If those patients travel via public transportation, the route can take over three hours, and travelers must leave home by 6:30am and do not return home until 6:00pm. This can have a large impact on their work and/or personal life.

Figure 3: Hospitals in Hawai‘i[55]



Many services that would often be considered routine or expected at an urban hospital or clinic are not present in some of the more remote islands in Hawai‘i or may take months to access. For example, on Moloka‘i, such services as a variety of higher-end dental services and MRI screenings are not available on-island, and patients must travel to O‘ahu or Maui via the only commercial air service available, Mokulele Airlines. If Mokulele Airlines cancels or delays a flight, patients must often reschedule their appointments with their healthcare provider, which may take weeks or even months. On other islands, appointments for certain providers—such as specialists in cardiology, neurology, and dermatology—can take several months due to the state's significant health workforce shortages.[56,57] This shortage is particularly severe in rural and

[55] Hawaii State Government. Hospitals in Hawaii [Map]. 2025. https://files.hawaii.gov/dbedt/op/gis/maps/hospitals.jpg.
[56] Hawai‘i/Pacific Basin Area Health Education Center. 2024. Hawai‘i Physician Workforce Assessment 2024 Annual Report. John A. Burns School of Medicine, University of Hawai‘i at Mānoa. https://ahec.hawaii.edu/_docs/2024-physician-workforce-report.pdf.
[57] Healthcare Association of Hawaii. "Hawaii Healthcare Workforce Initiative 2024 Report." 2024. https://www.hah.org/hwi.

neighbor island communities, where recruiting and retaining healthcare professionals is challenging due to high living costs, geographic isolation, and limited professional development opportunities. As a result, patients often experience long delays for essential diagnostic tests, follow-up care, and treatment, which can lead to worsened health outcomes and increased reliance on emergency services.

Air Travel from Rural Neighbor Islands

Patients who need to travel for routine appointments from the neighbor islands of Hawaiʻi to Oʻahu most often need to fly as there is no inter-island ferry system. Flights are expensive (approximately $120 to $300) and often unreliable, particularly on Molokaʻi and Lānaʻi, leading to decreased transportation access. There is a limited ferry system from Lānaʻi to Maui, but these ferries are time-consuming. Additionally, there are also limited specialists on Maui compared to Oʻahu. In addition to flight costs and the stresses of airline reliability, patients often have to account for the costs of missed work, child care, elder care, other transportation costs (such as to and from the hospital), any lodging, and travel with a companion.

The Essential Air Service (EAS) Subsidy Program

The EAS subsidy program is a federal initiative intended to maintain vital air links to small and remote communities across the country, such as the neighbor islands of Hawaiʻi. Enacted as part of the Airline Deregulation Act of 1978, which significantly liberalized the airline industry, the EAS program was designed to ensure that communities with a lack of sufficient commercial air service due to this deregulation could remain connected to the national transportation network.[58] Eligibility criteria for EAS subsidies include distance from larger hub airports and minimum passenger traffic requirements, as outlined in the Code of Federal Regulations (CFR) Title 14, Section 271.100 et seq.

The EAS program is operated by the U.S. DOT's Office of Aviation Analysis, which administers the selection of air carriers through a competitive bidding process. Airlines bid to provide scheduled air service to eligible communities, detailing the service they propose to offer and the subsidy amount required to offset operational costs not covered by passenger fares. Airlines can only bid if they can prove that service to the airport is not financially sustainable without help from the subsidy program. The DOT evaluates these proposals based on factors such as service reliability, frequency of flights, and community benefits.[59] Once selected, airlines receive federal subsidies to bridge the gap between operating expenses and revenue from passenger fares. These subsidies cover essential costs like fuel, maintenance, and crew wages, ensuring that airlines can feasibly provide regular service to these underserved areas. Federal

[58] Scarano, R. Michael et al. "Federal Preemption of State Regulation Over Air Ambulances." Air Medical Journal, Volume 28, Issue 2, 77 - 83. https://www.airmedicaljournal.com/article/S1067-991X(08)00272-1/fulltext.
[59] U.S. Department of Transportation. 2024. "Essential Air Service." https://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/essential-air-service.

statute requires participating EAS airlines to fulfill contractual obligations, including maintaining minimum service levels, meeting performance metrics, and regulating profits to continue receiving subsidies.[60]

Currently, EAS subsidies are in place for three airports in Hawaiʻi: Kamuela (Hawaiʻi Island), Hāna (Maui), and Kalaupapa (Molokaʻi).[61] For patients on Molokaʻi, Kalaupapa is a restricted airport that serves only the Hansen's Disease community of Kalaupapa. As such, the subsidy on Molokaʻi does not address medical care transportation needs for the majority of the Molokaʻi population.

Mokulele Airlines is the sole airline provider on Molokaʻi (save for Pacific Air Charters offering chartered flights), and, until the recent expansion of Lānaʻi Air,[62] was the only public air transport provider on Lānaʻi as well. This situation has been the case since 2020, when Hawaiian Airlines shut down its ʻOhana by Hawaiian service to those islands due in part to the COVID-19 pandemic. Mokulele Airlines has faced numerous criticisms and challenges over the years, the most severe and common being service reliability.[63] The airline's reliability, in terms of fleet readiness, flight schedules, and cancellations, has been called into question by local residents repeatedly over the years. Unreliability of airlines can disrupt travel plans for passengers relying on consistent service, as well as disrupt the schedule of providers who are waiting for patients to arrive for their appointments.[64]

The frequent cancellation and delay of flights by Mokulele Airlines has resulted in significant challenges for patients needing to attend medical appointments. Patients often schedule these appointments months in advance, and when flights are canceled or delayed with only a day's notice or shorter, it severely disrupts the patient's ability to make their appointments and access timely healthcare services, as specialists on Oʻahu and Maui are often fully booked out for weeks or months.

The provision of airline services to the Molokaʻi and Lānaʻi communities faces two primary constraints. The first is airport infrastructure limitations and runway capacity, necessitating the use of smaller aircraft. While the existing aircraft are adequate in size, their operations are significantly affected by weather conditions, busy travel seasons, and mechanical issues (including timeliness of receiving and installing replacement parts). For example, Mokulele Airlines recently grounded all of its flights for several days due to "maintenance," leaving residents who needed to travel off-island to take boats to other islands where more flights were available.[65] The proposition of expanding infrastructure or improving runways to

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[60] U.S. Department of Transportation. 2024. "Essential Air Service." https://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/essential-air-service.

[61] LNY airport on Lānaʻi qualified for EAS in 1983, and there were active conversations in March 2024 about seeking EAS, but to date (May 2025) no proposals have been submitted to DOT.

[62] Lānaʻi Air was established in 2018, and is self-titled a "Luxury Air Service" that also provides public charter flights. These flights are often double the cost of competing airlines, and are widely inaccessible for the majority of residents.

[63] Cluett Pactol, Catherine. "Mokulele Airlines Grounds Flights, Leaving Molokaʻi Residents Scrambling for Boat Rides." Hawaiʻi Public Radio, January 17, 2025. https://www.hawaiipublicradio.org/local-news/2025-01-17/mokulele-airlines-grounds-flights.

[64] Huff, Daryl. "Airline Struggling to Fulfill Its Role as Molokai's Lifeline for Health Care." *Hawaiʻi News Now*, May 16, 2024. https://www.hawaiinewsnow.com/2024/05/16/airline-struggling-fulfill-its-role-molokais-lifeline-health-care/.

[65] Cluett Pactol, Catherine. "Mokulele Airlines Grounds Flights, Leaving Molokaʻi Residents Scrambling for Boat Rides." Hawaiʻi Public Radio, January 17, 2025. https://www.hawaiipublicradio.org/local-news/2025-01-17/mokulele-airlines-grounds-flights.

accommodate larger aircraft might entice larger air service providers such as Hawaiian Airlines to return to providing services, as their fleet does not include those smaller planes.

The second constraint is the market size on Molokaʻi and Lānaʻi. The market is constrained by limited demand, primarily driven by small populations. While tourism boosts demand for air transport on these islands (Lānaʻi, in particular), there are still challenges in sustaining regular and economically viable air service to these communities at a larger and more consistent scale.

In general, the larger neighbor islands such as Maui, Kauaʻi, and Hawaiʻi Island have more airline options, such as through Hawaiian Airlines and Southwest Airlines.

Provider Travel to Rural Areas

On all neighbor islands, and especially Molokaʻi and Lānaʻi, hospitals and/or clinics contract with specialists on Oʻahu and Maui to fly to their islands to provide care. These travel costs are almost always borne by the receiving facility, and costs can be in the hundreds of thousands of dollars annually for hospitals and clinics operating on thin margins. On Lānaʻi, the majority of clinical providers are not based on-island and travel to the island on a rotating basis to provide care. For patients, this may mean that they do not have to travel off-island for certain care. However, this also means that transportation (and often housing) for the health providers themselves is an important determinant of health for those communities – and a high cost to the contracting hospitals and clinics.

Providers almost always travel commercial airlines for these rotations, and for those going to Molokaʻi or Lānaʻi, they must also deal with frequent cancellations and delays. If a provider is scheduled to see patients back-to-back for an entire day, and the flight is delayed three hours, those patients often do not receive care, the traveling provider has wasted valuable time sitting at an airport, and offices/hospitals must spend extra time ensuring all patients are rescheduled, whether that be waiting until the next time a provider comes or scheduling transportation to Oʻahu. Local providers on Molokaʻi or Lānaʻi often have to find ways to accommodate those patients, such as fitting them into their already-filled schedules to provide care until the off-island provider/specialist is able to rearrange their schedule for travel.

NEMT and MF Care

Transportation for MF care is a documented issue across the country, and can oftentimes significantly impact access to care for this population. Increasing transportation access to perinatal and postpartum care for mothers is linked to improving health outcomes, and has been well established as a method for increasing access to specialized care.[66] A recent study in Ohio

[66] DeSisto, Carla L., Reena Oza-Frank, David Goodman, Elizabeth Conrey, and Cynthia Shellhaas. “Maternal Transport: An Opportunity to Improve the System of Risk-Appropriate Care.” *Journal of Perinatology* 41, no. 9 (2021): 2141–46. https://pubmed.ncbi.nlm.nih.gov/33547406/.

found that 13.9% of all pregnancy-related deaths in the state from 2010-2016 would have been preventable with improved maternal transportation.[67]

Maternal transport issues include significant geographic disparities in access to MF care, which have been worsened by the increasing closures of maternity units in rural hospitals. Less than seven percent of all OBs in the United States practice in a rural area, and the majority of U.S. counties do not have access to inpatient obstetric services, which further exacerbates the need for transportation for services.[68,69,70] This trend has created considerable barriers for women throughout their pregnancy, childbirth, and postpartum periods. In rural areas, the challenge is compounded by the long distances and extended travel times required to reach available healthcare facilities. These factors can make it exceptionally difficult for those living in remote locations to receive timely and adequate maternity care, further exacerbating healthcare challenges.[71]

The burden of traveling to maternity care facilities for women in rural areas is linked to lower rates of prenatal care, as well as higher incidences of preterm births, low birth weights, and neonatal mortality.[72] A study conducted in rural Kansas found that greater travel distances to access maternity care were associated with decreased prenatal care uptake.[73] This effect was especially noticeable among women with lower incomes, who encounter additional challenges such as difficulties with transportation and childcare.[74] Additionally, a recent Canadian study showed that rural women about to give birth and needing to travel to access maternity services had higher rates of poor perinatal outcomes and adverse health outcomes for newborns.[75] Rural residents in the United States have an almost 10 percent higher probability of severe maternal morbidities and mortality when compared to urban residents.[76]

In Hawaiʻi, NEMT for MF care remains a pressing issue. Overall, over 87% of pregnant women in the United States received early and adequate primary care.[77] That number goes down to 63.2% in Hawaiʻi, and as low as 57% for those in more rural counties such as Hawaiʻi County.[78] Additionally, on some rural islands, the prenatal care that is delivered is often done so by a PCP, as opposed to an OB specialist.

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[67] Ibid.

[68] Changing rural demographics, July 29, 2013. National Conference of State Legislatures. http://www.ncsl.org/documents/agri/Rural_Demographics07-13.pdf. Accessed October 24, 2019

[69] ACOG Committee Opinion No. 586: "health disparities in rural women." *Obstet Gynecol*. 2014; 123(2 Pt 1): 384-388.

[70] Hung P, Henning-Smith CE, Casey MM, Kozhimannil KB. "Access to obstetric services in rural counties still declining, with 9 percent losing services, 2004–14." *Health Aff (Millwood)*. 2017; 36(9): 1663-1671.

[71] Hung, Peiyin, Marion Grangerm, Nansi Bonghossian, Jiani Yu, Sayward Harrison, Jihong Lio, Berry A. Campbell, Bo Cai, Chen Liang, and Xiaoming Li. "Dual Barriers: Examining Digital Access and Travel Burdens to Hospital Maternity Care Access in the United States, 2020." *The Milbank Quarterly* 101, no. 4 (2023): 1327–47. https://doi.org/10.1111/1468-0009.13024.

[72] Grzybowski, Stephen, Kathryn Stoll, and Jennifer Kornelsen. "Distance Matters: A Population-Based Study Examining Access to Maternity Services for Rural Women." *BMC Health Services Research* 11 (2011): 147. https://doi.org/10.1186/1472-6963-11-147.

[73] Kennedy, Mary, Kelly Kelly, and Christine Lemke. "The Adequacy of Prenatal Care in Rural Kansas Related to Distance Traveled." Kansas Journal of Medicine 15, no. 3 (2022): 437–40. https://doi.org/10.17161/KJM.VOL15.18523.

[74] Ibid.

[75] Grzybowski S, Stoll K, Kornelsen J. "Distance Matters: a Population Based Study Examining Access to Maternity Services for Rural Women." BMC Health Serv Res. 2011 Jun 10;11:147. doi: 10.1186/1472-6963-11-147. PMID: 21663676; PMCID: PMC3126704.

[76] Kozhimannil, Katy Backes, Julia D. Interrante, Carrie Henning-Smith, and Lindsay K. Admon. "Rural-Urban Differences in Severe Maternal Morbidity and Mortality in the US, 2007–15." *Health Affairs* 38, no. 12 (2019): 2077–85. https://doi.org/10.1377/hlthaff.2019.00805.

[77] Health and Human Development Workgroup. "Birth and Maternity." *Health and Human Development Workgroup.* https://go.hawaii.edu/3a8.

[78] Health and Human Development Workgroup. "Birth and Maternity." *Health and Human Development Workgroup.* https://go.hawaii.edu/3a8.

As previously mentioned, the islands of Molokaʻi and Lānaʻi face particularly challenging obstacles to receiving NEMT MF care. While perinatal care is an option on both islands, it is limited, and for patients that would like to establish care with the same doctor they plan to deliver with, they must travel to a different island in most scenarios. In some rural parts of the island of Maui, patients must drive over three hours to receive prenatal care, which often means appointments go unattended. On Molokaʻi and particularly on Lānaʻi, patients with high-risk pregnancies must relocate to either Oʻahu or Maui, forced to be away from their family, other children, support systems, jobs, community, and their ways of life.

On Hawaiʻi Island, all obstetric services are provided in the two major cities (Kona and Hilo), and those residents in between are often faced with difficult choices, such as whether to go to work or make a perinatal appointment, or whether to risk their car breaking down on a two-hour drive there and back to the appointment. As noted previously, a journey on public transportation in rural communities, when available, can be long and difficult. Some non-profit organizations have begun offering mobile clinic services for such services, filling gaps in service across the island.

Insurance Coverage

Insurance coverage for medically-related transportation is an important contributor to whether health services are accessible for patients or not. Health insurance coverage for NEMT in the United States varies drastically based on payer, state of residence, employment status, income, age, and more. Nationwide, in 2022, 92.1% of people had health insurance coverage, with 65.6% of people being insured by a private plan, versus having public coverage.[79] Specifically, 54.5% of the population had insurance through their employer, while 18.8% were covered under Medicaid, 18.7% by Medicare, 9.9% through “direct-purchase”[80] coverage, 2.4% through TRICARE, and one percent through the U.S. Department of Veterans Affairs (VA).[81]

While the vast majority of Americans have health insurance coverage, NEMT coverage is low. Currently, state Medicaid programs are the only insurers required by law to provide NEMT benefits to their beneficiaries.[82] Each state provides these Medicaid NEMT benefits differently, but they generally include transportation services for medically necessary healthcare needs, provided through taxis, buses, rideshare services and more.[83] It should be noted that even Medicaid NEMT benefits often do not provide coverage for travel companions, extra nights of

[79] U.S. Census Bureau. “Income and Poverty in the United States: 2022.” *U.S. Census Bureau.* https://www.census.gov/library/publications/2023/demo/p60-281.html#:~:text=In%202022%2C%2092.1%20percent%20of,91.7%20percent%20or%20300.9%20million.

[80] “Direct Purchase” coverage includes insurance that you buy directly from an insurance company or through a state or federal marketplace.

[81] U.S. Census Bureau. “Income and Poverty in the United States: 2022.” *U.S. Census Bureau.* https://www.census.gov/library/publications/2023/demo/p60-281.html#:~:text=In%202022%2C%2092.1%20percent%20of,91.7%20percent%20or%20300.9%20million.

[82] U.S. Government. *Code of Federal Regulations, Title 42, Section 431.53: Assurance of Transportation.* Washington, DC: Government Publishing Office, 2023. https://www.ecfr.gov/current/title-42/chapter-IV/subchapter-C/part-431/subpart-B/section-431.53

[83] Medicaid and CHIP Payment and Access Commission (MACPAC). “June 2021 Report to Congress on Medicaid and CHIP.” *Medicaid and CHIP Payment and Access Commission.* June 2021. https://www.macpac.gov/wp-content/uploads/2021/06/June-2021-Report-to-Congress-on-Medicaid-and-CHIP.pdf.

lodging, and other related expenses such as childcare, missed work, and other costs associated with travel.

The VA does provide many similar NEMT services based on eligibility requirements, and some Medicare Advantage (MA) plans are increasingly covering NEMT benefits for beneficiaries; however, the majority of private insurers and Medicare payers (including traditional Medicare) do not cover NEMT in any capacity.[84]

The importance of this NEMT benefit is found in the utilization data found in a 2021 report to Congress from the Medicaid and CHIP Payment and Access Commission (MACPAC).[85] MACPAC found that between three and four million Medicaid enrollees utilized their NEMT benefits annually from 2018-2021, which equates to roughly five percent of all Medicaid beneficiaries utilizing NEMT benefits each year.[86] However, it should be noted that this number is likely a significant underestimate of the total number, as not all NEMT services were reported in their data collection, and not all states were included in the estimate. The MACPAC report also found that specific demographic groups utilized NEMT services more, specifically including groups with higher health needs. Those with physical and mental health conditions such as chronic kidney disease (CKD) and end-stage renal disease (ESRD), as well as those with opioid and substance use disorder and those with DD/ID, all utilized NEMT at higher rates than average.[87]

In Hawaiʻi - Health Insurance Coverage for NEMT

In Hawaiʻi, 50% of individuals have insurance through employer-based plans, while 21% are covered under Medicaid and 17% are covered under Medicare (Figure 4).[88] The majority of state residents do not have coverage, or are significantly undercovered, for NEMT as Medicaid is one of the only insurers that fully covers NEMT. While some MA plans and private insurers cover limited NEMT, those without Medicaid are often left to pay for all transportation related to medical care. These costs are often burdensome for those whose income is too high to qualify for Medicaid but too little to be able to afford direct transportation costs and related costs, such as child care and missed work.

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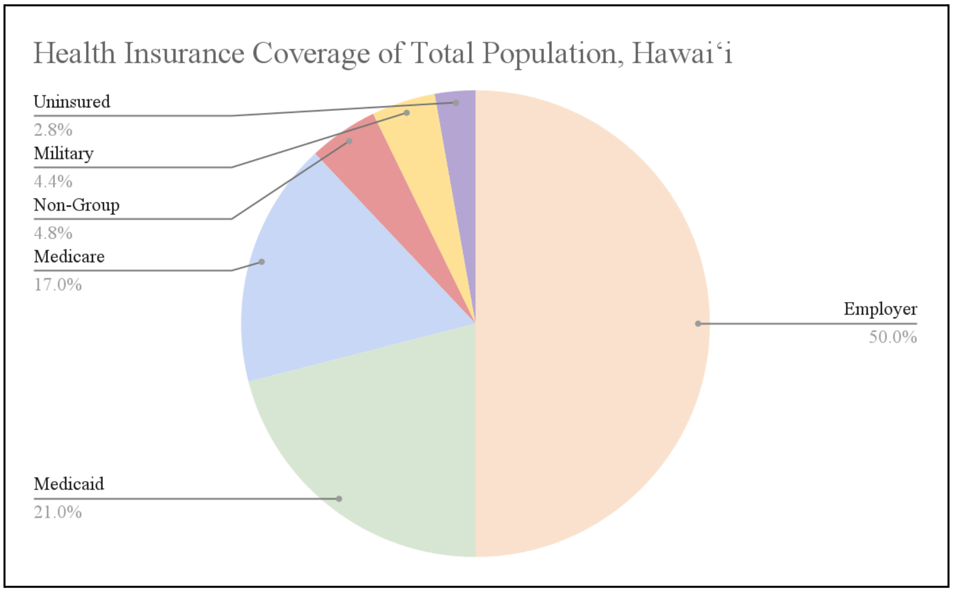
[84] Centers for Medicare & Medicaid Services. "Non-Emergency Medical Transportation (NEMT) Report to Congress: 2018-2021." *Centers for Medicare & Medicaid Services*, 2018. https://www.medicaid.gov/medicaid/benefits/downloads/nemt-rtc-2018-2021.pdf.
[85] Ibid.
[86] Ibid.
[87] Ibid.
[88] Kaiser Family Foundation. "Election 2024: State Health Care Snapshots." KFF, September 30, 2024. https://www.kff.org/statedata/election-state-fact-sheets/hawaii/.

Figure 4: Health Insurance Coverage of Total Population, Hawaiʻi as of June 2024[89]



Limited insurance coverage for transportation has an even greater effect when travel to another island is necessary. The cost of round-trip flights from the neighbor islands to Oʻahu or Maui range from $120 to $300, and this is only one of many costs associated with inter-island NEMT.[90] Other incurred costs also include the cost of transportation to and from the departing airport and transportation to and from the medical test, appointment, or operation back to the airport, as well as the opportunity costs of child care and missed work.

Generally, Medicaid plans in Hawaiʻi provide comprehensive coverage for NEMT; however, coverage of caretakers traveling with patients and lodging for overnight stays is a frequent concern for beneficiaries in the state, as coverage for these additional benefits is often on a case-by-case basis. If the medical appointment requires an overnight stay, lodging is an additional cost, as well as travel to and from the lodging. Oftentimes, those traveling have higher health needs, meaning a caretaker must travel with them, doubling many of the associated costs. Medicaid determines coverage of lodging and caretaker travel on a case-by-case basis.

Medicaid in Hawaiʻi is provided through five different managed care organizations (MCOs): AlohaCare, HMSA, ʻOhana Health Plan, Kaiser Permanente, and United Healthcare.[91] These MCOs all operate their own Medicaid plans, each with separate contracts with transportation providers. However, all five are required to cover flights for medically necessary events, public transportation, taxis, handivans, handicabs, wheelchairs, and stretcher vehicles. The health plans have the option to reimburse family and friends who are able to provide ground transportation for Medicaid beneficiaries.

[89] Kaiser Family Foundation. "Election 2024: State Health Care Snapshots." KFF, September 30, 2024. https://www.kff.org/statedata/election-state-fact-sheets/hawaii/.
[90] Laferriere, Nicole R., Malia Saruwatari, Xander L. Doan, Kevin B. Ishihara, David P. Puapong, Sarah M. Johnson, et al. "Telehealth Delivery of Outpatient Pediatric Surgical Care in Hawaiʻi: An Opportunity Analysis." Hawaiʻi Journal of Health & Social Welfare 79, no. 5 Suppl 1 (2020): 19–23.
[91] Hawaiʻi Med-QUEST Division. "Health Plans." Med-QUEST Division. https://medquest.hawaii.gov/content/medquest/en/members-applicants/already-covered/health-plans.html.

As noted, Medicaid plans often contract with third parties for transportation services, meaning that timeliness of securing services is another concern that routinely affects beneficiaries. Medicaid plans often require days or weeks of advanced notice to book transportation services depending on the type of transportation needed. This notice is required as the plans must authorize, schedule, and book with the third-party providers to secure services. However, despite the advanced notice, there are often delays in providing patients with knowledge of their forthcoming transportation plans. These delays often leave patients without information or knowledge of their transportation plans until right before their appointments, leading to confusion and frustration for travelers, as well as the need to cancel or reschedule health appointments at times. Adding to that confusion is that oftentimes insurers ask the provider to communicate with the patient, rather than directly communicating with the patient, leading to delays in information sharing related to travel plans. There are also additional costs to rural provider offices who often have hired staff to manage this complex process. Additionally, when securing insurance reimbursement for NEMT, the staff of the patient's provider has to prove there is not a (participating) provider to take care of the patient on the neighbor island, therefore necessitating the travel. This increases the time burden on rural providers, rather than the insurance company having that information on available providers on-hand.

The reliability of third-party transportation providers is also often called into question. For neighbor islands, and particularly in rural and remote areas of those islands, transportation service networks are limited. Patients with booked medical taxis through Medicaid in these areas oftentimes wait hours to receive transportation from the healthcare facility back to their home.

Overall, Medicaid in Hawaiʻi provides a much-needed safety net service for rural patients. Innovative and unique solutions to address barriers to access care are at the forefront of Medicaid policy in Hawaiʻi, and coverage of NEMT by Medicaid is generally more expansive than other insurers.

Health Insurance Coverage for NEMT and MF Care

In the United States, all Medicaid plans in every state are required to cover pregnancy and childbirth-related health issues, even if the pregnancy starts before the coverage starts.[92] Health insurance plans purchased on the Health Insurance Marketplace must also cover pregnancy and childbirth-related health issues, as MF care services are considered essential health benefits, meaning all marketplace and Medicaid health plans in the country must cover them.[93] However, whether all aspects of transportation for accessing those services are covered is a separate issue, and one that is not consistent across plans.

In Hawaiʻi, pregnant women can be covered under Medicaid plans for up to 12 months after birth or pregnancy termination. However, for those that are forced to relocate to another

[92] Centers for Medicare & Medicaid Services (CMS), *"Pregnancy and Newborn Coverage in the Marketplace and Medicaid"*, available at: https://www.cms.gov/marketplace/technical-assistance-resources/pregnancy-newborn-coverage.pdf
[93] HealthCare.gov. "What if I'm Pregnant or Plan to Get Pregnant?" *HealthCare.gov.* https://www.healthcare.gov/what-if-im-pregnant-or-plan-to-get-pregnant/#:~:text=Health%20coverage%20if%20you're,plans%20cover%20pregnancy%20and%20childbirth.

island to complete their pregnancy, lodging and other expenses are not covered by all MCOs, meaning costs are often borne by the patient, family, and friends. These added expenses, not covered by insurance, can lead to care being delayed for longer periods of time, which leads to the decreased rate of pregnant women in Hawaiʻi receiving early and adequate prenatal care (30% lower rate of prenatal care utilization in Hawaiʻi compared to the national rate[94]).

[94] Health and Human Development Week (HHDW). "Birth & Maternity." *Health and Human Development Week*. https://go.hawaii.edu/3a8.

Conclusion

The findings of this literature review highlight the critical role that transportation plays in healthcare access and health outcomes in rural Hawaiʻi. The challenges faced by rural communities—including long EMS response times, unreliable NEMT, inadequate insurance coverage for travel-related expenses, and limited trauma and maternity care facilities—create significant barriers to timely and equitable healthcare. For many rural residents, particularly those living on neighbor islands, access to essential and specialized care requires long-distance travel, which can be costly, time-consuming, and unreliable. These transportation challenges contribute to missed appointments, delayed treatments, poor health outcomes, and increased reliance on emergency services. MF health is particularly affected, as pregnant women in rural areas struggle to access prenatal, labor, and delivery services, often requiring relocation or emergency transport.

Addressing these transportation barriers will require multi-faceted policy solutions that improve EMS and air transport infrastructure, improve NEMT processes and increase airline reliability, expand insurance coverage for NEMT, enhance MF care access, and invest in telehealth services to reduce the need for travel. Future research and stakeholder input (see Part 2 of the report series) will be critical in shaping policies that bridge the gap between healthcare and transportation access, ensuring that rural communities in Hawaiʻi receive the care they need when they need it. Telehealth is also a critical component of addressing transportation challenges. Parts 1, 2, and 3 of this report series focus on specific transportation solutions, while Part 4 delves into the impact of telehealth on these issues, specifically regarding MF health.