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MAUIWES COMMUNITY REPORT

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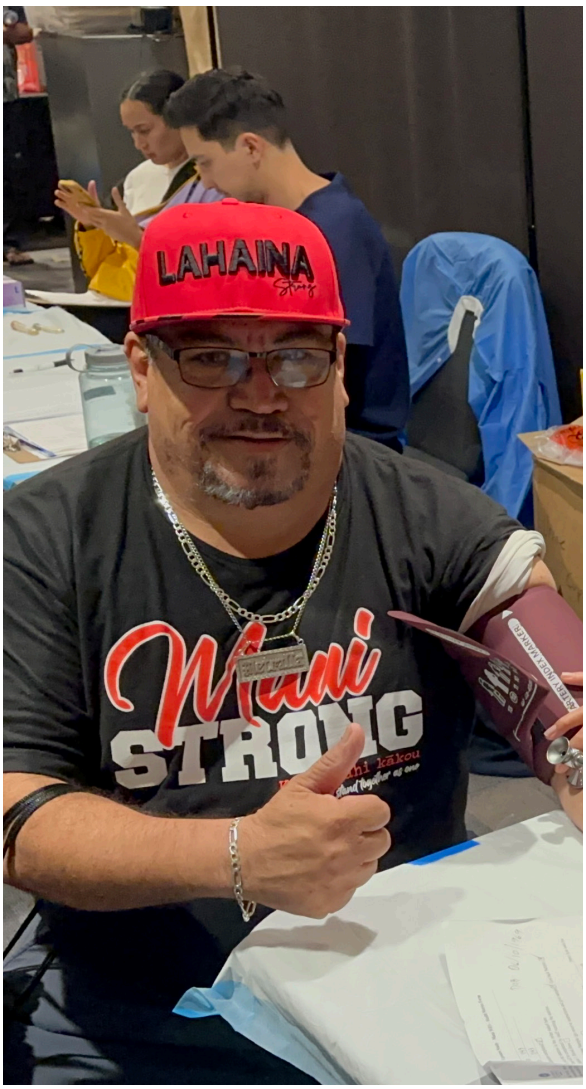
# THE ROAD TO RECOVERY: STRENGTHENING HEALTH, STABILITY, AND RESILIENCY THREE YEARS AFTER THE MAUI WILDFIRES

JULY 27, 2026




# MauiWES Community Report

# The Road to Recovery: Strengthening Health, Stability, and Resiliency Three Years After the Maui Wildfires



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*MauiWES and this report were made possible through support from the Hawai'i Community Foundation's Maui Strong Fund, Kaiser Permanente Hawai'i, the State of Hawai'i, and the National Institute on Minority Health and Health Disparities.*

*The findings and recommendations are those of the authors and do not necessarily reflect the views or official positions of UHERO, the University of Hawai'i, or any funding or supporting organization. This report was prepared independently and has not undergone formal academic peer review. Complete funding and partnership acknowledgments appear at the end of the report.*

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# Executive Summary

Three years after the Maui wildfires, findings from the Maui Wildfire Exposure Study (MauiWES) offer a hopeful but clear message: recovery is underway, but it remains uneven. Many residents are rebuilding routines, returning to work, gaining health insurance, reconnecting with services, and drawing strength from family, culture, community, and ʻāina (land). At the same time, many families continue to face interconnected challenges, including food insecurity, housing uncertainty, barriers to medical and mental health care, emotional distress, elevated blood-pressure screening results, and lung-function concerns. Because MauiWES follows many of the same residents over time, this report shows not only how participants are doing now, but how recovery is changing within the same people and communities.

**The clearest message:** Long-term health recovery is closely connected to four interrelated conditions: food and income security, housing security, access to care, and social support. These factors shape whether families can regain stability, whether children can heal, and whether physical and mental health concerns can be detected early and addressed before they become chronic conditions. Left untreated, these conditions can result in more severe medical and mental health complications. This is a particularly important consideration as care for chronic conditions is often unavailable or difficult to access in rural communities such as Lahaina.

MauiWES has become one of Hawai‘i’s largest community recovery efforts. More than 2,000 adults and children participated in Year 1, and more than 1,200 participated in Year 2. The year-to-year findings in this report are based on 1,131 participants who completed at least two study visits.

Across all study activities, MauiWES has completed more than 4,000 appointments and health-screening encounters, making it the most comprehensive social and biomedical study conducted following a disaster in Hawai‘i’s history and one of the largest of its kind in the nation. Through community-based events and trusted partnerships, MauiWES has provided mental health assessments, blood pressure checks, lung function testing, metabolic and other blood testing, social-needs screening, insurance-related support, and referrals to healthcare and community partners. Most importantly, MauiWES has created a bridge connecting community voices, healthcare services, research, and strategic decision-making.

Among returning adult participants, there are encouraging signs of progress. Employment increased from 62.0% in Year 1 to 80.9% in Year 2; health insurance coverage rose from 85.1% to 90.5%; the share living in temporary housing declined from 40.6% to 34.4%; and the share who felt secure in their housing increased from 72.2% to 79.6%. These improvements show that recovery efforts are making a difference. However, the same data also show where recovery remains fragile. About one-third of returning participants were still living in temporary housing. Food insecurity declined only modestly, from 49.8% to 44.9%, while very low food security remained essentially unchanged, from 23.0% to 23.4%. High levels of social support declined from 62.3% to 53.7%, suggesting recovery fatigue and growing strain on family and community support networks. Mental-health indicators showed mixed progress. Nearly one in two participants continued to report depressive symptoms, about the same as the previous year. Moderate-to-severe anxiety declined slightly from 26.2% to 25.1%, and suicidal ideation declined from 3.8% to 2.9%. In Year 2, nearly one in three returning adults—30.6%—fell into the PTSD symptoms or severe PTSD symptoms categories, underscoring the continuing emotional toll of the wildfires.

To continue to improve outcomes, we plan to move beyond our previous framework of connecting screening to action. Our plan for the next phase of MauiWES work requires that every unusual result gets a follow-up, whether it be with primary care, pulmonary care or mental health services, and incorporates medication access, insurance enrollment, and culturally responsive care navigation where needed. This pathway for screening follow-up is especially important for

residents who remain uninsured, underinsured, food insecure, housing insecure, or disconnected from basic healthcare.

Children and families require special attention. MauiWES's findings show that many child and youth survivors continue to experience emotional distress, including depression, anxiety, post-traumatic stress, and low self-esteem. Some children also show early signs of problems with blood pressure and lung health. For children in particular, early intervention is essential. These findings suggest a need for school-based mental health support, pediatric screening, clean-air environments, family-centered services, and culturally grounded programs that help children heal while protecting their long-term health. Maui's recovery is about more than homes rebuilt, roads reopened, or infrastructure restored. It is also about families who have enough food, feel secure in their housing, can access care, and remain connected to strong support systems. These four foundations are the pillars of recovery that will allow health, stability, and resiliency to grow.

# Plain Language Summaries

## English

Three years after the Maui wildfires, the Maui Wildfire Exposure Study shows that recovery is happening, but it is not the same for everyone. Many residents are returning to work, gaining health insurance, moving out of temporary housing, and feeling more secure in their housing. These are hopeful signs that recovery efforts are helping. At the same time, other residents and families still face serious challenges, including food insecurity, housing uncertainty, difficulty getting medical care, depression, anxiety, post-traumatic stress disorder, high blood pressure, and lung health concerns.

The strongest message from MauiWES is that health recovery depends on four basic supports: enough food and income, stable housing, access to healthcare, and strong social support from family, friends, community, and culture. These supports help families rebuild routines, reduce stress, catch health problems early, and connect to care. Children need special attention because many survivors are still showing signs of emotional distress, and some are showing early signs of problems with blood pressure and lung health. Maui's recovery is about more than homes and businesses rebuilt or roads reopened. The data also suggest that it is important that families have enough food, feel safe in their housing, can get the care they need, and are connected to the people and places that help them heal.

## ʻŌlelo Hawaiʻi:

ʻEkolu makahiki ma hope o nā ahi nahele o Maui, ua hōʻike ka **Maui Wildfire Exposure Study** ke holomua nei ka hoʻōla hou ʻana, akā ʻaʻole like ka holomua no kēlā me kēia kanaka. Ke hoʻi nei nā kamaʻāina he nui i ka hana, ke loaʻa nei iā lākou ka ʻinikua olakino, ke neʻe nei lākou mai nā hale noho no ka wā pōkole, a ke manaʻo nei lākou ua ʻoi aku ka palekana a me ka paʻa o ko lākou wahi noho. He mau hōʻailona hoʻolana manaʻo kēia e hōʻike ana ke kōkua nei nā hana hoʻōla. Ma ka manawa like naʻe, ke kū nei kekahi mau kamaʻāina a me nā ʻohana i mua o nā pilikia koʻikoʻi, ʻo ia hoʻi ka maopopo ʻole o ka loaʻa mau ʻana o ka meaʻai, ka maopopo ʻole o kahi noho paʻa, ka paʻakikī o ka loaʻa ʻana o ka mālama lapaʻau, ka maʻi kaumaha o ka naʻau, ka hopohopo nui, ka maʻi hoʻopilikia ma hope o ka hanana weliweli (PTSD), ke kaomi koko kiʻekiʻe, a me nā hopohopo e pili ana i ke olakino o nā ake māmā.

ʻO ka ʻōlelo koʻikoʻi loa a MauiWES, ʻo ia hoʻi, ke hilinaʻi nei ka hoʻōla hou ʻana o ke olakino ma luna o nā kākoʻo kumu ʻehā: ka lawa o ka meaʻai a me ka loaʻa kālā, ka hale noho paʻa, ka hiki ke loaʻa ka mālama olakino, a me ke kākoʻo ikaika mai ka ʻohana, nā hoaaloha, ke kaiāulu, a me ka moʻomeheu. Ke kōkua nei kēia mau kākoʻo i nā ʻohana e hoʻihoʻi i nā hana maʻamau o kēlā me kēia lā, e hōʻemi i ke koʻikoʻi, e ʻike koke i nā pilikia olakino i ko lākou wā hoʻomaka, a e loaʻa ka mālama kūpono. Pono e nānā kūikawā ʻia nā keiki, no ka mea, ke hōʻike mau nei ka poʻe i pakele he nui i nā hōʻailona o ka pilikia o ka naʻau, a ke hōʻike nei kekahi i nā hōʻailona mua o nā pilikia e pili ana i ke kaomi koko a me ke olakino o nā ake māmā. ʻAʻole pili wale ka hoʻōla hou ʻana o Maui i nā hale a me nā ʻoihana i kūkulu hou ʻia a i ʻole nā alanui i wehe hou ʻia. Ke hōʻike pū nei ka ʻikepili he mea nui ka lawa o ka meaʻai a nā ʻohana, ko lākou palekana ma ko lākou wahi noho, ko lākou hiki ke loaʻa ka mālama e pono ai, a me ko lākou pilina me nā kānaka a me nā wahi e kōkua iā lākou e hoʻōla.

## Español

Tres años después de los incendios de Maui, el Estudio de Exposición a los Incendios de Maui muestra que la recuperación está ocurriendo, pero no de la misma manera para todos. Muchas personas están regresando al trabajo, obteniendo seguro médico, saliendo de viviendas temporales y sintiéndose más seguras en su vivienda. Estas son señales esperanzadoras de que los esfuerzos de recuperación están ayudando. Al mismo tiempo, muchas familias todavía enfrentan desafíos graves, como inseguridad alimentaria, incertidumbre sobre la vivienda, dificultad para obtener atención médica, depresión, ansiedad, trastorno de estrés postraumático, presión arterial alta y preocupaciones de salud pulmonar.

El mensaje más importante de MauiWES es que la recuperación de la salud depende de cuatro apoyos básicos: suficiente comida e ingresos, vivienda estable, acceso a atención médica y un fuerte apoyo social de la familia, las amistades, la comunidad y la cultura. Estos apoyos ayudan a las familias a reconstruir rutinas, reducir el estrés, detectar problemas de salud temprano y conectarse con la atención que necesitan. Los niños y las familias necesitan atención especial porque muchos sobrevivientes todavía muestran señales de angustia emocional, y algunos muestran señales tempranas de problemas de presión arterial y salud pulmonar. La recuperación de Maui no debe medirse solo por las casas reconstruidas o los caminos reabiertos. También debe medirse por si las familias tienen suficiente comida, se sienten seguras en su vivienda, pueden recibir la atención que necesitan y siguen conectadas con las personas y los lugares que les ayudan a sanar.

## Tagalog

Tatlong taon matapos ang malawakang sunog sa Maui, ipinakikita ng Maui Wildfire Exposure Study (MauiWES) na nagpapatuloy ang pagbangon, ngunit hindi ito pantay-pantay para sa lahat. Maraming residente ang nakababalik na sa trabaho, nagkakaroon ng health insurance o segurong pangkalusugan, nakalilipat mula sa pansamantalang tirahan, at nakararamdam ng higit na kapanatagan sa kanilang tahanan. Ang mga ito ay positibong palatandaan na nakatutulong ang mga programa at pagsisikap para sa pagbangon. Gayunman, may mga residente at pamilyang patuloy na humaharap sa mabibigat na hamon. Kabilang na dito ang kawalan ng seguridad sa sapat na pagkain, hindi tiyak na kalagayan sa pabahay, kahirapan sa pagkuha ng serbisyong medikal, depresyon, pagkabalisa, post-traumatic stress disorder (PTSD), mataas na presyon ng dugo, at mga suliranin sa kalusugan ng baga.

Ang pinakamahalagang mensahe mula sa MauiWES ay ang paggaling ng kalusugan ay nakasalalay sa apat na pangunahing suporta: sapat na pagkain at kita, matatag at ligtas na tirahan, pagkakaron ng sapat na serbisyong pangkalusugan, at matibay na suporta mula sa pamilya, mga kaibigan, komunidad, at kultura. Nakatutulong ang mga suportang ito sa mga pamilya upang maibalik ang kanilang pang-araw-araw na gawain, mabawasan ang stress, matukoy at maagapan ang mga problema sa kalusugan, at makatanggap ng angkop na pangangalaga. Nangangailangan ng natatanging atensyon ang mga bata dahil marami sa mga nakaligtas ang patuloy na nagpapakita ng mga palatandaan ng matinding emosyonal na pasanin, at ang ilan ay nagpapakita rin ng mga unang indikasyon ng problema sa presyon ng dugo at kalusugan ng baga.

Ang pagbangon ng Maui ay hindi lamang tungkol sa muling pagtatayo ng mga bahay at negosyo o sa muling pagbubukas ng mga kalsada. Ipinapakita rin ng datos na mahalagang may pamilya ay may sapat na pagkain, kapanatagan sa kanilang tirahan, nakakukuha ng kanakailangang pangangalaga at nananatili konektado sa mga tao, at lugar na nakatutulong sa kanilang paggaling.

## Ilocano / Ilokano

Kalpasan iti tallo a tawen manipud idi napasamak dagiti nakaro ken nalawa nga uram idiay Maui, ipakpakita ti Maui Wildfire Exposure Study nga agtultuloy ti panagimbag ti kasasaad, ngem saan nga agpapada iti kapadasan ti tunggal maysa. Adu kadagiti agnaed iti Maui ti agsubsubli iti trabaho, naaddaan iti insurance para iti salun-at, ummakar manipod kadagiti apagbiit a pagnaedan, ken makarikna iti ad-adda a kinatalged iti pagtaenganda. Dagitoy ket mangted iti namnama ken mangipakita a makatulong dagiti programa ken ar-aramid para iti pannakaurnos iti kasasaad. Nupay kasta, adda pay laeng dagiti agned ken pamilya nga agsagsagaba iti nadagsen a parikut, kas iti saan a kinasigurado iti panakkaadda iti umdas a taraon, saan a kinatalged ti pagnaedan, rigat iti pannakagun-od iti serbisyo medikal, depresion, panagdanag, post- traumatic stress disorder (PTSD) wennu sakit a gapu iti nakaro a trauma kalpasan ti didigra, nangato a presion iti dara, ken dagiti pakaseknan maipanggep iti salun-at iti bara.

Ti kangrunaan a mensahe ti MauiWES ket iti panagimbag iti salun-at ket agpannuray kadagiti uppat a kangrunaan a tulong: umdas a taraon ken pagbiagan, natalged ken permanente a pagnaedan, pannakagun-od iti kasapulan a serbisio iti salun-at, ken napigsa a pannakidanggay manipud iti pamilya, gagayyem, komunidad, ken kultura. Dagitoy ket makatulong kadagiti pamilia

tapno maisublida dagiti gagangayda iti inaldaw, mangpababa iti stress, maduktalan a nasapa dagiti problema iti salun-at, ken maiturongda kadagiti kasapulan a serbisio ken panangtaripato.

Kasapulan a maikkan dagiti ubbing ti naisangsangayan a panangipateg, gapu ta adu kadagiti ubbing a nakalasat ti mangipakpakita pay laeng kadagiti pagilasinan ti pannakariribuk ti rikna. Adda met kadakuada ti mangipakpakita kadagiti nasapa a pagilasinan ti problema iti presion ti dara ken salun-at ti bara.

Ti panagsubli ti Maui ti nasayaat a kasasaad ket saan laeng a maipapan iti pannakaipasdek manen dagiti balay ken negosyo wenno iti pannakalukat manen dagiti kalsada. Ipakita met dagiti datos a napateg nga adda umdas a taraon dagiti pamilya, makariknada iti talged iti pagnaedanda, magun-odda iti taripato a kasapulanda, ken agtalinaedda a nasinged kadagiti tattao ken lugar a makatulong iti panagimbagda.

## Lea faka-Tonga

Kuo ʻosi ha taʻu ʻe tolu talu mei he ngaahi afi lahi ʻi Maui, pea ʻoku fakahaaʻi ʻe he Maui Wildfire Exposure Study ʻoku hoko ʻa e toe langa hake, ka ʻoku ʻikai tatau ki he tokotaha kotoa. ʻOku tokolahi ʻa e kakai nofo ʻoku nau foki ki he ngāue, maʻu maluʻi moʻui, mavahe mei he nofoʻanga fakataimi, pea ongoʻi malu ange ʻi honau nofoʻanga. Ko e ngaahi fakaʻilonga fakalotolahi ʻeni ʻoku fakahaaʻi ai ʻoku tokoni ʻa e ngaahi ngāue ki he toe langa hake. Ka ʻi he taimi tatau, ʻoku kei fehangahangai ha ngaahi famili tokolahi mo ha ngaahi faingataʻa mamafa, kau ai ʻa e faingataʻa ke maʻu ha meʻakai feʻunga, taʻe-pau ʻa e nofoʻanga, faingataʻa ke maʻu ha tokoni fakafaitoʻo, loto-mafasia, hohaʻa, PTSD pe mamahi fakaloto hili ʻa e fakatamaki, toto māʻolunga, mo e ngaahi tokanga ki he moʻui lelei ʻo e maʻamaʻa.

Ko e pōpoaki mahuʻinga taha mei he MauiWES, ʻoku fakafalala ʻa e fakaakeake ʻo e moʻui lelei ki ha ngaahi poupou tefito ʻe fā: meʻakai mo e paʻanga hū mai feʻunga, nofoʻanga malu mo tuʻuloa, faingamālie ke maʻu ha tokoni fakafaitoʻo, mo ha poupou mālohi mei he famili, ngaahi kaungāmeʻa, komiuniti, mo e anga fakafonua. ʻOku tokoni ʻa e ngaahi poupou ko ʻeni ki he ngaahi famili ke toe fokotuʻu ʻenau moʻui fakaʻaho, fakasiʻisiʻi ʻa e loto-hohaʻa, ʻilo vave ʻa e ngaahi palopalema fakamoʻui, pea fakafehokotaki kinautolu ki he tokoni ʻoku nau fiemaʻu. ʻOku fiemaʻu ha tokanga makehe ki he fānau mo e ngaahi famili, koeʻuhí ʻoku kei hā mai ha ngaahi fakaʻilonga ʻo e mamahi fakaloto ʻi he fānau naʻa nau moʻui mei he fakatamaki, pea ʻoku ʻi ai foki ha niʻihi ʻoku hā ai ha ngaahi fakaʻilonga vave ʻo e palopalema ki he toto māʻolunga mo e moʻui lelei ʻo e maʻamaʻa. ʻOku ʻikai totonu ke fua ʻa e toe langa hake ʻa Maui ʻaki pē ʻa e ngaahi fale kuo toe langa pe ngaahi hala kuo toe fakaava. ʻOku totonu foki ke fua ʻaki pe ʻoku maʻu ʻe he ngaahi famili ha meʻakai feʻunga, ʻoku nau ongoʻi malu ʻi honau nofoʻanga, ʻoku nau maʻu ʻa e tokoni fakafaitoʻo ʻoku nau fiemaʻu, pea ʻoku nau kei fehokotaki mo e kakai mo e ngaahi feituʻu ʻoku tokoni ki heʻenau fakaakeake.

## Tiếng Việt

Ba năm sau vụ cháy rừng ở Maui, Nghiên cứu về Phơi nhiễm Cháy rừng Maui cho thấy quá trình phục hồi đang diễn ra, nhưng không giống nhau đối với mọi người. Nhiều người dân đang quay trở lại làm việc, có bảo hiểm y tế, ổn định nơi ở mới và cảm thấy an toàn hơn với nơi ở của mình. Đây là những dấu hiệu đầy hy vọng cho thấy các nỗ lực phục hồi đang có hiệu quả. Đồng thời, nhiều gia đình vẫn đang đối mặt với những thách thức nghiêm trọng, bao gồm an ninh lương thực, bất ổn về nhà ở, khó tiếp cận chăm sóc y tế, trầm cảm, lo âu, rối loạn căng thẳng sau sang chấn, huyết áp cao và các lo ngại về sức khỏe phổi.

Thông điệp mạnh mẽ nhất từ MauiWES là việc phục hồi sức khỏe phụ thuộc vào 4 yếu tố hỗ trợ cơ bản: đủ thực phẩm và thu nhập, nhà ở ổn định, khả năng tiếp cận chăm sóc sức khỏe, và sự hỗ trợ xã hội vững chắc từ gia đình, bạn bè, cộng đồng và văn hóa. Những hỗ trợ này giúp các gia đình xây dựng lại thói quen hằng ngày, giảm căng thẳng, phát hiện sớm các vấn đề sức khỏe và kết nối với các dịch vụ chăm sóc sức khoẻ cần thiết. Trẻ em và gia đình cần được quan tâm đặc biệt vì nhiều người trẻ sống sót sau thảm họa vẫn còn có dấu hiệu căng thẳng tinh thần, và một số em có dấu hiệu sớm về huyết áp và sức khỏe phổi. Sự phục hồi của Maui không nên chỉ được đo bằng số ngôi nhà được xây lại hay số con đường được mở lại. Sự phục hồi cũng cần được đo bằng việc các

gia đình có ổn định về lương thực, thực phẩm hay không, có cảm thấy an toàn về nhà ở hay không, có nhận được sự chăm sóc cần thiết hay không, và có tiếp tục kết nối với mọi người và cộng đồng xung quanh hay không để giúp họ phục hồi.

## 中文（简体）

毛伊岛野火三年后，毛伊岛野火暴露研究显示，恢复正在发生，但每个人的情况并不相同。许多居民正在重返工作岗位，获得医疗保险，搬离临时住所，也对自己的居住状况感到更安心。这些都是令人鼓舞的迹象，说明恢复的努力正在见效。与此同时，许多家庭仍面临严重挑战，包括食物不足或不稳定、住房不确定、难以获得医疗服务、抑郁、焦虑、创伤后压力症候群、高血压以及肺部健康方面的担忧。

MauiWES 传达的最重要信息是：健康恢复取决于四项基本支持：充足的食物和收入、稳定的住房、获得医疗照护的机会，以及来自家人、朋友、社区和文化的强大社会支持。这些支持能帮助家庭重建日常生活、减轻压力、及早发现健康问题，并连接到所需的医疗和服务。儿童和家庭需要特别关注，因为许多幸存者仍表现出情绪困扰的迹象，一些儿童也出现血压和肺部健康问题的早期迹象。毛伊岛的复原不应只用重建了多少房屋或重新开放了多少道路来衡量。也应衡量家庭是否有足够的食物、是否在住房上感到安全、是否能够获得所需的照护，以及是否仍能与帮助他们疗愈的人和地方保持联系。

# Key Findings at a Glance

**Bottom line:** Recovery is underway, but it remains uneven. Progress is being made in employment, health insurance coverage, and housing security. However, persistent food insecurity, emotional distress, declining social support, and continuing medical concerns—especially elevated blood pressure and abnormal lung function—suggest that long-term recovery still requires sustained investment.

Because MauiWES follows many of the same participants over time, the study can now show how recovery is changing within the same families. Below is a brief summary of some of the findings from Year 1 to Year 2. Details of the longitudinal data can be found in the next section in Table 1 and in the figures.

### 1. Longitudinal data show signs of recovery.

Among returning adults, there were improvements in employment, health insurance coverage, and housing security along with a decline in those in temporary housing.

- **Employment:** 62.0% in Year 1 to 80.9% in Year 2.
- **Insurance coverage:** 85.1% in Year 1 to 90.5% in Year 2.
- **Temporary housing:** 40.6% in Year 1 to 34.4% in Year 2.
- **Housing security:** 72.2% in Year 1 to 79.6% in Year 2.

### 2. Recovery remains fragile for many families.

The same data show serious ongoing hardship. Food insecurity remained high, very low food security did not improve, and social support declined. These patterns suggest that the conditions needed for health recovery remain uneven across families.

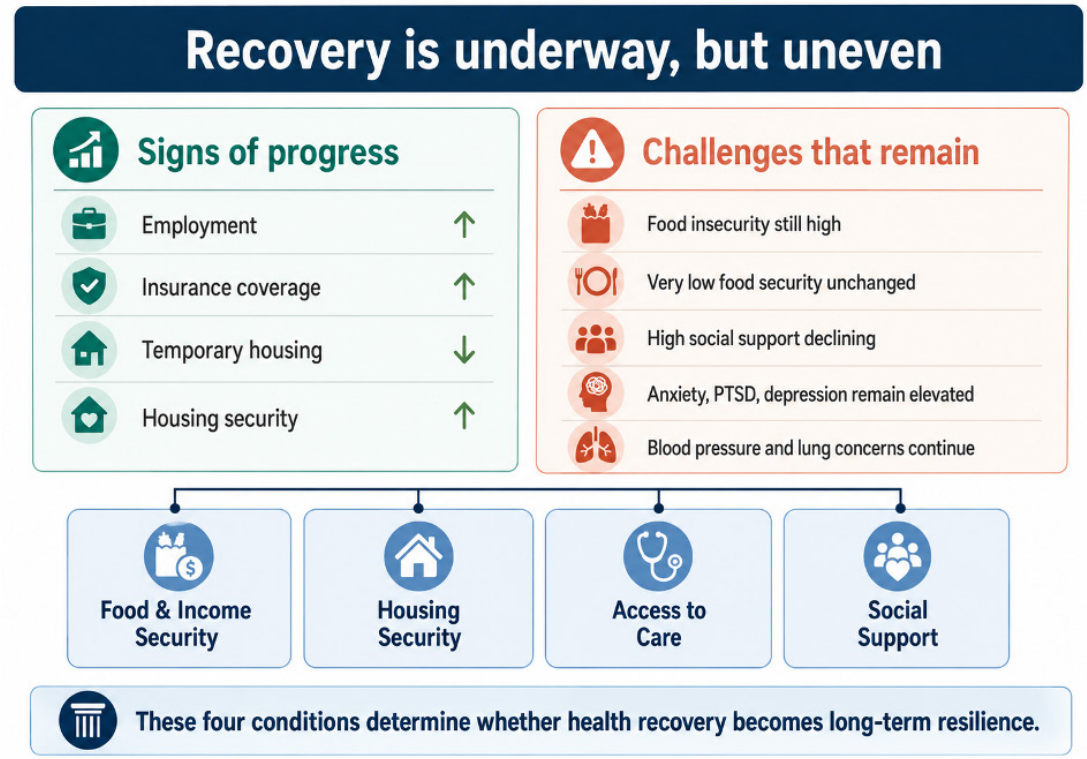
### 3. Physical and mental health concerns remain elevated.

MauiWES continues to identify substantial emotional distress and physical-health screening concerns. About one in two adults reported depressive symptoms, including 8.8% with high depressive symptoms. In Year 2, 25.1% screened with moderate-to-severe anxiety, 2.9% reported suicidal ideation, and post-traumatic stress symptoms also remained elevated. Physical-health concerns were similarly common: 27.1% of returning adults had a screening result meeting Stage 1 hypertension criteria, and 31.0% had a result meeting Stage 2 criteria. Lung-function findings were mixed: the proportion with forced expiratory volume in 1 second ($FEV_1$) below the expected range increased, while the proportion with forced vital capacity (FVC) below the expected range decreased. These screening findings are not diagnoses, but they identify residents who may need timely clinical confirmation and follow-up.

### 4. Four interrelated factors that shape recovery.

- **Food and income security:** A stable income and reliable access to nutritious food are critical. Food insecurity impacts physical, mental and overall well-being.
- **Housing security:** Families need stable, secure housing, not repeated relocations or ongoing fear of losing their current housing.
- **Access to care:** Screening must lead to follow-up care, including primary care, specialty care when indicated (e.g., pulmonary care) and mental health services as well as to medication access and insurance coverage.
- **Social support:** ʻOhana (family), friends, churches, cultural groups, schools, and community organizations remain central to resiliency. Declining levels of social support suggest a need to reinforce these networks.

Figure 1. Recovery is underway, but uneven.




*This summary graphic contrasts signs of progress with the remaining challenges and identifies the four interrelated factors used throughout the report.*
**AI was used to generate this figure with all content reviewed by authors.*

## 5. Children's health findings remain mixed

Children's findings were mixed. Anxiety and the overall share with depressive or PTSD symptoms decreased, but severe depressive symptoms, severe PTSD symptoms, and low self-esteem increased. Lung-function screening results improved but remained concerning, while Stage 1 hypertension and obesity increased. These patterns support continued pediatric screening, clinical follow-up, school-based mental-health support, clean-air environments, and family-centered services.

# How MauiWES Tracks Recovery Over Time

A key strength of MauiWES is that it follows many of the same residents over time. This allows the study to move beyond a single snapshot of post-fire health and begin answering a deeper question: how is recovery changing within the same families and communities?

In the first year after the wildfires, MauiWES focused on documenting immediate and continuing health and social impacts. Participants shared information about wildfire exposure, housing, employment, food security, access to care, mental health, physical health, and sources of support. They also received on-site health screenings, including blood pressure checks, lung function testing, and other clinical measures.

In the second and third years, MauiWES invited participants to return for follow-up visits. These repeated visits allowed the study to compare each participant's health and recovery conditions across time. Importantly, MauiWES examined whether the same individuals were experiencing improvement, stability, or decline.

This longitudinal approach is especially important after a disaster because recovery does not move in a straight line. Some residents may regain employment or housing while still experiencing depression, anxiety, PTSD, elevated blood pressure, or respiratory symptoms. Others may appear stable at one point but face new stressors later, such as food insecurity, loss of support, housing uncertainty, or barriers to medical care. In terms of mental health care, the study found that it is difficult to treat a person's underlying issues related to trauma without their basic needs being met first.

Because MauiWES combines survey data, clinical screening, biological samples, referrals, and community-based outreach, it provides a more complete picture of recovery than any single data source alone. The study captures not only whether people are physically or mentally well, but also whether they have the stability, resources, and support needed to heal.

**How to read the figures and tables:** Figures and tables in this report show patterns observed among MauiWES participants and should be used to guide support, follow-up, and planning. They should not be interpreted as proof that one condition alone causes an outcome.

# What Changed Since Last Year

A major strength of this year's report is the ability to examine change over time among returning adults. The longitudinal data show a clear but complex pattern: recovery is underway, but it remains uneven.

Several indicators improved between Year 1 and Year 2. Employment increased from 62.0% to 80.9%, suggesting that many residents are reconnecting with work and rebuilding financial stability. Health insurance coverage increased from 85.1% to 90.5%, reflecting the importance of enrollment assistance, proactive outreach and community-based support. The share of people in temporary housing declined from 40.6% to 34.4%, and perceived housing security rose from 72.2% to 79.6%.

Table 1. MauiWES Adults' Longitudinal Data from Year 1 to Year 2

| Indicator or category | Year 1 | Year 2 | Observed change |
|---|---|---|---|
| **Employment and access to care** | | | |
| Employed | 62.0% | 80.9% | Increased |
| Health insurance coverage | 85.1% | 90.5% | Increased |
| **Housing** | | | |
| Living in temporary housing | 40.6% | 34.4% | Decreased |
| Feeling secure in current housing | 72.2% | 79.6% | Increased |
| **Food security** | | | |
| Any food insecurity | 49.8% | 44.9% | Decreased |
| Food secure | 50.2% | 55.1% | Increased |
| Low food security | 26.8% | 21.5% | Decreased |
| Very low food security | 23.0% | 23.4% | Little change |
| **Social support** | | | |
| High social support | 62.3% | 53.7% | Decreased |
| Medium social support | 28.4% | 34.9% | Increased |
| Low social support | 9.3% | 11.4% | Increased |
| **Mental-health screening results** | | | |
| Moderate-to-severe anxiety | 26.2% | 25.1% | Little change |
| Any depressive symptoms | 50.7% | 52.5% | Little change |
| Little or no depressive symptoms | 49.3% | 47.5% | Little change |
| Mild-to-moderate depressive symptoms | 40.3% | 43.7% | Increased |
| High depressive symptoms | 10.4% | 8.8% | Modest decrease |
| Suicidal ideation | 3.8% | 2.9% | Decreased |
| Low self-esteem | 19.2% | 18.9% | Little change |
| **Post-traumatic stress disorder symptoms** | | | |
| Little or no PTSD symptoms | Not measured | 31.8% | Year 2 only |
| Mild PTSD symptoms | Not measured | 37.6% | Year 2 only |
| PTSD symptoms | Not measured | 21.0% | Year 2 only |
| Severe PTSD symptoms | Not measured | 9.6% | Year 2 only |
| **Blood pressure screening** | | | |
| Screening result meeting Stage 1 hypertension criteria | 31.5% | 27.1% | Decreased |
| Screening result meeting Stage 2 hypertension criteria | 31.8% | 31.0% | Little change |
| **Lung-function screening results** | | | |
| FEV1 below the expected range | 15.6% | 19.8% | Increased |
| FVC below the expected range | 11.6% | 9.9% | Decreased |

At the same time, major challenges remained. About one-third of returning participants were still living in temporary housing. Food insecurity declined only modestly, from 49.8% to 44.9%, and very low food security remained essentially unchanged. The share of people reporting that they have high levels of social support declined from 62.3% to 53.7%, suggesting that recovery fatigue may be straining families, friends, and community networks.

One should be cautious in interpreting the findings showing recovery. These individual indicators cannot be interpreted in isolation. Multiple factors impact each participant and family. For example, some participants may be back at work but remain food insecure; others may have insurance but still face barriers to care. Consider also that some families may have moved out of temporary housing but still feel uncertain about whether they can remain housed. Finally, family members may appear outwardly stable, but they may be continuing to experience depression, anxiety, PTSD, or chronic stress.

**Organizing framework:** The rest of this report focuses on four interrelated social factors—food and income security, housing security, access to care, and social support—to explain in detail where recovery is improving, where it remains fragile, and what these findings suggest for future action.

# The Four Interrelated Factors

## Factor 1: Food and Income Security Supports Health Recovery

**Why this matters:** Food and income security are more than measures of economic recovery. In the MauiWES data, they are among the clearest signals of health recovery.

The longitudinal data show that many residents are reconnecting with work, but financial and food-related hardship remain deeply persistent. Employment rates improved between Year 1 and Year 2, yet food insecurity remained high, and the most severe form of food hardship did not improve. This matters because food insecurity is not simply about whether a household has enough food. It is also an indicator of chronic stress, instability, disrupted routines, difficulty managing health, and reduced capacity to recover.

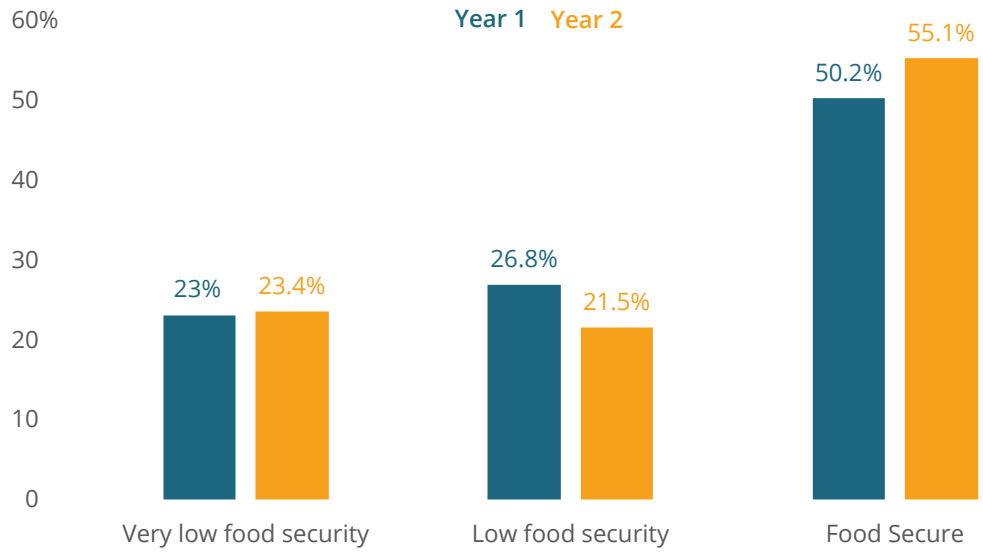
Among returning MauiWES participants, food insecurity continued to impact almost half of participants. Very low food security remained essentially unchanged, meaning almost a quarter of participants continued to experience the most severe form of food hardship even as employment and insurance coverage improved.

The health patterns are striking. Mental health burden rises sharply as food security worsens. Food-secure adults were much more likely to report little to no depressive symptoms, minimal anxiety, lower severity of PTSD symptoms, lower levels of suicidal ideation, and higher levels of self-esteem. Adults experiencing very low levels of food security consistently carried the heaviest emotional burden.

These findings show that food security is not a secondary issue in disaster recovery. It is a core condition for good health. When families are unsure whether they can afford or access food, stress remains high, sleep and daily routines are disrupted, chronic conditions become harder to manage, and emotional recovery becomes more difficult.

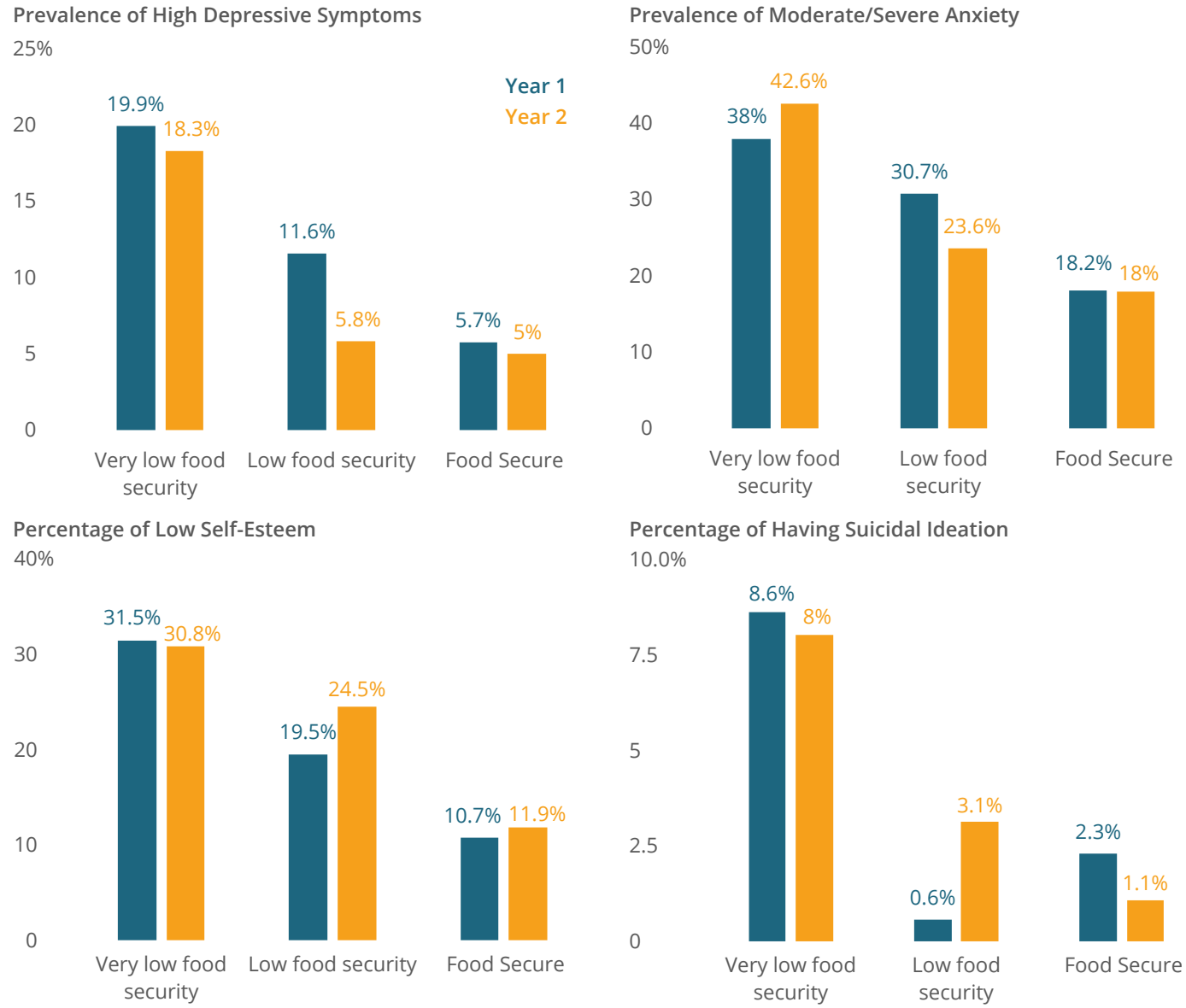
**Policy implication:** Our findings suggest that food assistance is a health intervention, not merely a form of economic relief. Expanding nutritious and culturally appropriate food programs, benefits enrollment, produce prescription programs, medically supportive food, school and family food programs, and emergency financial support can reduce stress and protect overall health.

Figure A1. Food security among returning adults.



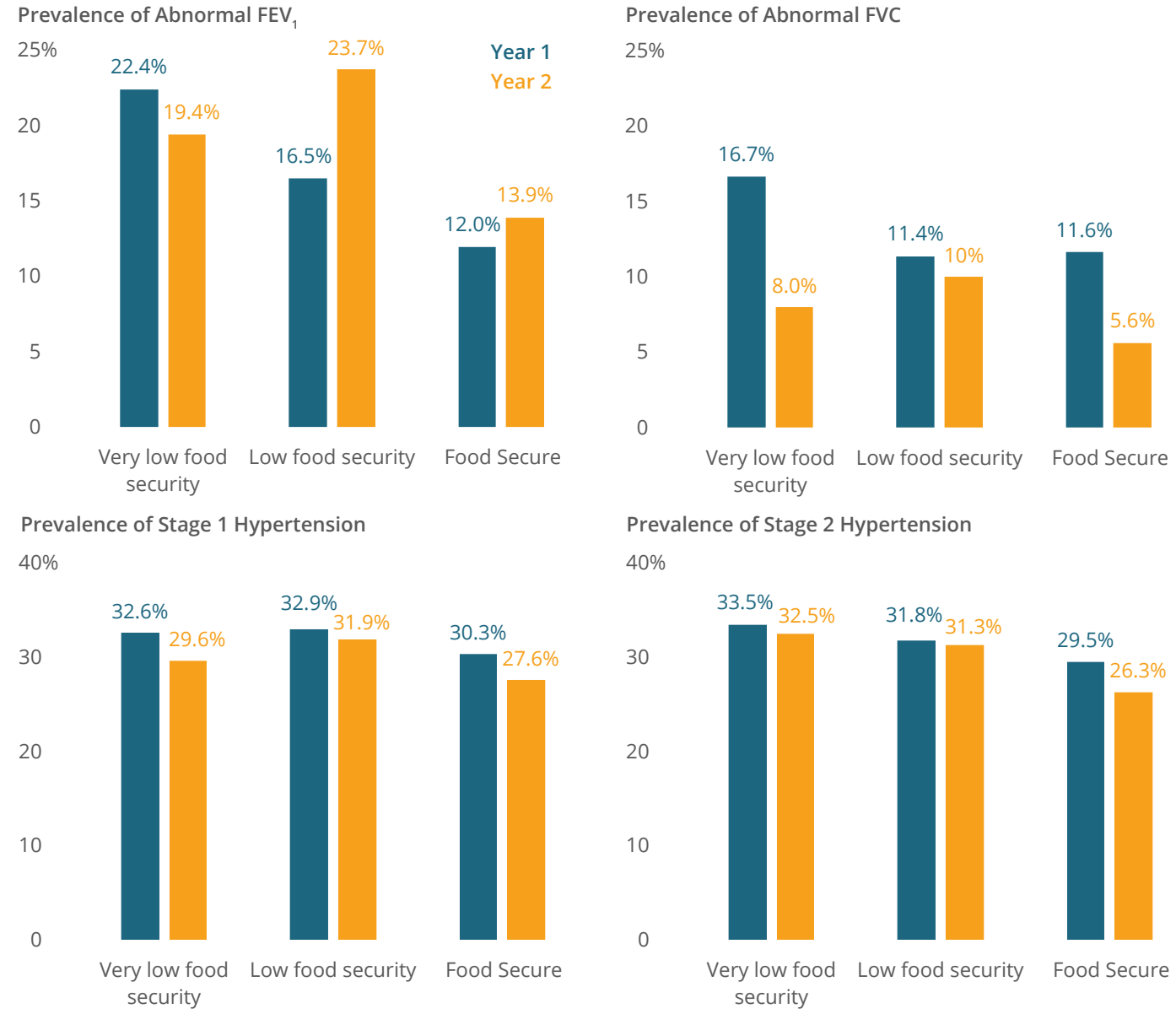

*The food-secure share increased from 50.2% to 55.1%, while low food security declined from 26.8% to 21.5%. Very low food security was essentially unchanged, moving from 23.0% to 23.4%.* ***Community Takeaway: Food hardship eased somewhat, but nearly one in four returning adults still faced the most severe level of food insecurity.***

**Figure A2. Mental-health screening results by food security among returning adults.**




*In Year 2, adults with very low food security had the highest levels of high depressive symptoms at 18.3%, moderate-to-severe anxiety at 42.6%, low self-esteem at 30.8%, and suicidal thoughts at 8.0%. Food-secure adults had lower levels on every measure.* ***Community Takeaway: The most severe food hardship was associated with the greatest emotional burden—the same residents are dealing with both. Food-assistance settings are therefore a direct point of contact for reaching residents with the highest mental-health risk and connecting them to screening and support.***

**Figure A3. Physical-health screening results by food security.**




*The four panels compare lung-function and blood-pressure screening results by food security. In Year 2, adults with low or very low food security had more lung-function concerns and Stage 1 or Stage 2 hypertension than food-secure adults. Results over time were mixed.* ***Community Takeaway: Food insecurity was linked to more physical-health concerns, so the settings that deliver food support are also an ideal point to connect residents to health screening and follow-up.***

# Factor 2: Housing Security

Why this matters: Housing recovery is not only about whether a family has a place to sleep. It is about whether families feel safe, stable, and able to rebuild their daily routines without the ongoing threat of relocation, rent increases, or the loss of current housing.

The MauiWES longitudinal data show signs of progress. Temporary housing declined between Year 1 and Year 2, and the share of returning participants who felt secure in their housing increased. These changes suggest that some families are moving from emergency shelter and temporary arrangements toward greater stability.

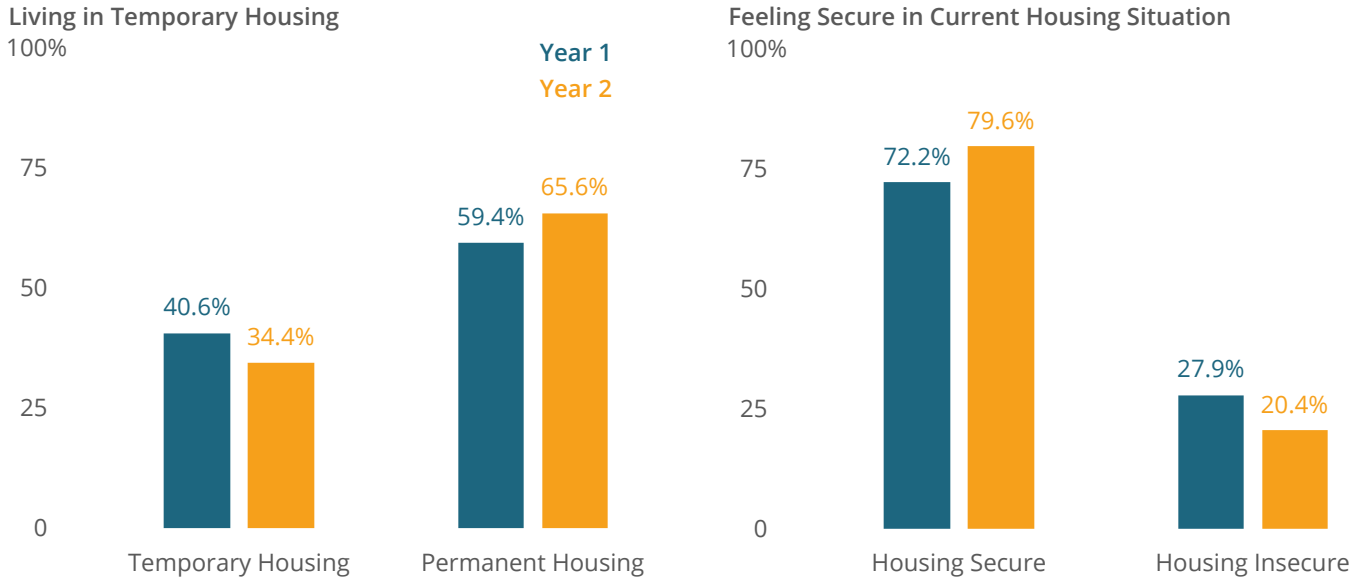
But housing recovery remains incomplete. Even after improvement, about one-third of returning participants were still living in temporary housing. Many others were no longer in temporary housing but still did not feel secure in their current living situation. This distinction is important because housing instability includes fear of being forced to move again, uncertainty about affordability, repeated relocations, issues involving distance from work or school, and the stress of rebuilding routines while housing security remains unresolved.

The health patterns in the MauiWES data show why housing security is a health issue. Adults in temporary housing and adults who did not feel secure in their current housing generally showed a higher mental health burden. Depression, anxiety, PTSD, suicidal ideation, and low self-esteem were more common among participants facing housing instability.

Housing also matters for physical health. Stable housing makes it easier to keep medical appointments, store medications, maintain routines, prepare healthy food, rest, and avoid repeated exposure to stressful or unhealthy environments. MauiWES findings suggest that it is important to continue monitoring housing instability as the cohort is followed over time.

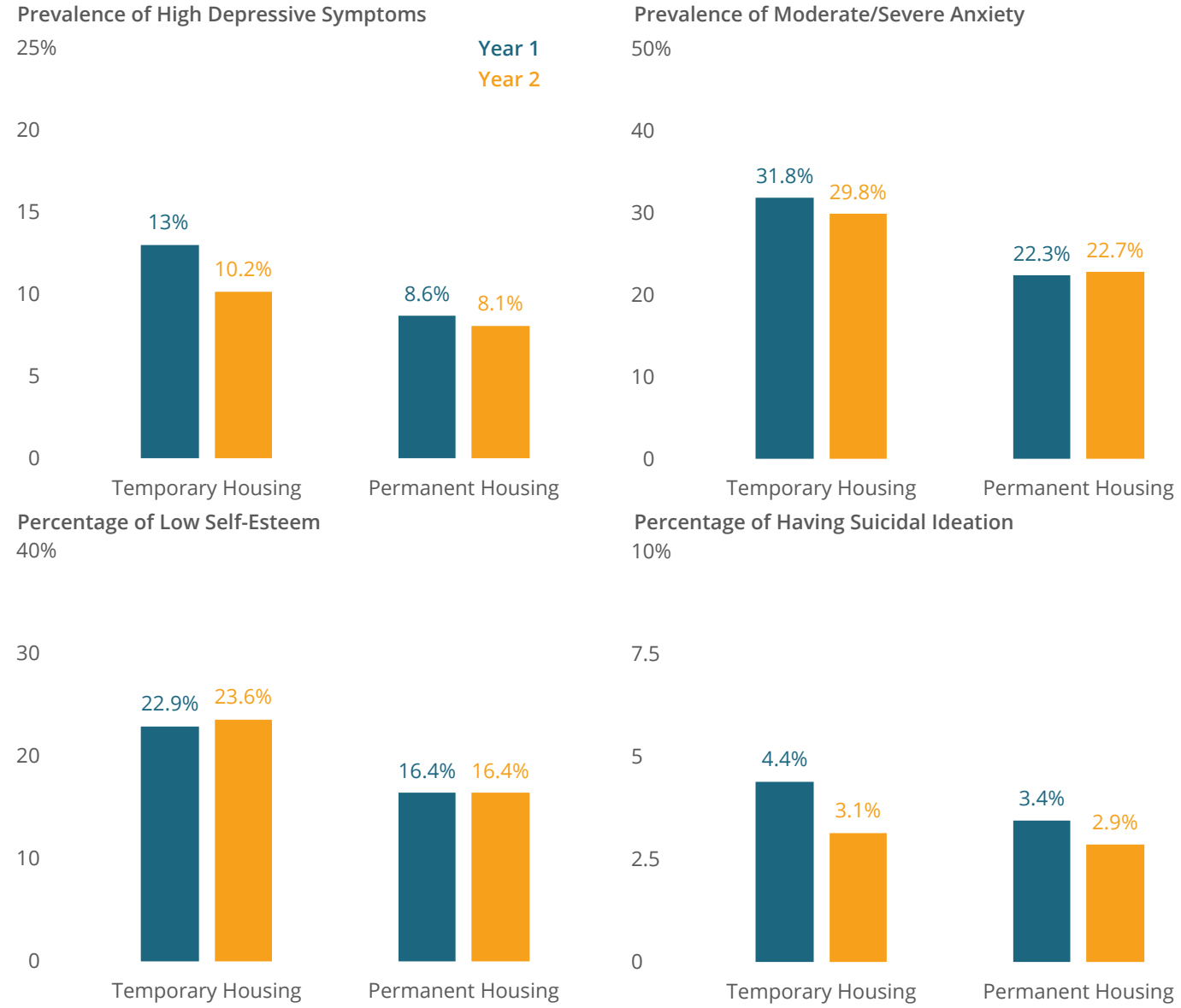
**Policy implication:** Housing stability has important health implications. Long-term rental support, relocation prevention, housing navigation, legal and benefits support, and coordinated services can reduce chronic stress and help families rebuild daily life.

**Figure B1. Housing status and housing security among returning adults.**



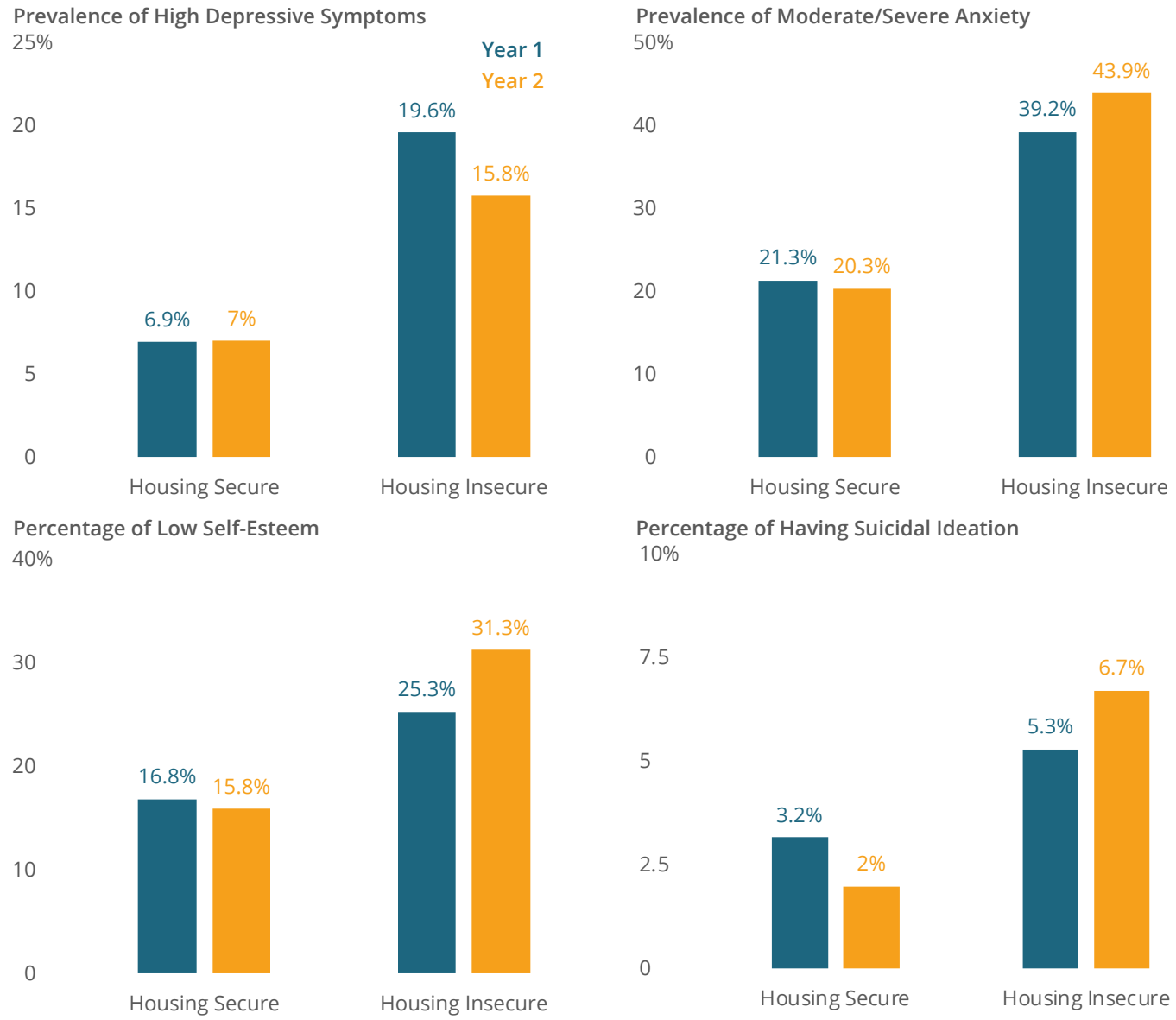

*The share living in temporary housing declined from 40.6% to 34.4%, while the share who felt secure in their current housing increased from 72.2% to 79.6%. In Year 2, 34.4% remained in temporary housing and 20.4% still did not feel secure in their housing.* ***Community Takeaway: Housing improved, but about one in three returning adults remained in temporary housing and one in five still did not feel secure.***

**Figure B2. Mental-health screening results by temporary housing status.**



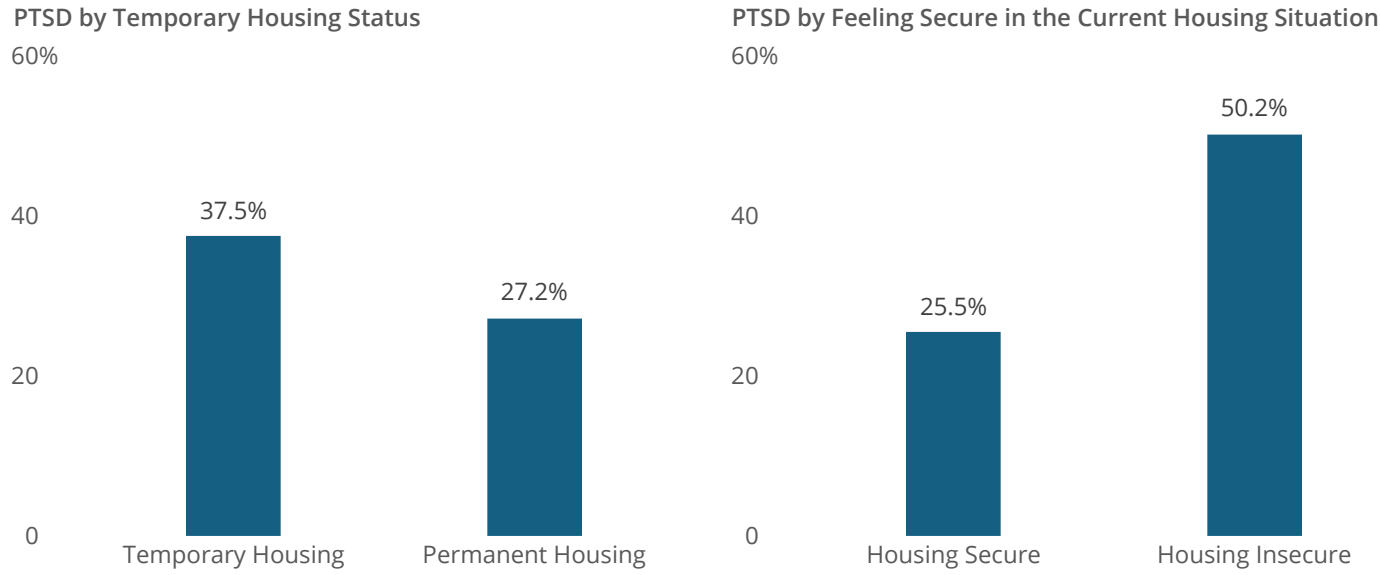

*In Year 2, adults in temporary housing reported more moderate-to-severe anxiety than adults not in temporary housing, 29.8% compared with 22.7%, and more low self-esteem, 23.6% compared with 16.4%. Differences in high depressive symptoms, 10.2% compared with 8.1%, and suicidal thoughts, 3.1% compared with 2.9%, were smaller.* ***Community Takeaway: The clearest emotional-health gaps for adults in temporary housing were anxiety and low self-esteem. Housing assistance programs are therefore an ideal contact point for mental-health support.***


**Figure B3. Mental-health screening results by whether adults feel secure in their housing.**



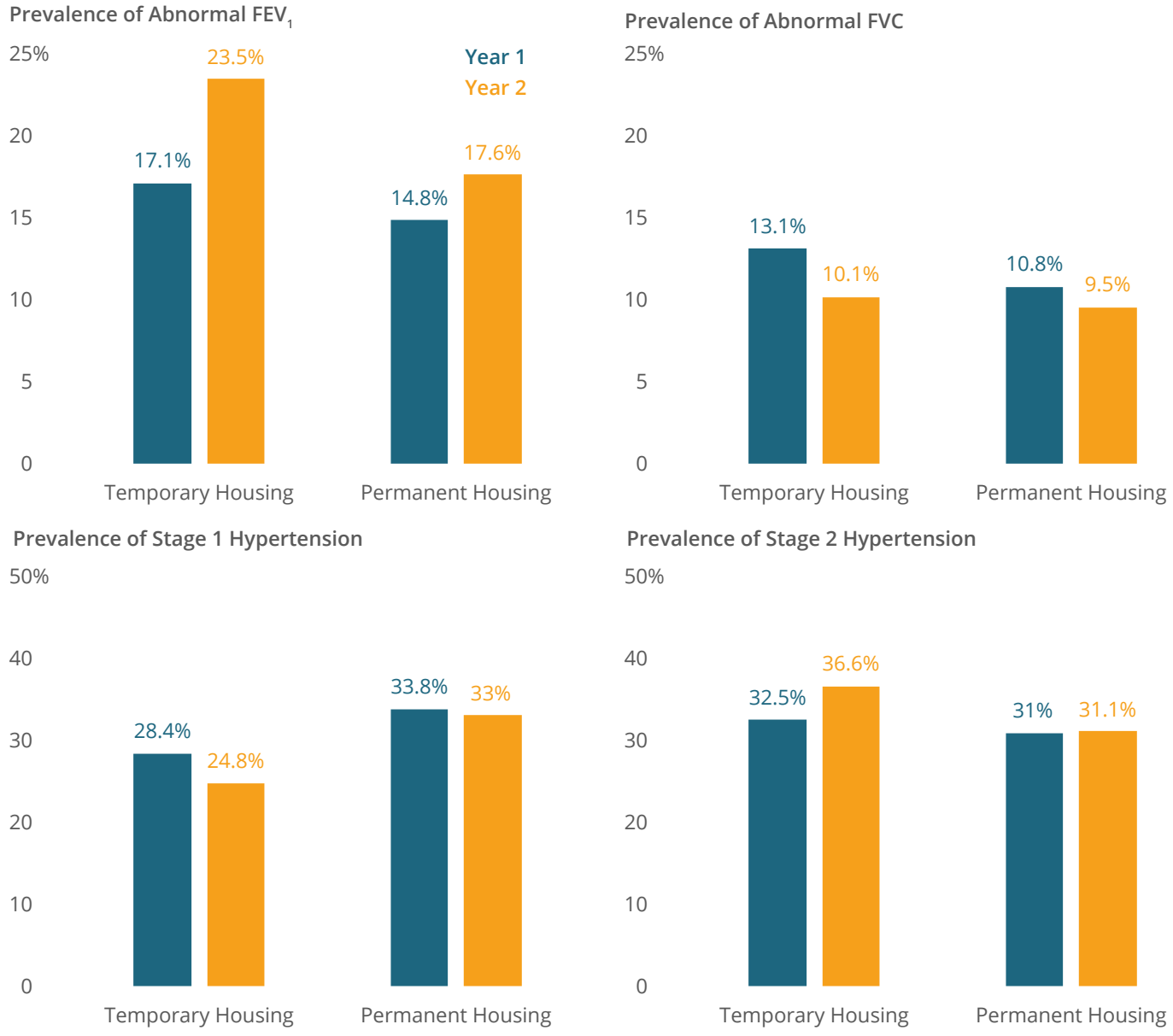

*In Year 2, housing-insecure adults had higher levels of high depressive symptoms, 15.8% compared with 7.0%; moderate-to-severe anxiety, 43.9% compared with 20.3%; low self-esteem, 31.3% compared with 15.8%; and suicidal thoughts, 6.7% compared with 2.0%.* ***Community Takeaway: Feeling insecure in housing was associated with much greater emotional distress. Housing security is also a mental-health issue.***

**Figure B4. Post-traumatic stress symptoms and housing instability, Year 2.**



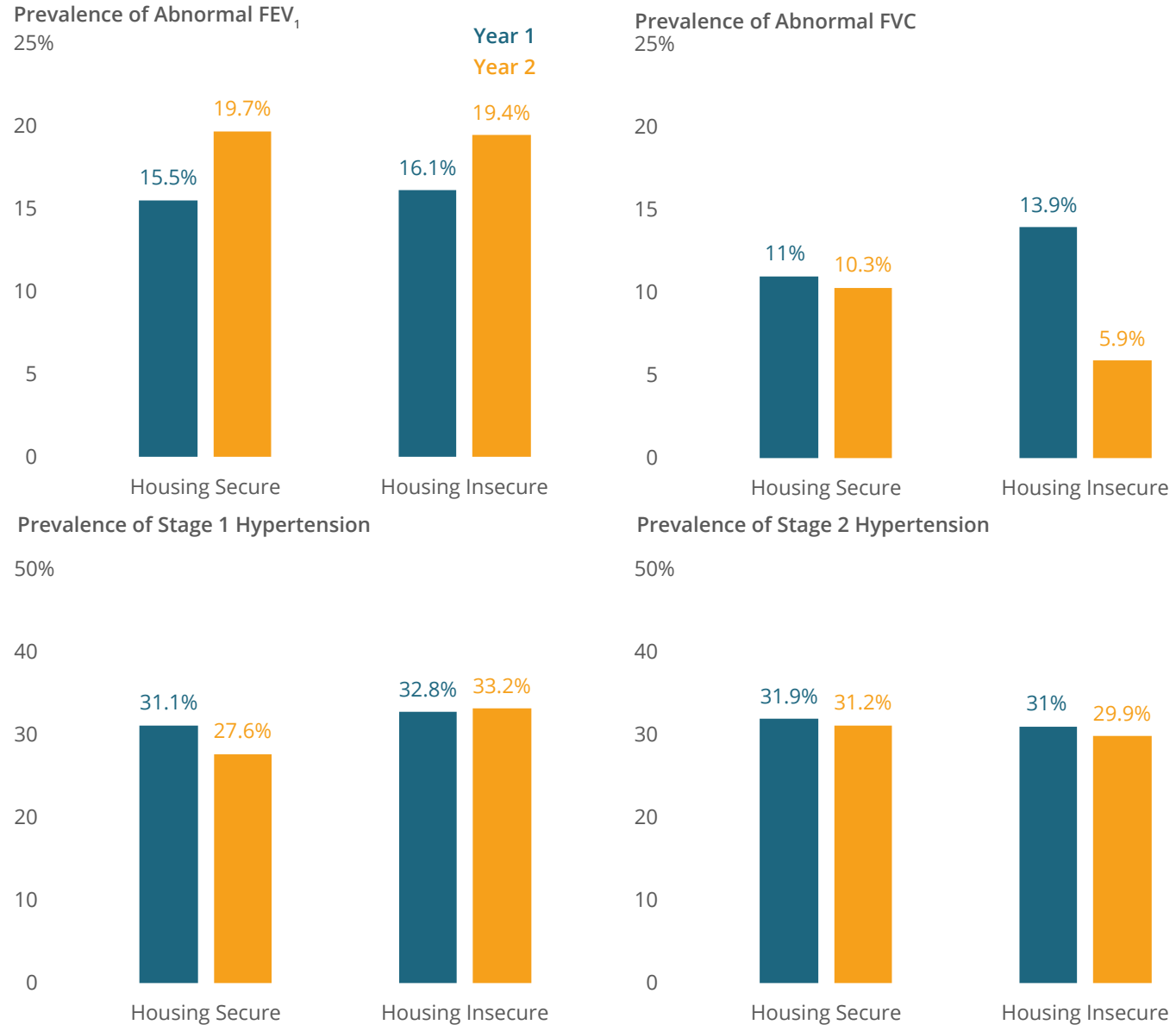

*Moderate-to-severe post-traumatic stress symptoms were reported by 37.5% of adults in temporary housing, compared with 27.2% of adults not in temporary housing. Moderate-to-severe post-traumatic stress symptoms were reported by 50.2% of adults who felt insecure in their housing, compared with 25.5% of adults who felt secure.* ***Community Takeaway: Housing insecurity was the clearest divide: one in two housing-insecure adults had moderate-to-severe post-traumatic stress symptoms.***

**Figure B5. Physical-health screening results by temporary housing status.**




*Lung-function and blood-pressure results changed in different directions. In Year 2, adults in temporary housing had more $FEV_1$ results below the expected range and more Stage 2 hypertension readings than those in permanent housing.* ***Community Takeaway: Physical-health concerns remained greater for adults in temporary housing, so housing support programs are also a point to connect residents with medical follow-up.***

**Figure B6. Physical-health screening results by housing security.**




*Results were mixed, but adults who felt insecure in their housing had more Stage 1 hypertension in Year 2. Lung-function and Stage 2 hypertension patterns were less consistent.* ***Community Takeaway: Housing insecurity should remain part of health screening and follow-up planning.***

# Factor 3: Access to Care

**Why this matters:** MauiWES is identifying important health needs across the community. Screening is essential, but long-term healing requires that every unusual result leads to a clear pathway to follow-up care.

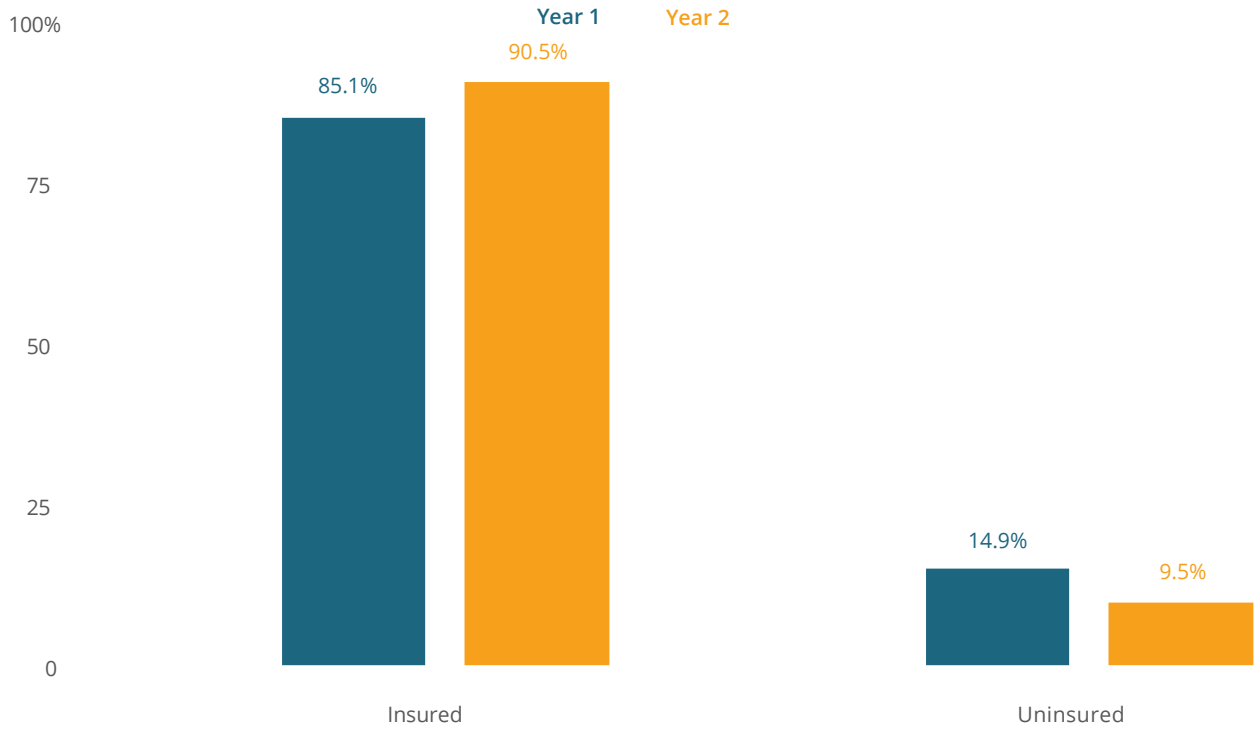
The MauiWES longitudinal data show meaningful progress in health insurance coverage. Among returning adult participants, insurance coverage increased from 85.1% in Year 1 to 90.5% in Year 2. This improvement reflects outreach efforts, enrollment support, community-based assistance, and trusted partnerships that helped residents reconnect with care systems after the disaster.

One of the clearest examples is the role of charitable insurance and enrollment support through partners such as Kaiser Permanente Hawai'i (Community Health Coverage Program). Early in recovery, uninsured rates among Hispanic/Latino residents were extremely high. Through targeted outreach, enrollment assistance, charitable coverage, and trusted community-based support, that gap has been cut by more than half. Even so, nearly one in five Hispanic/Latino participants remains uninsured, showing the importance of continuing these enrollment assistance efforts and making them sustainable. Health insurance is often the first door into care, but access to care is more than having an insurance card. It also includes whether residents can find an available provider, afford medications, travel to appointments, understand their results, receive care in a trusted language and cultural context, and continue care over time.

MauiWES continues to identify high levels of depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms, as well as suicidal thoughts, elevated blood-pressure screening results, and abnormal lung-function results. Without follow-up care, these conditions can become long-term health burdens. MauiWES makes every effort to ensure that an abnormal screening for depression, anxiety, PTSD, suicide risk, blood pressure, or lung function does not simply end with data collection and a printed result. The study framework requires that participants flagged for these risks receive warm handoffs, follow-up phone calls, insurance enrollment when needed, medication support, care navigation, referrals to healthcare providers, and referral tracking.

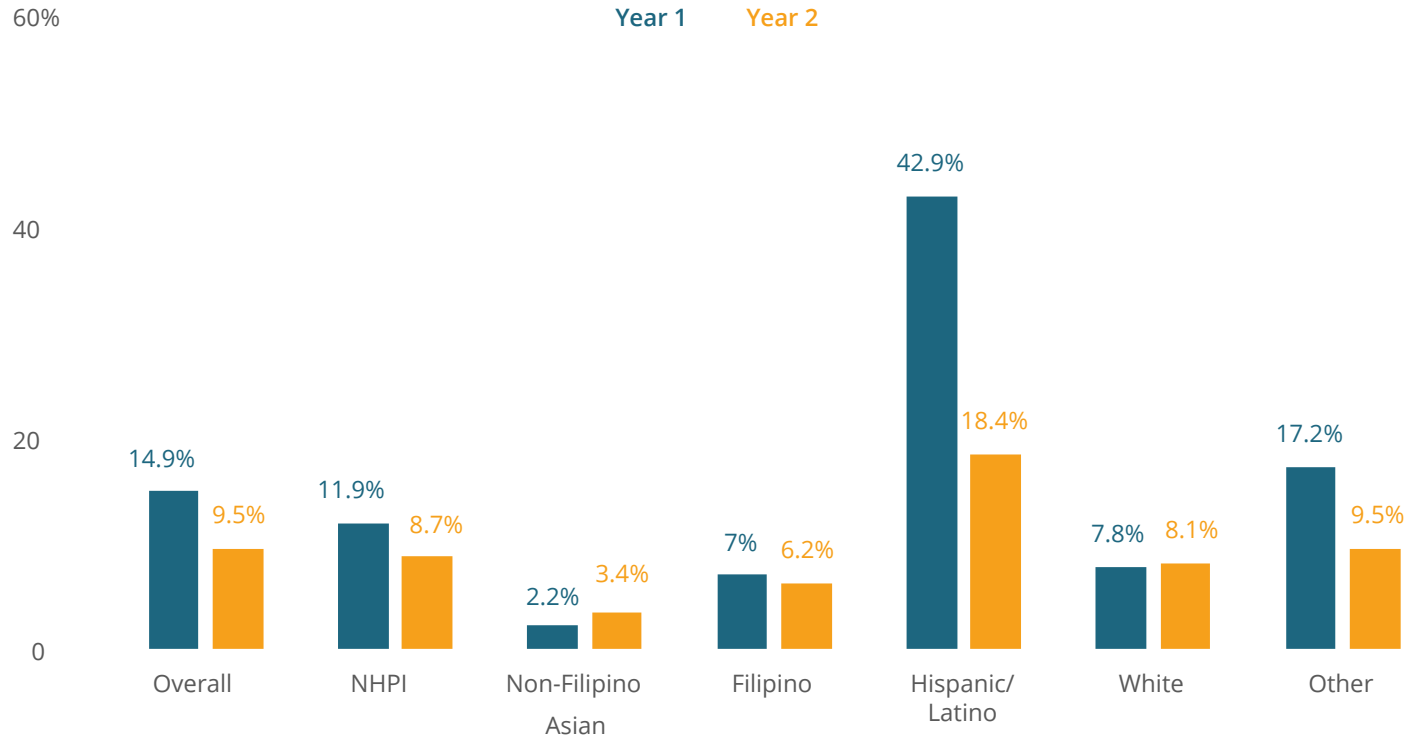
**Policy implication:** Closing the loop from screening to care means clear pathways for primary care, specialist care (e.g. pulmonary care), behavioral healthcare, medication access, insurance enrollment, transportation support, language access, and culturally responsive care navigation.

**Figure C1. Health insurance coverage among returning adults.**




*Insurance coverage increased from 85.1% in Year 1 to 90.5% in Year 2, while the uninsured share declined from 14.9% to 9.5%.* ***Community Takeaway: Insurance coverage improved, but nearly one in ten returning adults still lacked coverage and may need enrollment and care-navigation support.***

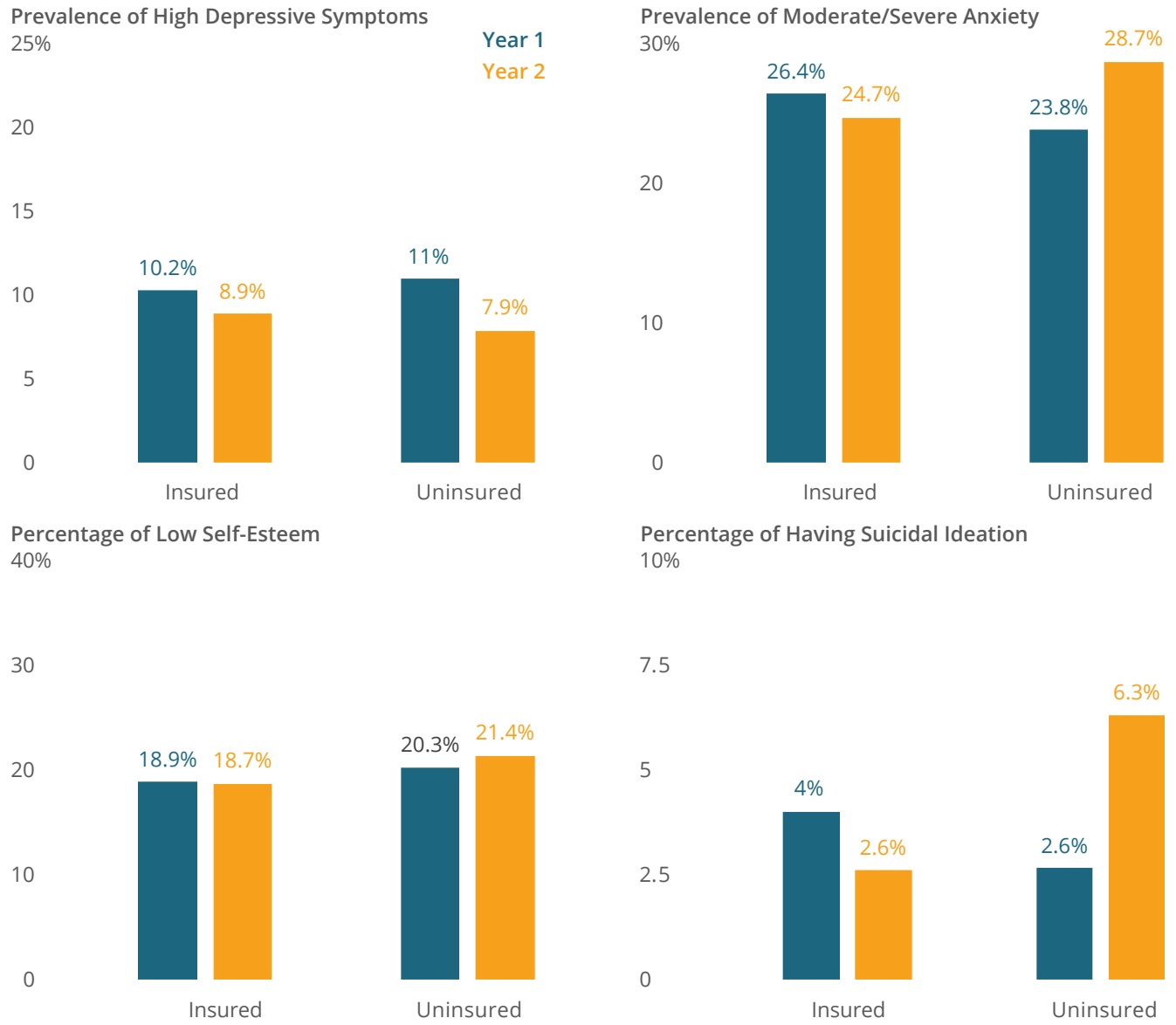
**Figure C2. Uninsured share by race/ethnicity.**




*NHPI = Native Hawaiian or other Pacific Islander*

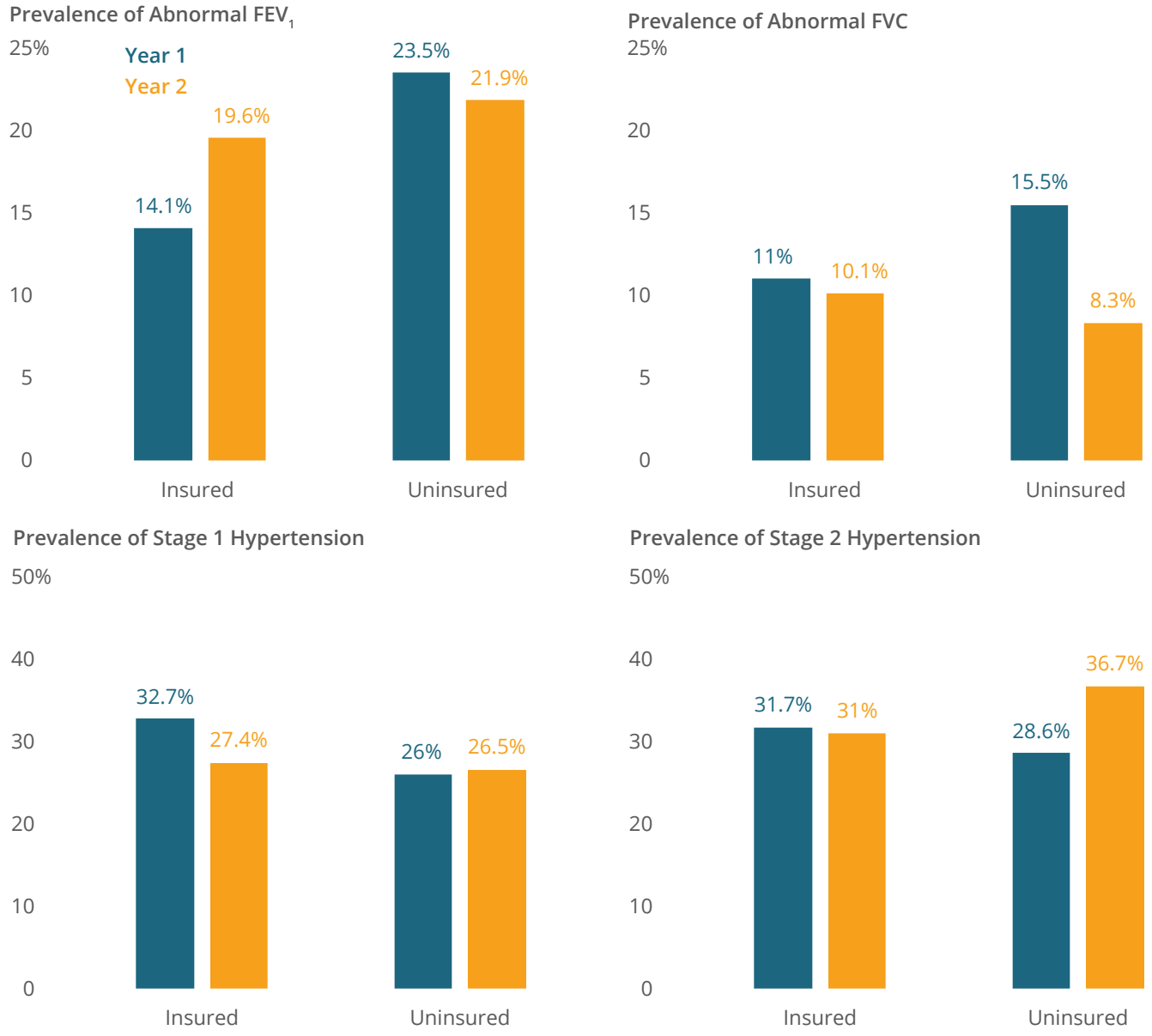
*The overall uninsured share declined from 14.9% to 9.5%. Among Hispanic/Latino adults, it declined from 42.9% to 18.4%, the largest decrease shown. Even after that improvement, Hispanic/Latino adults had the highest Year 2 uninsured share among the groups displayed.* ***Community Takeaway: Hispanic/Latino adults experienced the largest decline in uninsurance but remained the group most likely to be uninsured. Continued multilingual enrollment assistance, healthcare navigation, and charitable coverage programs, such as Kaiser Permanente's Community Health Coverage Program, remain important for closing this gap.***

Figure C3. Mental-health screening results by insurance status.




*In Year 2, uninsured adults had higher moderate-to-severe anxiety than insured adults, 28.7% compared with 24.7%, and higher suicidal thoughts, 6.3% compared with 2.6%.* ***Community Takeaway: The clearest Year 2 mental-health gaps for uninsured adults were anxiety and suicidal thoughts. Insurance enrollment programs are an excellent point of contact for mental-health screening and support.***

**Figure C4. Physical-health screening results by insurance status.**




*Results varied by measure. In Year 2, uninsured adults had more $FEV_1$ results below the expected range and more Stage 2-range blood-pressure readings than insured adults.* ***Community Takeaway: Insurance coverage is a starting point, not a substitute for appointments, medication access, and direct care navigation.***

# Factor 4: Social Support

**Why this matters:** Social support is one of Maui's greatest strengths in recovery. It is also showing signs of strain. Community connection can work as a successful health intervention, not only a separate or informal add-on.

'Ohana, friends, neighbors, churches, cultural groups, schools, community organizations, and trusted outreach teams have helped residents navigate services, cope with stress, maintain hope, and stay connected through a long and difficult recovery.

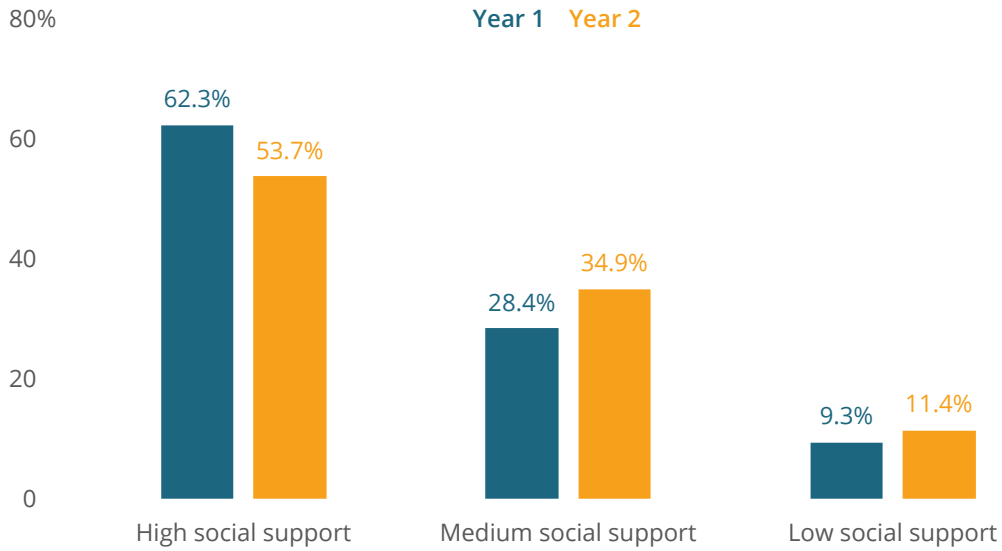
But the MauiWES longitudinal data show that social support is weakening. The share of returning adults reporting high levels of social support declined from 62.3% in Year 1 to 53.7% in Year 2. At the same time, medium and low levels of social support increased. This pattern may reflect recovery fatigue or increasing strain on families and community support networks.

This matters because social support is strongly connected to health. Adults with high levels of social support had much lower levels of depression, anxiety, PTSD, low self-esteem, and suicidal ideation than adults with low levels of support. MauiWES findings also suggest that social support may be connected to physical health recovery by helping residents manage stress, maintain routines, access care, follow treatment plans, and recover over time.

The data suggest that the decline in high levels of social support is a warning sign. Maui's community networks remain strong, but they are carrying a long-term burden. The decline in support suggests these networks are strained and may not sustain recovery without reinforcement.

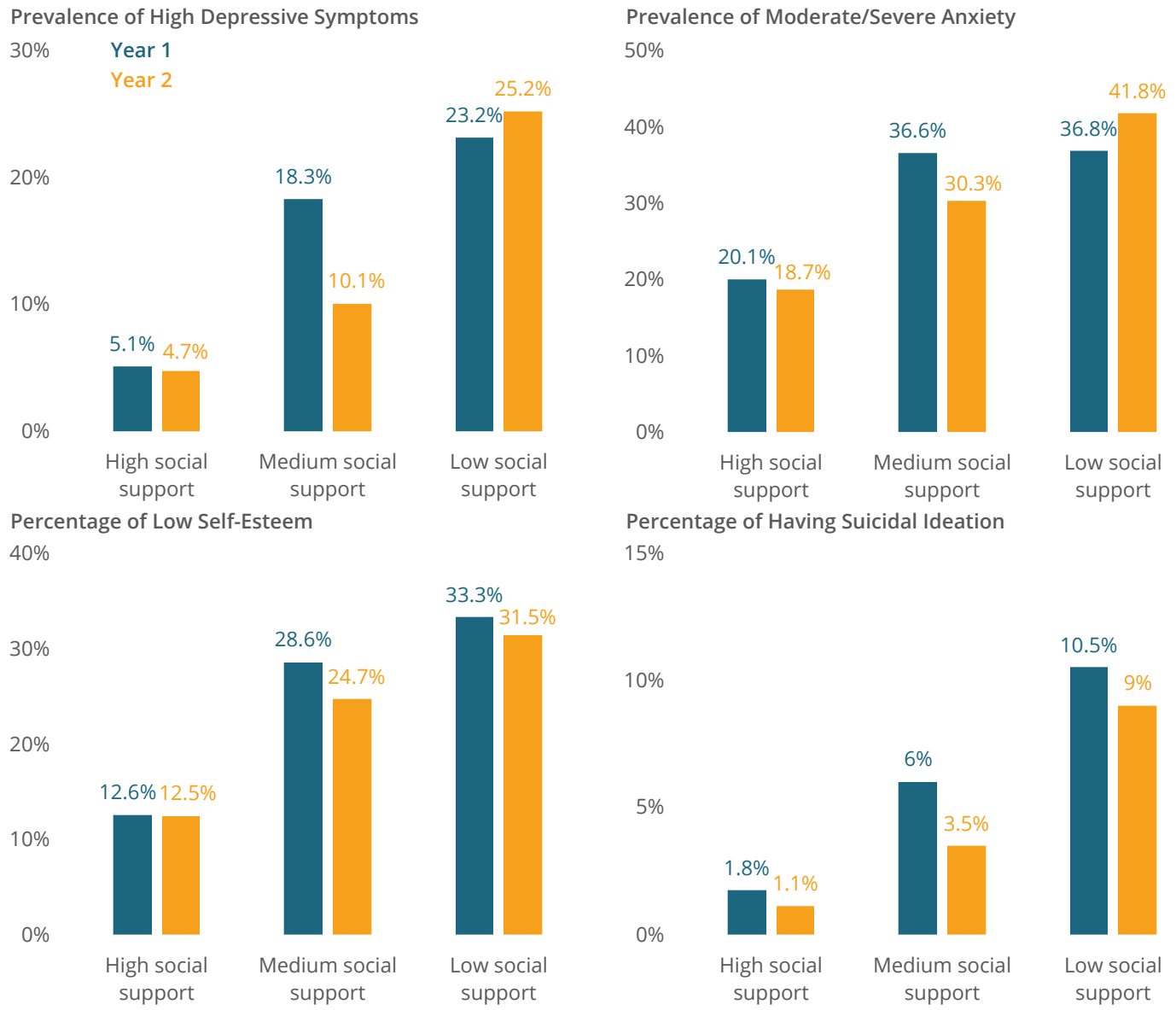
**Policy implication:** Social support was strongly associated with better mental health, yet high support is declining. Approaches that reinforce these networks—peer support, community navigators, family-strengthening programs, caregiver relief, culturally-grounded healing, school-based supports, outreach to isolated residents, and trusted referral networks connecting families to food, housing, healthcare, and mental health services—target a factor that MauiWES data link closely to recovery.

**Figure D1. Level of social support among returning adults.**



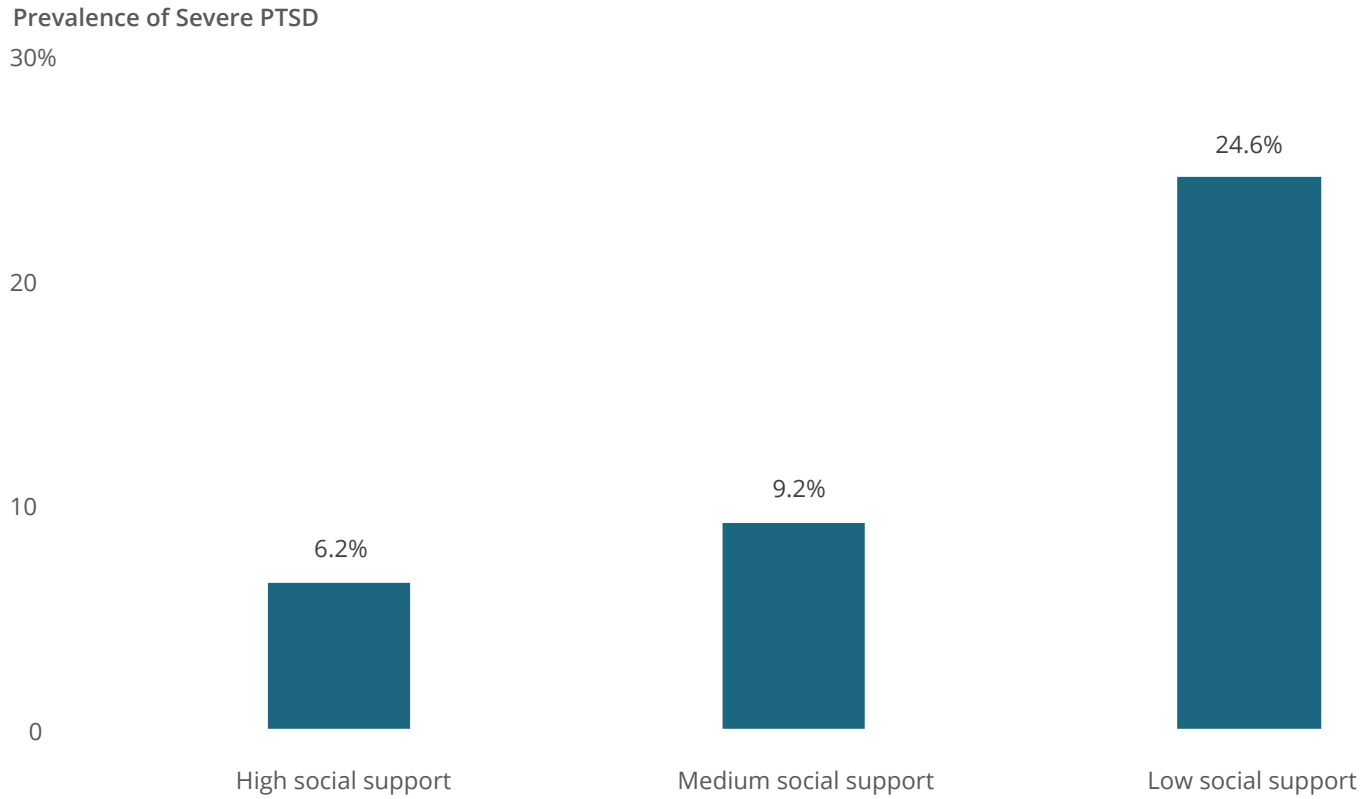

*High social support declined from 62.3% to 53.7%, while medium support increased from 28.4% to 34.9% and low support increased from 9.3% to 11.4%.* ***Community Takeaway: Social support is strongly linked to mental health in the MauiWES data, yet it is the one factor that worsened between Year 1 and Year 2—high support declined by 8.6 percentage points, leaving nearly half of returning adults with only medium or low support. Sustaining Maui's 'ohana, cultural and community networks is a clear priority for the next phase of recovery.***

Figure D2. Mental-health screening results by level of social support.



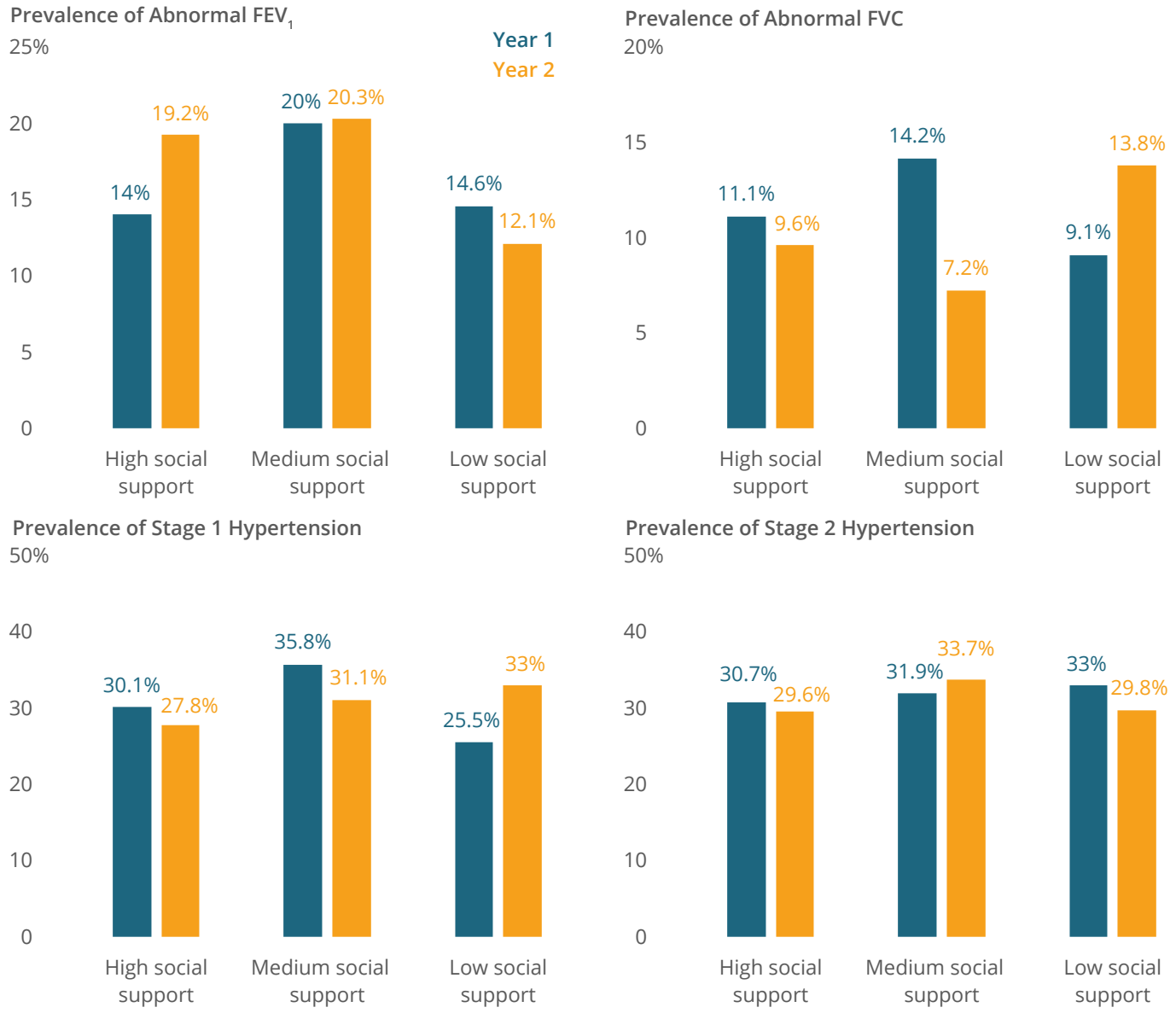

*In Year 2, adults with low social support had substantially higher levels of high depressive symptoms, 25.2% compared with 4.7% among adults with high support; moderate-to-severe anxiety, 41.8% compared with 18.7%; low self-esteem, 31.5% compared with 12.5%; and suicidal thoughts, 9.0% compared with 1.1%.* ***Community Takeaway: Strong social support was associated with much lower emotional burden. Strengthening community connection is part of mental-health recovery.***

Figure D3. Severe post-traumatic stress symptoms by social support, Year 2.




*Severe symptoms were reported by 6.2% of adults with high social support, 9.2% of adults with medium support, and 24.6% of adults with low support.*
***Community Takeaway: Nearly one in four adults with low social support had severe post-traumatic stress symptoms, compared with about one in sixteen adults with high support.***

**Figure D4. Physical-health screening results by social support.**




*Lung-function and blood-pressure patterns were mixed across support levels. In Year 2, adults with low support had the highest FVC-below-expected and Stage 1-range blood-pressure results.* ***Community Takeaway: Physical-health patterns were not consistent, but residents with limited support may benefit from proactive screening and care navigation.***

# Children and Families: Protecting the Next Generation

**Why this matters:** The four social factors described in this report affect children through family stress, school stability, routines, nutrition, housing, access to care, and connection to trusted adults.

The evidence suggests that children and families need special attention in Maui's next phase of recovery. MauiWES child findings show that many young survivors continue to carry hidden emotional and physical health risks. While many children may appear outwardly resilient, the data show that substantial emotional distress persists.

**Table 2. MauiWES Children's Longitudinal Data from Year 1 to Year 2**

| Indicator | Year 1 | Year 2 | Observed change |
|---|---|---|---|
| Any depressive symptoms | 50.0% | 43.8% | Lower overall, but severe symptoms increased from 11.8% to 15.1% |
| Possible anxiety disorder | 31.0% | 24.3% | Lower by 6.7 percentage points |
| Any PTSD symptoms | 40.9% | 37.8% | Lower overall, but severe symptoms increased from 2.8% to 4.0% |
| Low self-esteem | 12.9% | 26.0% | Higher by 13.1 points |
| Lung function: Abnormal forced expiratory volume in 1 second ($FEV_1$) | 72.7% | 61.0% | Lower by 11.7 points, but still high |
| Lung function: Abnormal forced vital capacity (FVC) | 57.7% | 38.8% | Lower by 18.9 points, but still high |
| Healthy weight | 52.9% | 54.2% | Little change; higher by 1.3 points |
| Obesity or severe obesity | 27.9% | 30.6% | Higher by 2.7 points |
| Stage 1 hypertension | 14.9% | 18.9% | Higher by 4.0 points |
| Stage 2 hypertension | 6.0% | 5.4% | Little change; lower by 0.6 points |

These findings do not mean that every child will develop long-term illness. But they do show why continued screening, early intervention, and family-centered support are important. Childhood is a sensitive period for development, and disaster-related stress, displacement, food insecurity, disrupted schooling, unstable routines, and family financial strain can affect emotional health, learning, sleep, behavior, and long-term physical health.

MauiWES findings support including school-based mental health services, pediatric blood-pressure and lung-function screening, clean-air school and childcare environments, family-centered care navigation, culturally grounded healing programs, and peer and family support activities in the next phase of recovery. These findings also suggest that treating children alongside their families yields better recovery outcomes than treating them in isolation. Supporting parents and caregivers, along with housing stability, food security, access to care, and social support, is also part of protecting children's health.

**Central lesson:** Our evidence suggests that Maui's recovery will be measured not only by how adults recover today, but by whether children are protected from carrying the disaster's health impacts into adulthood.

**Figure E1. Children's mental-health screening results, Year 1 and Year 2.**


*Possible anxiety declined from 31.0% to 24.3%. Mild-to-moderate depressive symptoms declined from 38.2% to 28.8%, and mild-to-moderate post-traumatic stress symptoms declined from 38.0% to 33.8%. At the same time, severe depressive symptoms increased from 11.8% to 15.1%, severe post-traumatic stress symptoms increased from 2.8% to 4.0%, and low self-esteem increased from 12.9% to 26.0%.* ***Community Takeaway: Children's mental-health findings were mixed: some common symptoms improved, but severe symptoms and low self-esteem worsened. This trend warrants continued school-, family-, and community-based support.***

**Figure E2. Children's physical-health screening results, Year 1 and Year 2.**


*Lung-screening results improved but remained concerning: $FEV_1$ below the expected range declined from 72.7% to 61.0%, and FVC below the expected range declined from 57.7% to 38.8%. The broader physical-health picture was mixed. Stage 1 hypertension increased from 14.9% to 18.9%, Stage 2 hypertension changed little from 6.0% to 5.4%, and obesity or severe obesity increased from 27.9% to 30.6%.* ***Community Takeaway: Children's lung-screening measures improved, but Stage 1 hypertension and obesity increased. Continued pediatric screening and clinical follow-up remain important.***

# A Path Forward: Data-Driven Considerations for Decision-Makers

**Maui's recovery will continue to evolve. Our findings suggest the next phase is a coordinated system that connects housing, food and income assistance, healthcare, social support, schools, and trusted community organizations.**

The priority is not simply to document unmet needs, but to ensure that people identified through screenings are connected to appropriate services and receive sustained follow-up. Because housing, food security, income, healthcare access, and social support are closely interconnected, these actions will have the greatest impact when implemented together rather than through isolated programs.

## 1. Strengthening food and income security

The MauiWES data show that food insecurity remains one of the clearest signs that recovery is incomplete. The findings suggest that food support can serve as a health intervention, not only as emergency relief. Components of action programs that can address these issues:

- Produce prescriptions and medically supportive food programs.
- SNAP, WIC, Medicaid, and benefits enrollment support at community events.
- Culturally grounded food distribution through trusted local organizations.
- Link food support directly to MauiWES screening, clinics, schools, and community health workers.
- Employment support, wage stability, transportation assistance, childcare support, and emergency financial relief for families still experiencing hardship.

**Why this matters:** Reducing hunger lowers stress, supports chronic disease management, and helps families move from survival toward stability.

## 2. Making housing stability a health priority

Housing recovery means families can stay housed, avoid repeated relocation, afford rent, rebuild routines, and feel secure enough to heal. Components of action programs that can address these issues:

- Long-term rental support for displaced and at-risk families.
- Relocation prevention for households at risk of repeated displacement
- Housing navigation to help families move from temporary to stable housing.
- Legal, benefits, and documentation support for families facing housing barriers.
- Stabilizing social services that connect housing support with healthcare, schools, transportation, food access, and behavioral health.

**Why this matters:** Stabilizing housing reduces chronic stress, prevents repeated displacement, and makes stable daily life possible for children, workers, kūpuna, and families.

## 3. Closing the loop between screening and care

MauiWES has identified high levels of depressive symptoms, anxiety, post-traumatic stress symptoms, suicidal thoughts, elevated blood-pressure screening results, and abnormal lung-function results, as well as barriers to medication access and health insurance. We find that

screening is essential, but screening alone is not enough. Components of action programs that can address these issues:

- Primary care follow-up for participants with abnormal screening results.
- Pulmonary follow-up for participants with abnormal lung function screening results.
- Confirmation, treatment and monitoring of abnormal blood pressure by a primary care physician.
- Behavioral health services, including trauma-informed and culturally responsive care.
- Health insurance enrollment, including charitable coverage and navigation for uninsured residents.
- Care navigation, warm handoffs, referral tracking, transportation support, and language access.

**Why this matters:** Every abnormal screening result should lead to appropriate clinical evaluation, diagnosis, treatment, and follow-up—not simply a result on paper.

### 4. Rebuilding and sustaining social support

Maui's ʻohana, churches, cultural groups, schools, community organizations, and grassroots partners remain among the strongest sources of support and resiliency. However, our data suggest that social support is weakening over time. Components of action programs that can address these issues:

- Peer support programs for survivors, caregivers, parents, and kūpuna.
- Community navigators who can connect families to food, housing, care, and benefits.
- Family-strengthening programs that rebuild routines, connection, and trust.
- Caregiver relief and support for households carrying long-term recovery burdens.
- Trusted local organizations that already have relationships with affected communities.
- Culturally-grounded healing programs rooted in place, community, and ʻohana.

**Why this matters:** Strengthening social supports reduces isolation, strengthens resiliency, improves mental health, and makes sure families are not left to navigate recovery alone.

### 5. Protect children and families from long-term harm

The MauiWES data indicate that children and families require a dedicated recovery strategy. Findings among children show substantial emotional distress and early physical health warning signs. These are opportunities for early intervention. Components of action programs that can address these issues:

- School-based mental health teams with trauma-informed counselors and cultural navigators.
- Pediatric screening of child and youth survivors for blood pressure, lung function, depression, anxiety, PTSD, and self-esteem.
- Clean-air environments in schools, childcare settings, and community spaces.
- Family-centered care navigation that connects children and caregivers to services together.
- Youth peer support, family programs, and culturally-grounded healing activities.

- Partnerships with schools, pediatric providers, community health workers, and trusted organizations.

**Why this matters:** Protecting and supporting children and families prevents the disaster from becoming a lifelong health burden for Maui's children.

### A coordinated recovery system

These recommendations are most beneficial when they are implemented together. Recovery cannot occur in silos. Food support without housing stability or housing without healthcare is unlikely to ease stress. Health insurance without care navigation may leave people disconnected, whereas social support without sustained investment may lead to burnout. Children are unlikely to recover if their families remain unstable.

Our plan for the next phase of MauiWES work extends its screening activities and results into a coordinated referral network across healthcare providers, schools, housing services, food programs, benefits enrollment, behavioral health services, and trusted community organizations.

## Conclusion: From Recovery Signals to Recovery Systems

Maui has already built many of the foundations needed for long-term recovery: strong community partnerships, trusted local organizations, expanding access to care, and a growing body of evidence about what residents and families need. The progress is real. More returning adults are working, more have health insurance, fewer are living in temporary housing, and more feel secure in their homes.

But recovery remains incomplete. Severe food hardship persists, many residents continue to experience mental-health strain, blood-pressure and lung-function concerns remain common, access to care is still uneven, and social support is showing signs of strain. The next challenge is not simply to identify these needs, but to build systems that respond to them.

Families should not have to navigate food assistance, housing, healthcare, mental-health services, schools, insurance, and benefits on their own. A stronger recovery system would connect these supports through trusted community organizations, clinics, schools, navigators, and clear referral pathways. Building on the MauiWES model, screening should become more than a source of information—it should become a supported pathway to care, treatment, and sustained follow-up.

Maui's recovery will not be measured only by homes rebuilt, businesses reopened, or roads restored. It will also be measured by whether families have enough food, feel secure in their housing, can access the care they need, and remain connected to the people and organizations that help them heal. By investing together in food and income security, housing stability, access to care, and social support, Maui can turn the lessons of this disaster into a healthier, more resilient, and more inclusive future for generations to come.

# Appendix: Study Design, Methods, and Limitations

## Study design and community-based recruitment

In the months following the 2023 wildfires, Maui needed a systematic, community-centered approach to track the health and recovery of fire-affected residents over time. This need led to the creation of the Maui Wildfire Exposure Study, a partnership between University of Hawai'i researchers led by Drs. Ruben Juarez and Alika Maunakea, local healthcare providers, and grassroots organizations, including Roots Reborn, Maui Medic Healers Hui, Hawai'i Community Health Hui, the American Lung Association in Hawai'i, and more than a dozen other community partners.

From the outset, the guiding principles were simple: meet people where they are, communicate in the languages they trust, and provide useful health information and support during each visit. Beginning in January 2024, the MauiWES team organized health-screening events at accessible locations where residents were living or gathering, including the Royal Lahaina Resort, the J. Walter Cameron Center in Wailuku, Kula Lodge, churches, schools, the Lahaina Comprehensive Health Center, the Lahaina Civic Center, UH Maui College, and clinics and community spaces across Maui. During the past year, MauiWES has been based primarily at the Hawai'i Department of Health's Wailuku Health Center and the Lahaina Comprehensive Health Center. We are deeply grateful to both organizations and their staff for providing trusted, accessible spaces for this work.

To reach a broad and diverse group of residents, MauiWES used multiple recruitment sites, multilingual navigators, evening and weekend events, and partnerships with trusted community organizations. Navigators welcomed participants in English, Tagalog, Ilocano, Spanish, and other languages; provided clear, plain-language explanations of the study; answered questions; and guided each participant through the informed-consent process. The study included residents directly affected by the fires, as well as those affected through smoke, ash, displacement, employment disruption, caregiving, volunteering, or impacts on family members.

## What participants did and received

Each participant's visit took approximately one hour. Participants first completed a comprehensive questionnaire, either in person or online, covering wildfire exposure, housing, employment, food security, and mental health. The study used age-appropriate and validated tools, such as the CES-D for depression, GAD-7 for anxiety, the Rosenberg Self-Esteem Scale, PCL-5 for post-traumatic stress disorder, and the Multidimensional Scale of Perceived Social Support for adults. We assessed every child (ages 8-17) with four validated tools: the CES-DC for depression, SCARED-5 for anxiety, CPSS-5 for PTSD, and the Rosenberg Self-Esteem Scale.

Following the questionnaire, participants completed a basic health check, including height, weight, automated blood pressure reading, pulse, and oxygen saturation. Blood pressure was measured using an automated device. Elevated blood pressure readings were repeated after the participant rested, and the lowest recorded reading was used in this report.

Blood, urine, saliva, and inner-cheek swab samples were also collected from participants. A blood sample was tested on site using the i-STAT system to measure electrolytes, kidney function, and blood sugar. Lung function was assessed using spirometry and oscillometry. Spirometry measured how much air participants could exhale and how quickly; oscillometry assessed respiratory resistance and reactance during normal breathing.

All participants were offered comprehensive in-person consultations to review their physical and mental health results. Each received a printed summary, access to the MauiWES Health Portal, appropriate referrals, and a $100 incentive for participating.

## Who enrolled and who returned for Year 2

By February 2025, MauiWES had enrolled more than 2,000 adults and children. During Year 2, 1,088 adults and 116 children ages 8–17 participated in MauiWES, including both returning participants and individuals participating for the first time. For this report, the longitudinal analysis focuses on the 1,057 adults and 74 children who participated in both Year 1 and Year 2 and had complete information for all core measures included in the analysis . This matched group makes it possible to track changes in health, housing, access to care, and recovery over time. Nearly one in five returning participants had relocated, highlighting the continued disruption many families experienced well into the recovery period. Since March 2026, an additional 587 participants have already taken part in Year 3; their data are not yet included in this report.

Women made up 63.8% of returning adult participants. The adult cohort was racially and ethnically diverse: 33.2% White, 18.5% Hispanic/Latino, 17.9% Native Hawaiian or other Pacific Islander, 15.5% Filipino, and 8.6% non-Filipino Asian. This mix closely reflects the racial and ethnic composition of the affected regions before the wildfires and has strong representation of groups often underrepresented in health studies.

Approximately one quarter had a high school diploma, one third had completed some college-level, technical or vocational education and another third had completed a bachelor's degree or higher. Almost half were married or living with a domestic partner, and about one-third were single or never married.

Six in ten adults were between 35 and 64 years old, a life stage when employment, housing, caregiving, and rebuilding pressures often overlap. The cohort also included many lower-income households: almost one-half lived below the federal poverty line, and almost one-fifth were within 50% above it.

Almost one in two returning adults were geocoded as having lived within the mapped fire perimeter at the time of the fire, and many others were affected by smoke exposure, ash, displacement, work disruption, caregiving, volunteering, or family impacts.

To assess whether the Year 2 findings were affected by differences in who returned, MauiWES compared participants at baseline with those who completed follow-up. The groups were broadly similar in age, race and ethnicity, education, and marital or civil status. Women and participants living within the burn perimeter were somewhat more likely to return than men and those living outside the burn perimeter, and this should be considered when interpreting the results. Overall, however, the similarity between the two groups suggests that the changes observed over time are unlikely to be explained mainly by major demographic differences in who returned.

**Figure S1. Who enrolled at baseline and who returned for Year 2.**


*The baseline cohort and Year 2 returnees were broadly similar in age, race/ethnicity, education, and relationship or marital status. Women and participants who lived inside the mapped fire perimeter were somewhat more likely to return. These differences should be considered when interpreting and generalizing the findings.* ***Community Takeaway: The follow-up group broadly resembled the baseline cohort, but the findings should not be assumed to represent every wildfire survivor.***

## What data were collected

Alongside survey responses and point-of-care tests, the team collected small samples of venous blood, saliva, urine, and inner cheek swabs. These specimens are frozen at -80 degrees Celsius in Honolulu, creating a biobank that future toxicology, transcriptomics, metabolomics, and epigenetic studies can draw upon. This biobank is important, because the long-term biological effects of exposure to wildfire smoke remain poorly understood.

## Limitations and Interpretation

MauiWES provides a detailed, community-based picture of recovery after the Maui wildfires, but several limitations should guide how these findings are interpreted.

1. **Voluntary community-based participation.** Participants enrolled through community events, clinics, and outreach activities. Residents who moved off-island, were homebound, lacked transportation, or were less connected to community networks may be underrepresented. The findings should therefore not be treated as exact population estimates for every Maui resident or wildfire survivor.

2. **Follow-up and participant attrition.** Longitudinal analyses include 1,057 adults and 74 children who completed at least two visits. Participants who returned may differ from those who did not return in ways that were not fully measured. Women and residents who lived within the fire perimeter were somewhat more likely to return, and other unmeasured differences may influence the observed changes over time.

3. **Self-reported information.** Housing, food security, social support, wildfire experiences, and mental-health symptoms were largely reported by participants. Recall difficulties, stigma, and willingness to disclose sensitive experiences may lead to under- or over-reporting, particularly for financial hardship, suicidal thoughts, trauma, and other sensitive topics.

4. **Associations do not establish cause and effect.** The figures show patterns and changes observed among MauiWES participants. They cannot establish that food insecurity, housing instability, insurance status, or social support directly caused a particular health outcome. Preexisting health conditions, later smoke or vog exposure, respiratory infections, seasonal variation, and continuing post-disaster stressors may also contribute to the observed outcomes.

5. **Screening results are not clinical diagnoses.** Mental-health questionnaires, lung-function tests, blood-pressure measurements, and point-of-care blood tests are intended to identify possible concerns and the need for follow-up. Elevated blood-pressure readings were repeated after participants rested, and the lowest recorded value was used. However, measurements from a single study visit cannot confirm hypertension, and reporting the lowest reading may produce lower estimates than averaging repeated readings. Abnormal results require evaluation and confirmation by a healthcare provider.

6. **Lung-function and field-measurement limitations.** The lung-function analyses included tests receiving A, B, or C quality grades under the study protocol. Even these results may be affected by participant effort, technique, current symptoms, and field-testing conditions. $FEV_1$ and FVC results identify possible lung-function concerns but do not diagnose a specific respiratory disease.

7. **Small children's cohort.** The longitudinal children's cohort includes 74 participants, and the number available for some measures may be smaller. As a result, a small number of children can meaningfully change the reported percentages, and detailed subgroup comparisons may be unstable. These findings should be viewed as important early signals that need confirmation in a larger and more representative children's cohort.

8. **Different sample sizes across measures.** Not every participant completed every questionnaire or health screening, and some tests were excluded because of missing information or quality requirements. The number of participants may therefore differ across figures and outcomes.

9. **Descriptive comparisons.** Most figures present percentages without confidence intervals or formal statistical tests. Small differences across years or subgroups may reflect sampling variability and should not automatically be interpreted as meaningful improvement or decline.

Despite these limitations, MauiWES's longitudinal design, community-based recruitment, validated questionnaires, health screening, biological samples, and repeated follow-up provide a valuable picture of how recovery is unfolding and where continued support and clinical follow-up are most needed.

# Acknowledgments and Support

The Maui Wildfire Exposure Study is the result of extraordinary collaboration among participants, families, community organizations, healthcare providers, public agencies, funders, advisory boards, and the people of Maui. We offer our heartfelt gratitude to everyone who has made this work possible.

First and most importantly, mahalo to the Maui residents and families who have shared their time, health information, stories, and trust with MauiWES. Their participation makes it possible to understand how recovery is changing, identify unmet needs, and inform efforts to support long-term healing.

We especially thank our core funding and institutional partners, including the Hawai'i Community Foundation's Maui Strong Fund, Kaiser Permanente Hawai'i, the State of Hawai'i, the National Institute on Minority Health and Health Disparities (NIH R33MD019793), AirHEALTH (P01HL152953), Direct Relief, and the Episcopal Church in Hawai'i. Their investment and leadership have helped sustain one of the most comprehensive post-disaster health studies in Hawai'i's history and have supported a model that connects community-based screening with follow-up care and referrals while supporting informed policymaking.

We are grateful to the Hawai'i Department of Health and its dedicated nursing staff, the Office of the Governor, the Office of Wellness and Resilience, Maui County partners, and the Lahaina Comprehensive Health Center for their continued support. Their collaboration has helped bring screenings and care connections closer to residents most affected by the fires.

Mahalo to our community and scientific advisory boards, field staff, researchers, community health workers, translators, students, clinicians, nurses, volunteers, and care navigators. Their work has been carried out with professionalism, cultural humility, compassion, and deep commitment to Maui's recovery.

We also recognize the essential role of community partners whose presence and relationships made participant recruitment and follow-up possible, including Maui Medic Healers Hui, Roots Reborn, Tagnawa for Maui, Hawai'i Community Health Hui, Hui No Ke Ola Pono, the Lahaina Comprehensive Health Center, UH Maui College, the American Lung Association in Hawai'i, Papa Ola Lōkahi, Healthy Mothers Healthy Babies Coalition of Hawai'i, Lahaina Rotary, Kaiaulu

Initiatives, Lahaina Strong, BKreative Hawai'i, Kaibigan Ng Lahaina, Spirit Horse Ranch, and many other grassroots leaders and organizations supporting survivors.

We are especially grateful to UH Maui College and its leadership, faculty, students, and staff for their generous support with facilities, student engagement, and recruitment events. We also thank the many partner clinics, schools, churches, cultural practitioners, and community spaces that welcomed MauiWES and helped residents participate in trusted settings.

The opinions and findings in this report are those of the authors and do not necessarily reflect the views of our funders, advisory boards, public agency partners, or community partners.

## MauiWES Staff and Volunteers

We gratefully recognize the MauiWES staff and volunteers whose dedication made our 2025–2026 community screenings, participant follow-up, and recovery work possible.

### MauiWES staff:

Dr. Binh Le, Brennan Yamamoto, Connor Slavens, Dr. Christopher Knightsbridge, Dr. Shubhanshu Jain, Dr. Pauli Amornkul, Quan Zhang, Sadichchha Shrestha, Marzuka Tartil, Manmohan Yadav, Lesley Umeda, Bryan Suechting, Tina Ryu, Cybil Moran, Cy Ornellas, Nichole Calagias, Dr. Marsha Lowery, Dr. Samia Valeria Ozorio Dutra, Yamilet Osorio, Marilyn Bui, Whitney Herrelson, Esther Arvizu, and Dayna Moore.

### Clinical, student, and community volunteers:

Dr. Peggy Latare, Nathan Ching, Freddie Lao, Teo Fukamizu, Jonas Yee, Dr. Martina L. Kamaka, Princess Rodelyn Cacpal, Tara Zamani, Vinnerie Conner, Lisa Park, Dr. Miriam Chang, Colby Macapagal, Thaddeus "Kahi" Young, Celina Tong, Luiza Siglock, Dr. Neil Partain, Tynell Ornellas, Tony Head, Gaebrel Andre Mabuti, Samantha Termulo, Karen Ynez Tabbada, Dayna Moore, Dr. Robb Petty, Kathleen Hagan, Ashley Rao, Kristelle Turalva-Albano, Eilem Arellano, Dr. Guy Sugino, Dr. Kaumaka Shimatsu, Dr. Arleen Ricalde Garcia, Dr. Helen K. Blaisdell-Brennan, and Margarita Tirona.

**With deep appreciation for their compassion, professionalism, and unwavering commitment to making MauiWES possible and advancing the long-term health and recovery of Maui's families.**

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Together, these partners help MauiWES continue community-based health screening, follow-up, and recovery support for Maui families.

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