Maui Wildfire Exposure Study

www.MAUIWES.info

MauiWES

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PAAC

Pacific Alliance Against COVID19

www.PAAC.info

Pacific Alliance Against COVID-19 recruited over 30,000 participants and performed over 50,000 COVID tests during the pandemic in partnership with several FQHCs and Schools
www.PAAC.info

UHERO
THE ECONOMIC RESEARCH ORGANIZATION AT THE UNIVERSITY OF HAWAI'I

PUBLIC HEALTH REPORT

SHAPING HEALTH IN HAWAII: THE INFLUENCES OF POVERTY, HOUSING AND FOOD INSECURITY

JULY 12, 2023

Over 2000 state of Hawaii residents are enrolled in biannual cohort to understand social determinants of health and be ready for the next disaster

www.uhero.hawaii.edu

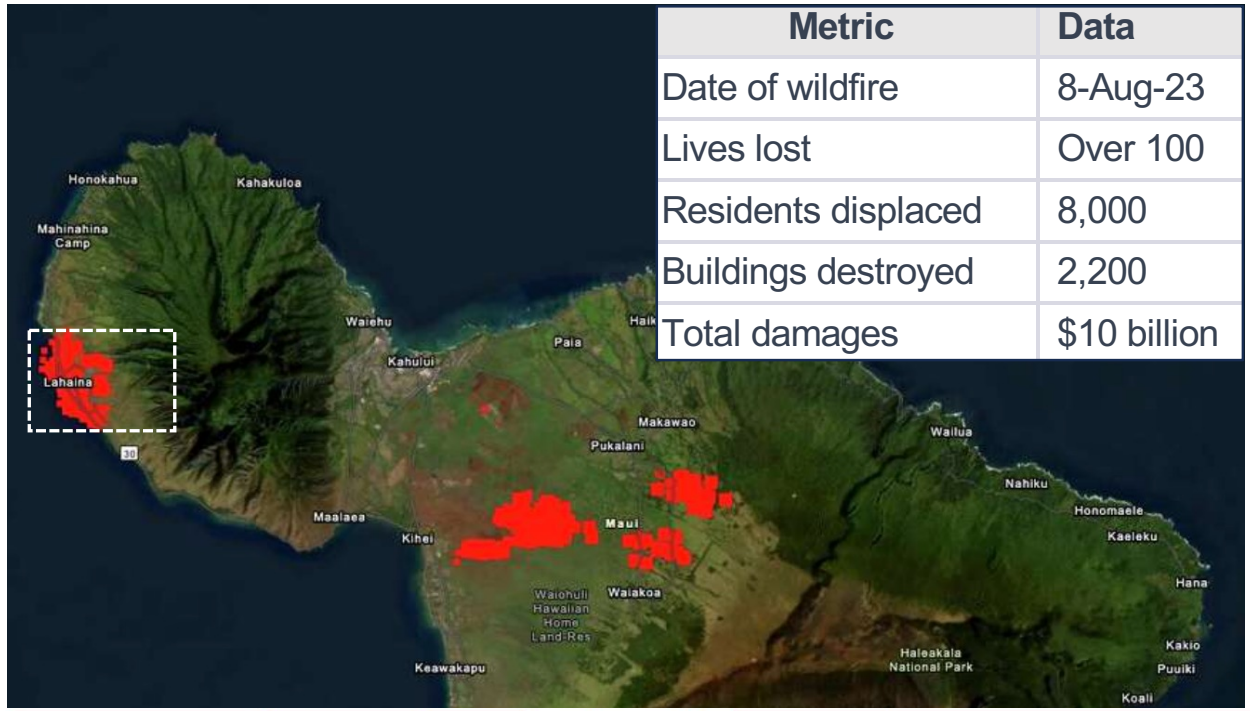
Hawai'i Social Epigenomics Early Diabetes Cohort

2100 residents, primarily Native Hawaiian and Pacific Islanders are enrolled to understand the early origins of diabetes

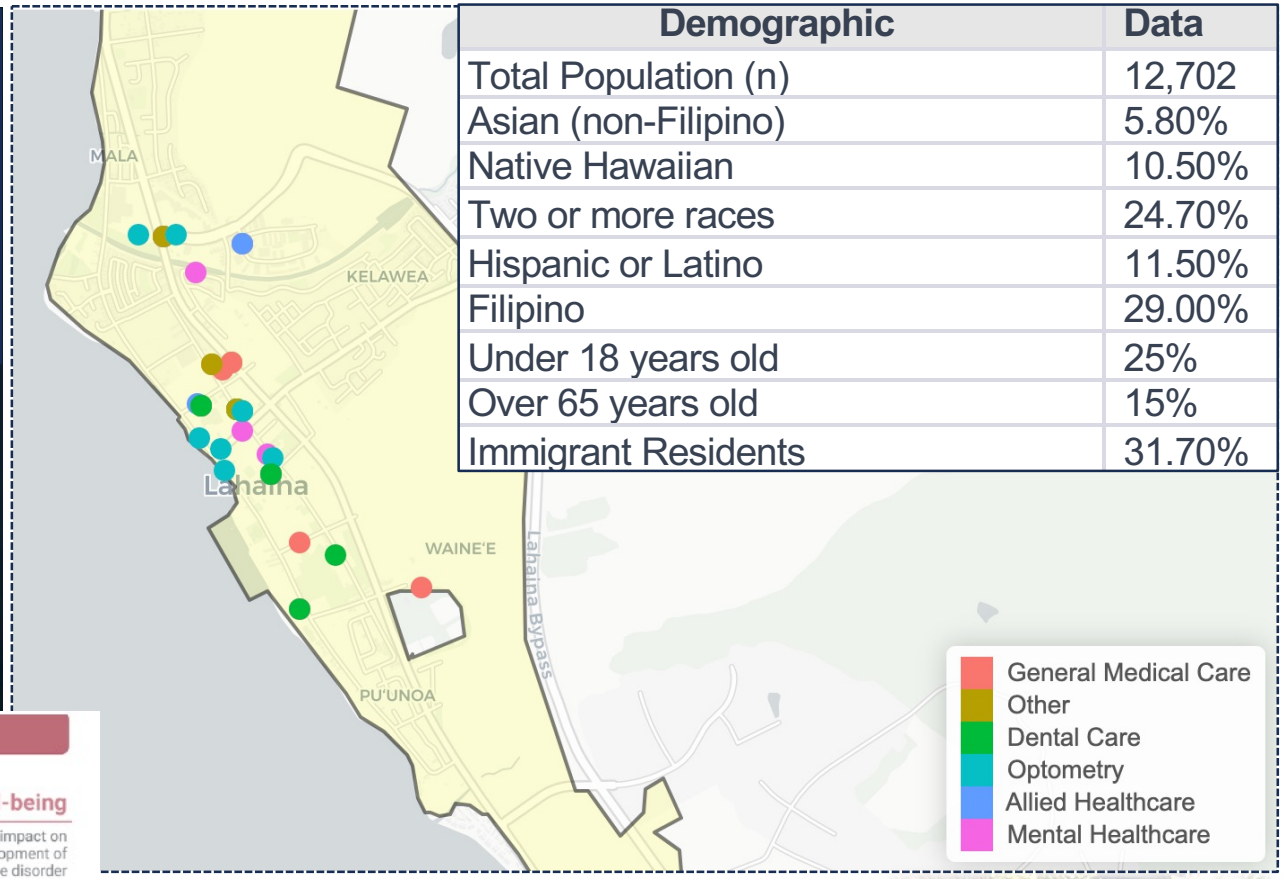
www.hiseed.org

Juarez and Maunakea led several cohort studies totaling more than 50,000 participants in Hawai‘i using community-based participatory research.

The Maui Wildfire Impacts



Metric	Data
Date of wildfire	8-Aug-23
Lives lost	Over 100
Residents displaced	8,000
Buildings destroyed	2,200
Total damages	$10 billion



Demographic	Data
Total Population (n)	12,702
Asian (non-Filipino)	5.80%
Native Hawaiian	10.50%
Two or more races	24.70%
Hispanic or Latino	11.50%
Filipino	29.00%
Under 18 years old	25%
Over 65 years old	15%
Immigrant Residents	31.70%

Short to Mid-Term Effects of Exposure

Headaches, dizziness, reduced O_2 transport

Smoke pollutants (including CO and CO_2) can reduce oxygen transport, causing symptoms of oxygen deprivation.

Eye irritation and vision complications

Fine particulate matter can directly irritate the eyes.

Respiratory irritation and reduced lung function

Fine particulate matter (PM2.5; can include inorganic compounds, heavy metals, etc), gases (CO, CO_2, SO_2, NO_2, etc), volatile organic compounds (aldehydes, benzene, etc), and other pollutants irritate lungs and throat.

Cardiovascular stress and complications

Smoke pollutants (including CO) can reduce oxygen-carrying capacity of blood. Such cardiovascular stressors can lead to cardiovascular complications and exacerbate existing heart conditions.

Long-Term Effects of Exposure

Negative impact on psychological health and well-being

Community proximity to and consequences of wildfire events can leave a lasting impact on emotional and psychological well-being. Such an impact can lead to the development of disorders including post-traumatic stress disorder (PTSD), major depressive disorder (MDD), and anxiety, among other negative experiences.

Increased risk for cancer and respiratory illnesses

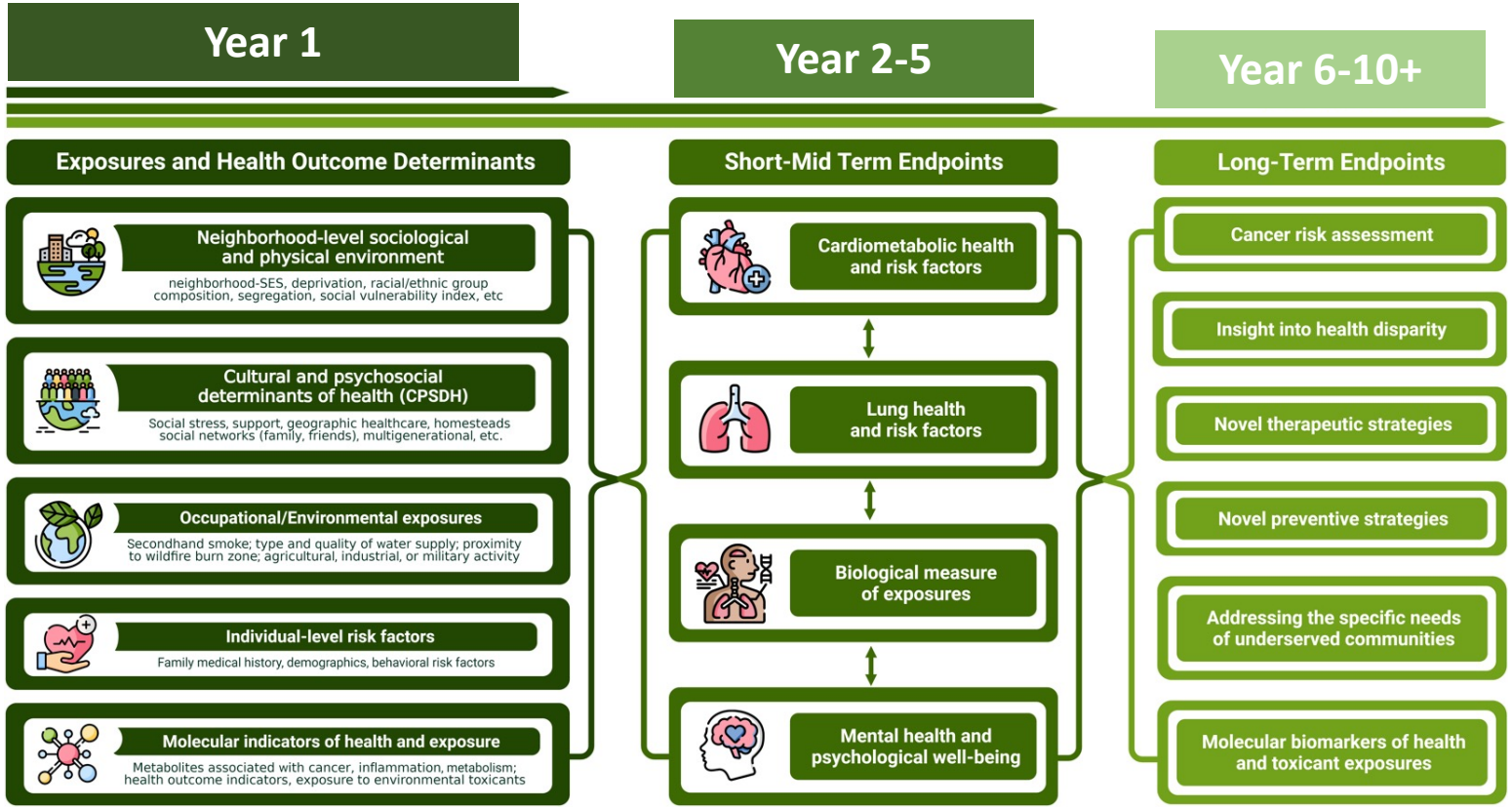
Long-term exposure to fine particulate matter can lead to the development of chronic respiratory conditions like chronic obstructive pulmonary disease (COPD), asthma, and bronchitis. Such pollutants may include polycyclic aromatic hydrocarbons (PAHs), which are carcinogenic. Additional physiological stressors can lead to compromised immune functioning, increasing risk for infection.

Increased risk for heart attack and stroke

Chronic exposure to airborne pollutants can prolong irritation and inflammatory responses. Such long-term stress on cardiovascular pathways can cause hypertension and increase risk for cardiometabolic disorders.

"Aloha Lahaina"
– K. Maunakea
Kula born, Haku Mele & Hawaiian Healer

Maui Wildfire Exposure Study Cohort



- **Objective**: Establish a cohort of 1,000 adults effected by the wildfires. Our aim is to assess the social and health impacts. This will involve collecting both social and biomedical data, with annual follow-ups with each participant. We anticipate data collection for 10+ years to evaluate long-term impacts contingent on funding.
- **Timeline**: Data gathering started on January 26, 2024…

www.MauiWES.info

Comprehensive Survey and Biomonitoring Assessments

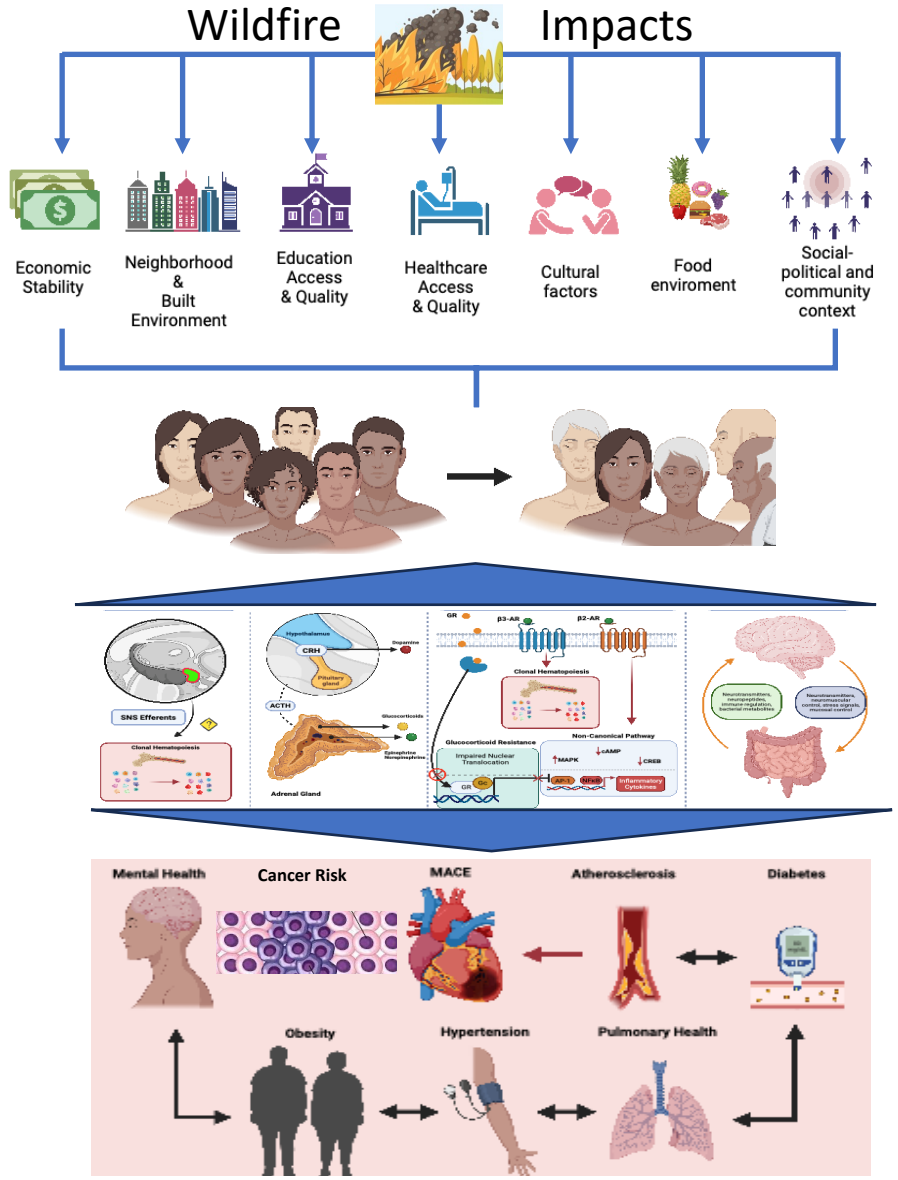
Data Components

Questionnaires
- Demographics
- Housing Stability
- Food Security
- Employment
- Exposure
- Resiliency
- Social Support
- Health Behaviors
- Perceived Trust
- *Etc…*

Biospecimens
- Stress Response
- Inflammation
- Environmental Toxicants

Health Exam
- Lung Health
- Cardiovascular Health
- Metabolic Health
- Mental Health
- Cancer Risk (EMR)

Participant Involvement

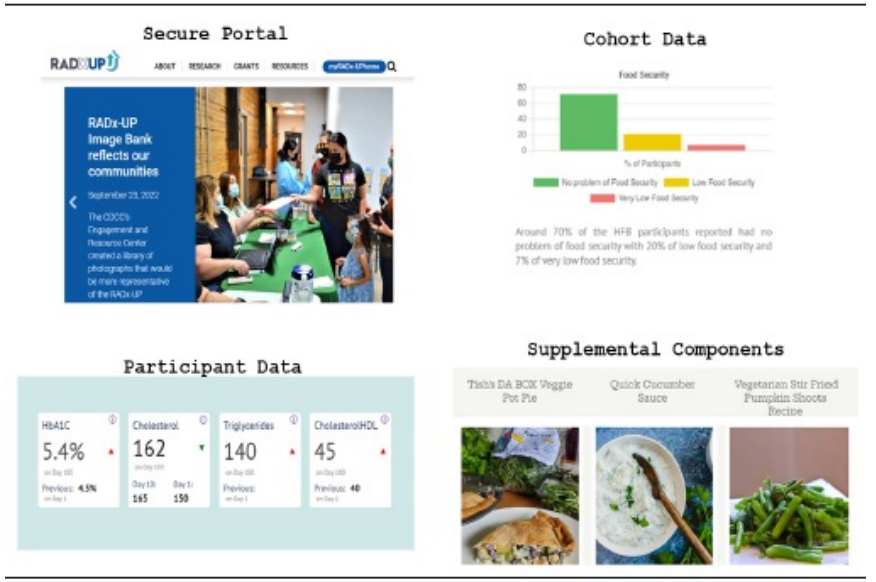


This is the most comprehensive study to evaluate short- & long-term health to date following a natural disaster in Hawai'i.

Immediate Benefits for Community: Rapid Response, Feedback, Connection, Follow-up

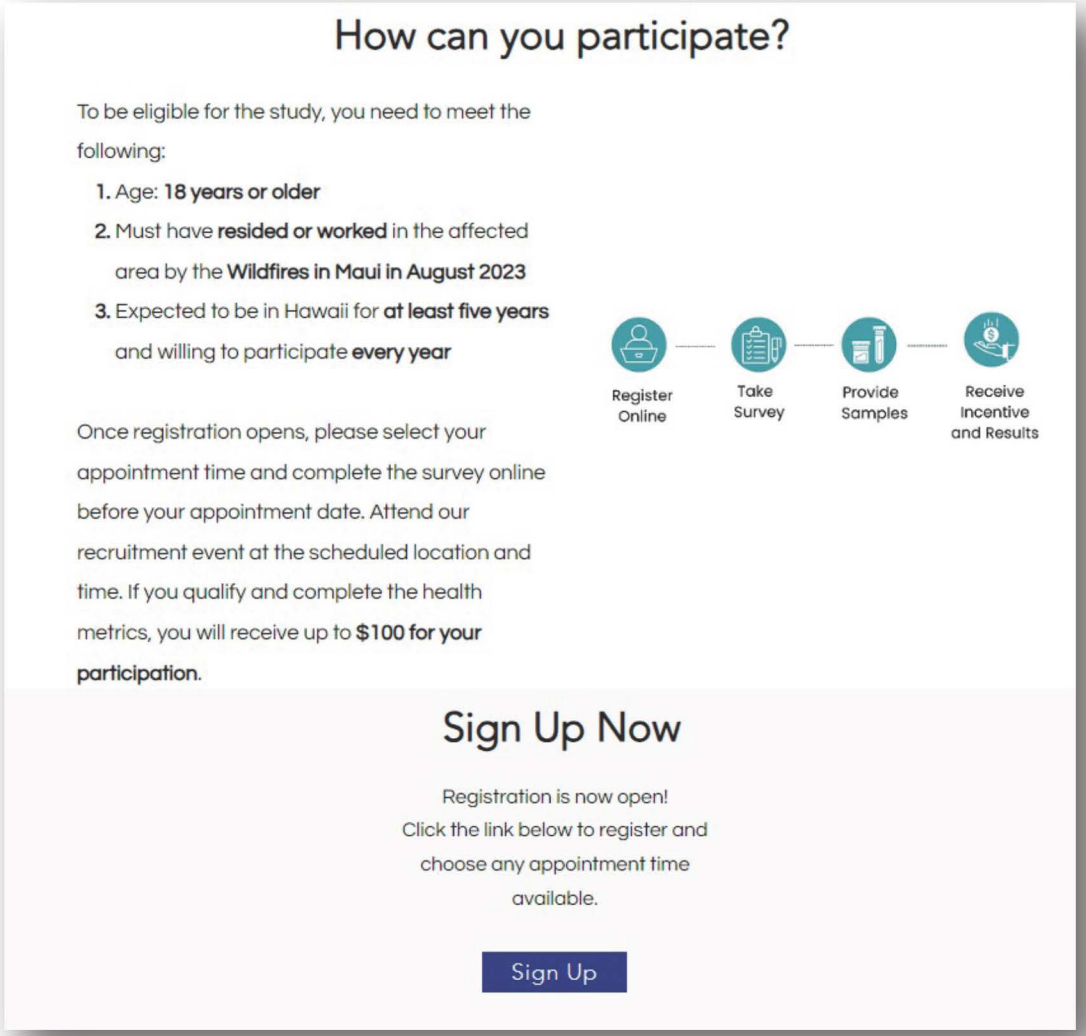
Participant and Community Data Sharing

- Participants are provided with RAPID results for relevant health conditions and some toxicant exposures with more comprehensive tests to be analyzed later
- We will connect participants to their results and at-risk individuals will be referred to relevant services/providers using a *de novo* **Wildfire Exposures Data Dashboard**
- Annual follow-up planned to evaluate changes and reassess community needs
- Transparent and community-engaged data collection and sharing for community
- Sharing data and communication strategies to inform state government agencies, community-based organizations on the ground, medical providers, and health insurers to establish guidelines/practices to mitigate health impacts



Data Dashboard has been used for several community studies: see www.hia.llc for more information

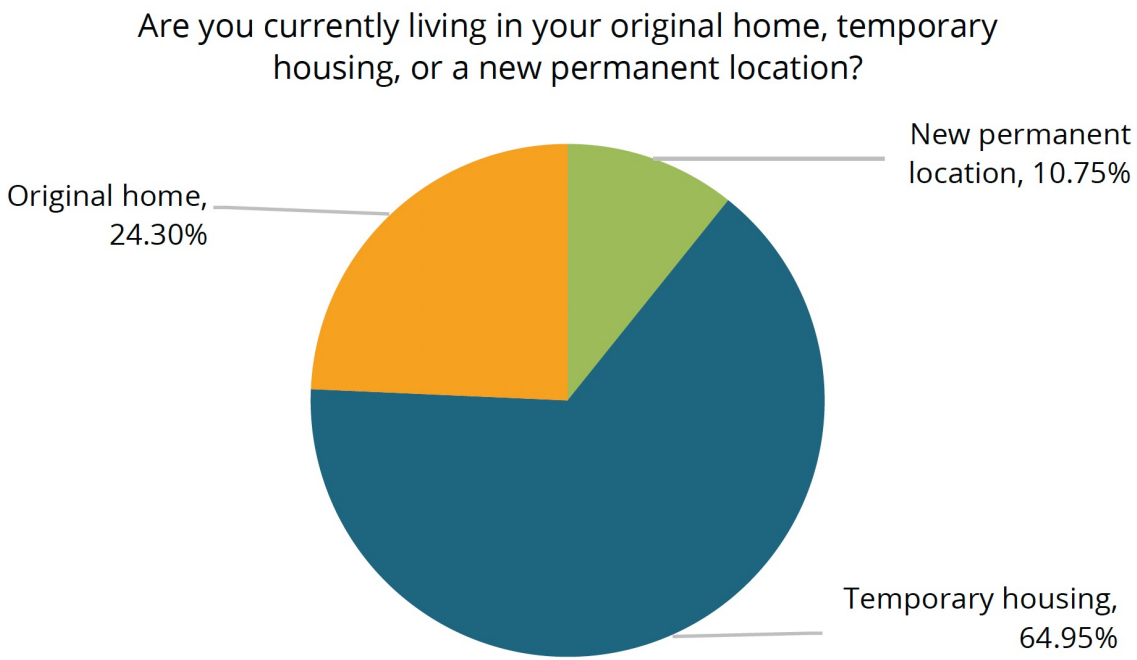
MauiWES.info is Live

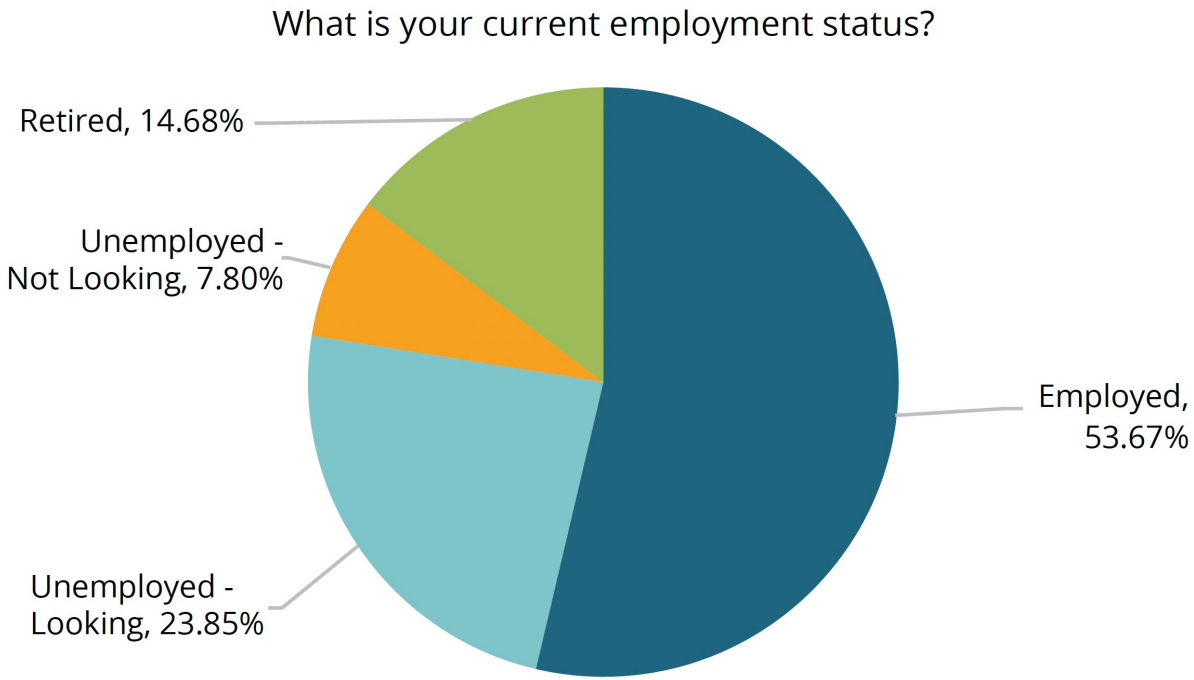


Scheduled Events:

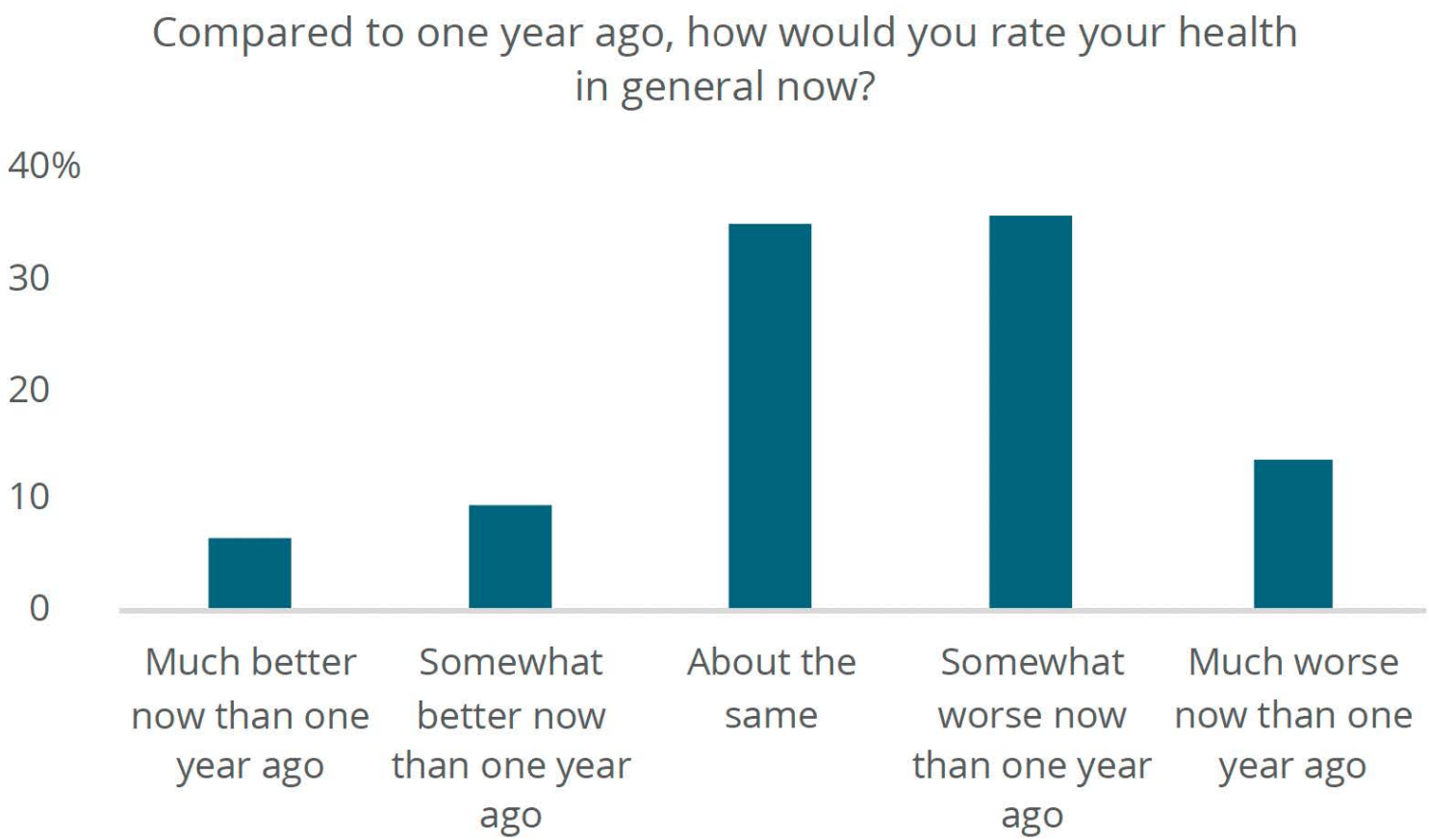
February 9, 10, 16 - Royal Lahaina
February 17 – Kula Lodge

Only 24% of participants remain in their pre-wildfire homes. The majority, 65%, are in temporary homes, and 11% have moved to new permanent homes. The wildfires caused 58% of participants to lose their jobs. Currently, over half have found employment, but 24% are still jobless and searching. Additionally, 74% report a drop in their household income.

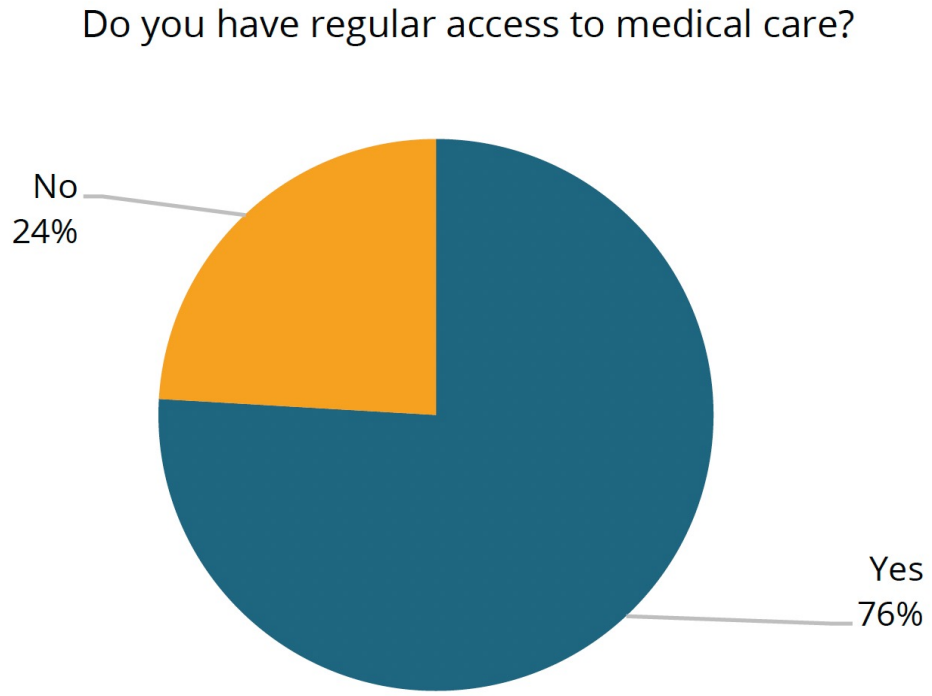




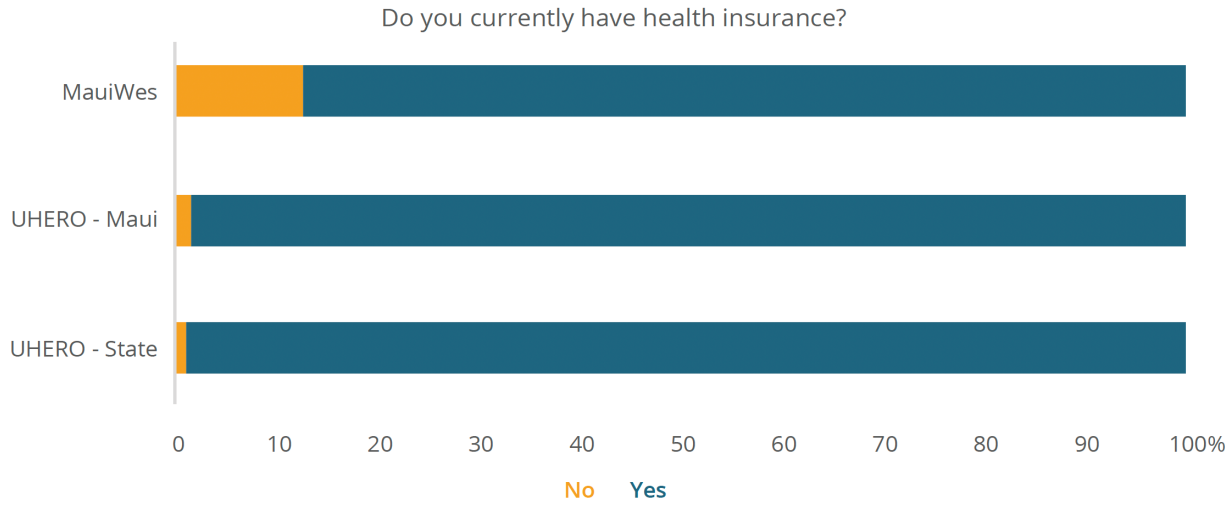
Almost half of the participants (49%) said their health is now worse than last year (prior to the wildfires)



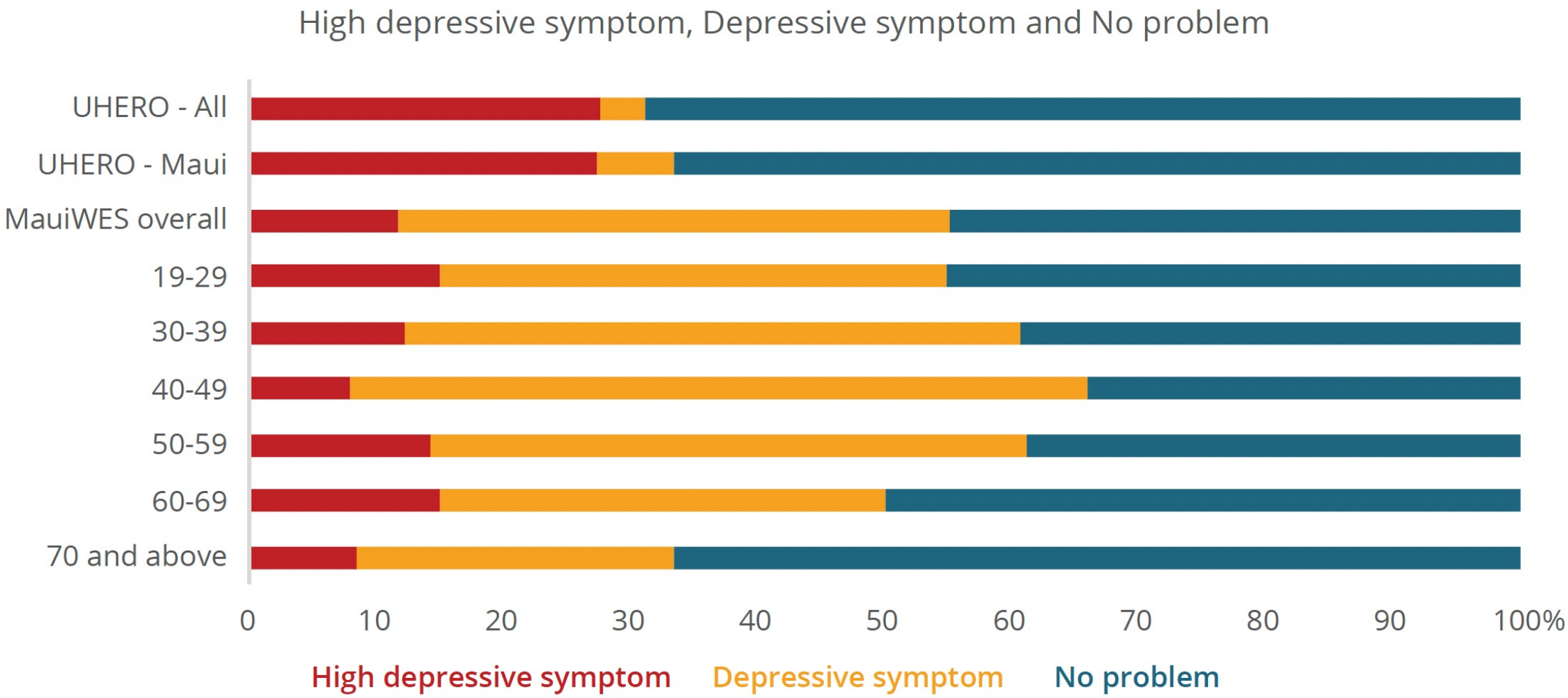
About 24% reported that they do not have steady access to medical care. Also, 13% reported that they do not have health insurance, much higher than last year's survey of Maui residents where only 1.7% reported being uninsured, similar to that reported over the state at 1.2%



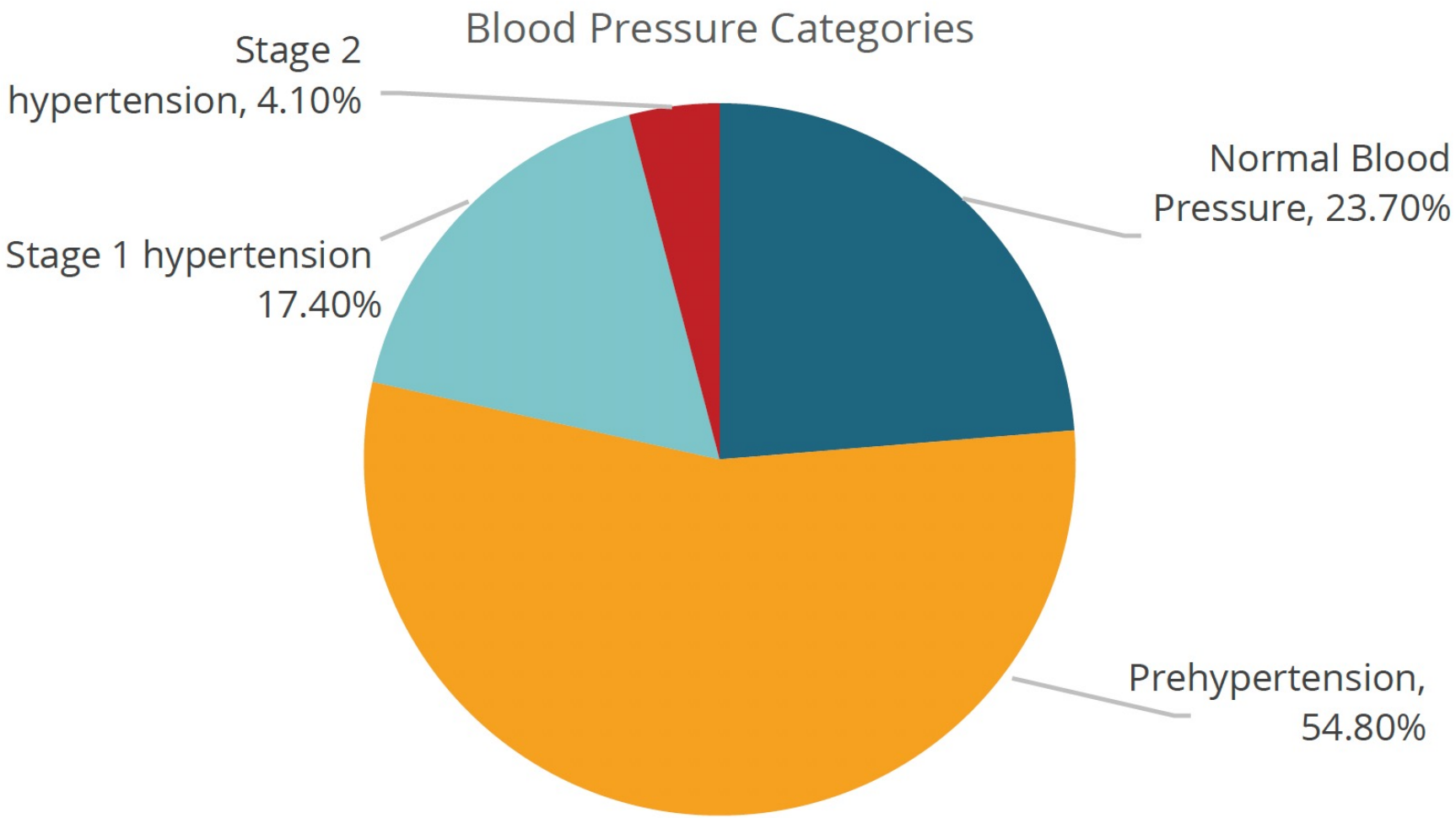
Do you currently have health insurance?



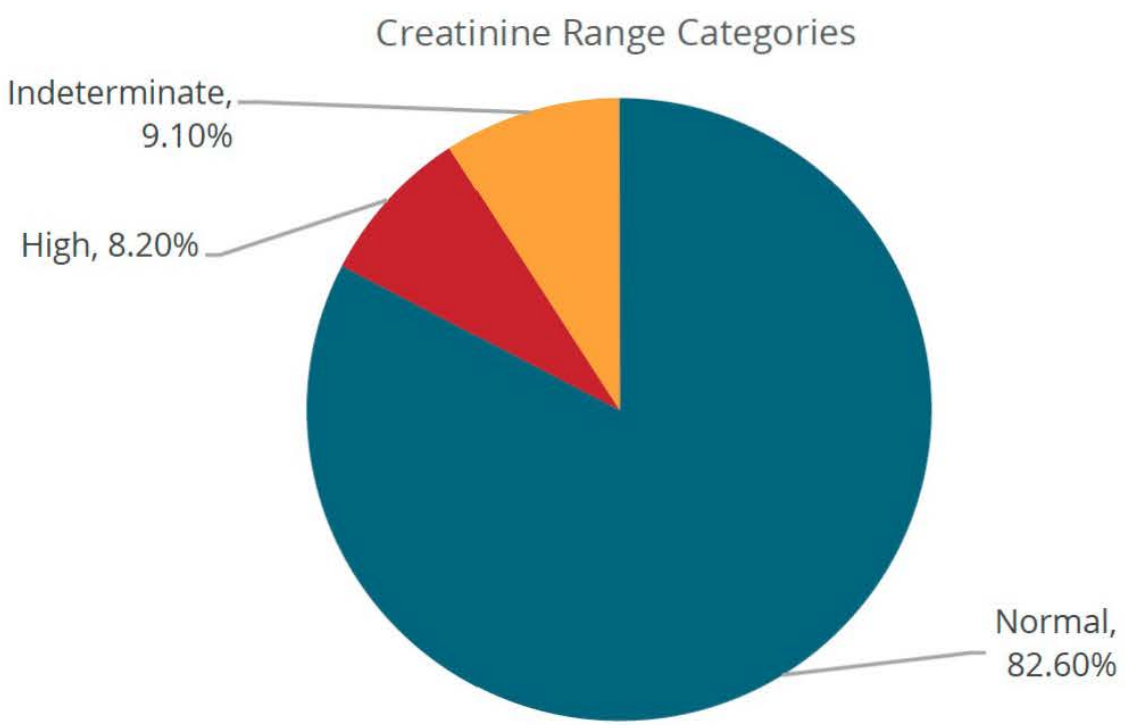
Depression rates among its participants, with 55% exhibiting depressive symptoms. This is notably higher than the approximately 33% reported for both the general population statewide and specifically for Maui residents in a previous survey. Depression rates in the MauiWES cohort increased with age. This suggests the wildfires had a profound impact on the mental health of older residents, highlighting their vulnerability to psychological trauma during recovery. Similar issues with Self-esteem and Anxiety

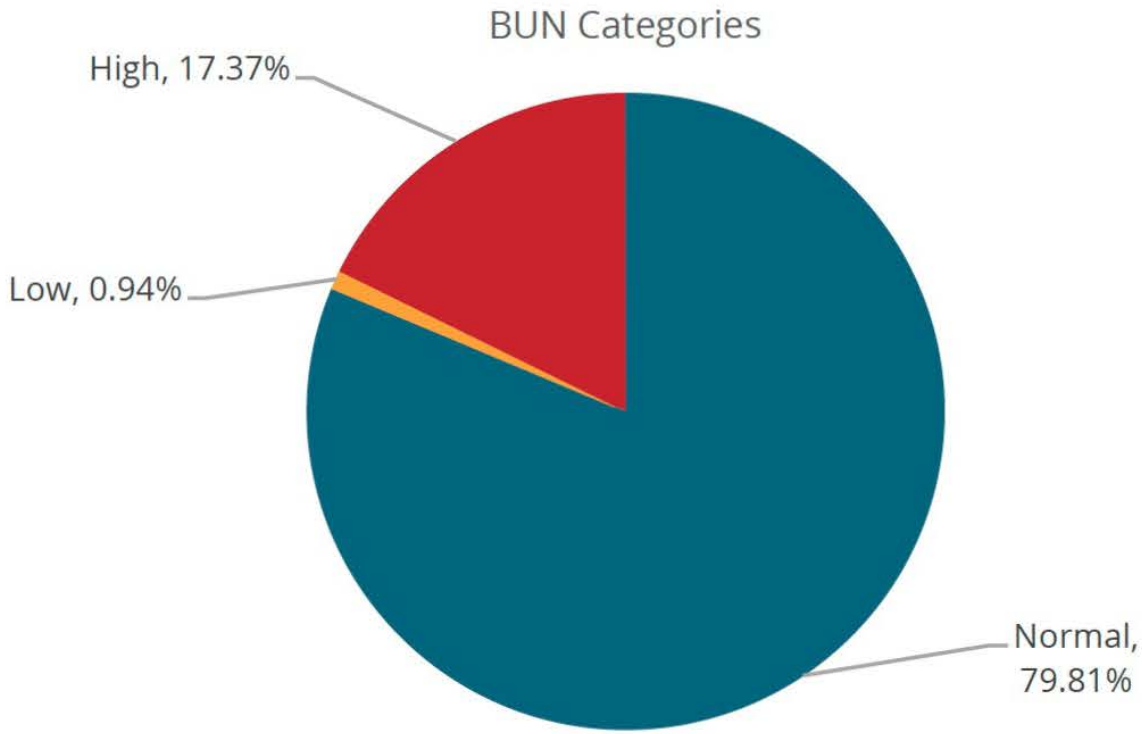


Over 20% of the cohort participants showed high blood pressure at the level of stage 1 and 2 hypertension, with 55% at pre-hypertension levels, indicating an overall proportion (~76%) of individuals at elevated risk for cardiovascular disease

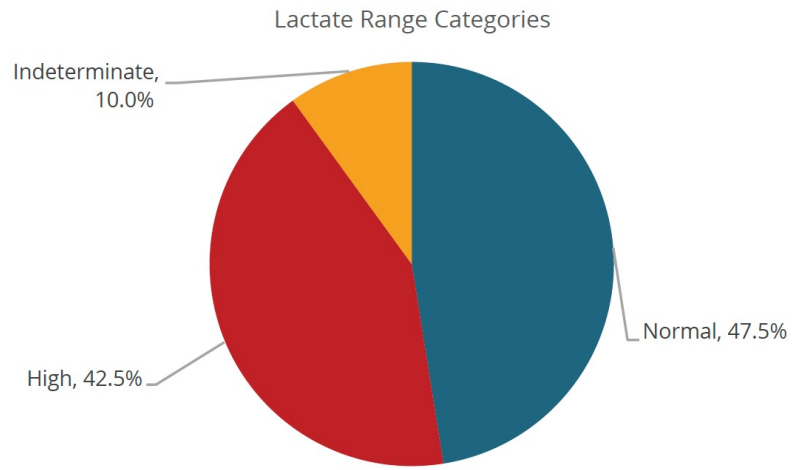


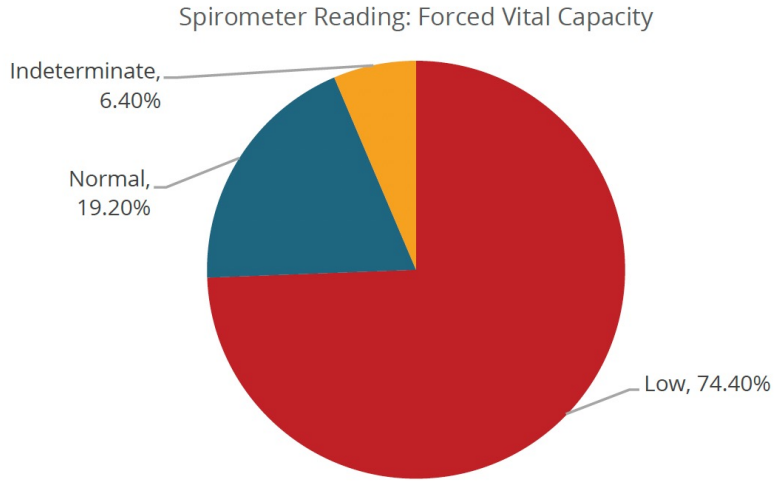
Initial blood biomarker tests also indicated that 8-18% of participants may have compromised kidney function

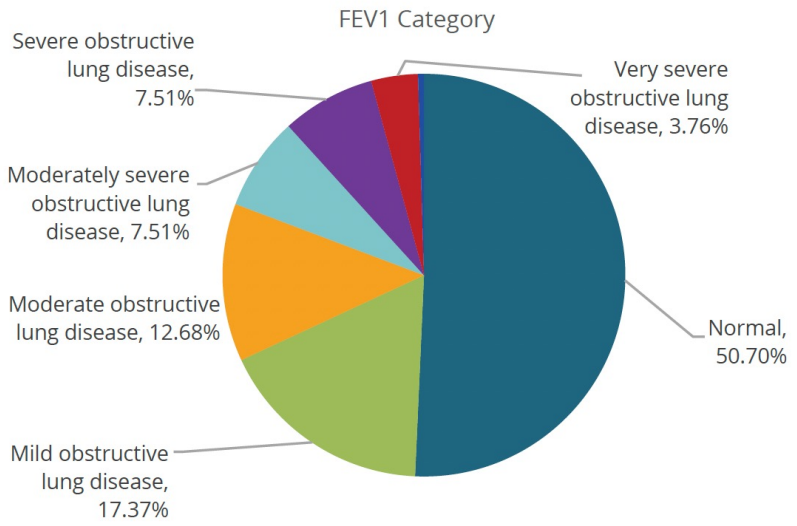


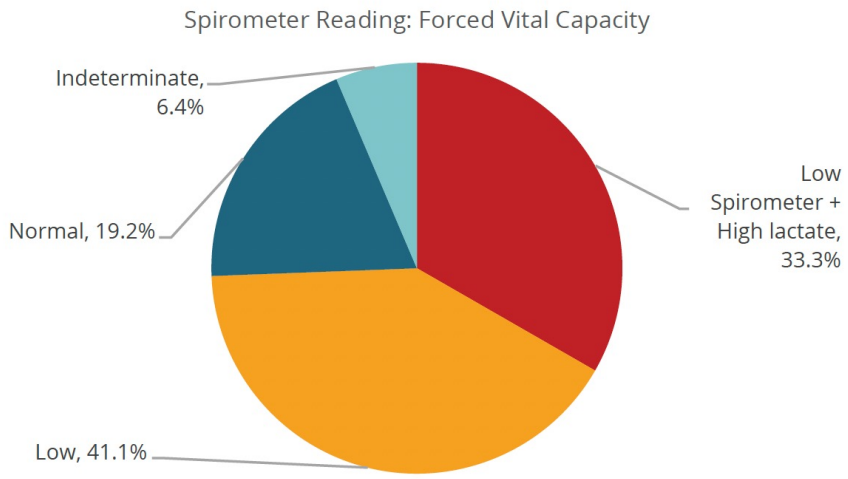


Up to 74% of participants may be experiencing poor respiratory health, with 49% exhibiting signs of mild to severe lung obstruction, and 33% with compromised lung function linked to impaired tissue oxygenation.





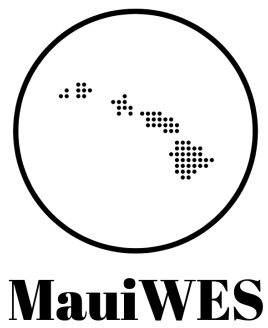




For more information: MAUIWES.info

Mahalo!

Community Partners



WASSP Committee

From: Ruben Juarez <rubenj@hawaii.edu>
Sent: Wednesday, February 14, 2024 11:17 AM
To: WASSP Committee
Subject: Fwd: Invitation to Attend the Water Authority, Social Services, and Parks Committee Meeting of Feb. 20, 2024
Attachments: UH_Maui_WES_2024_Public.pdf

For the presentation next week.

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