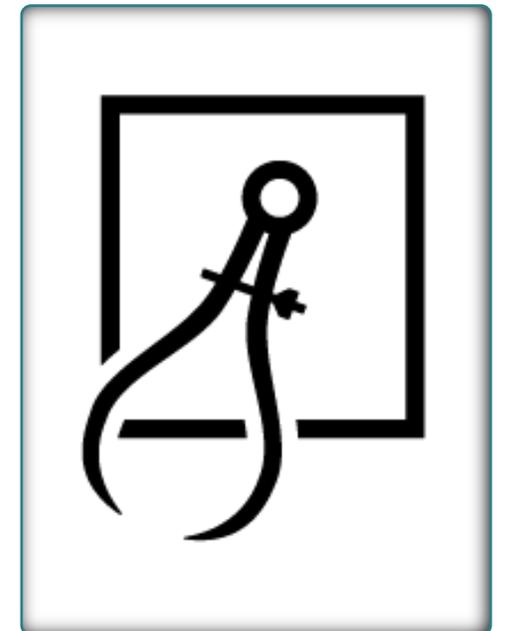
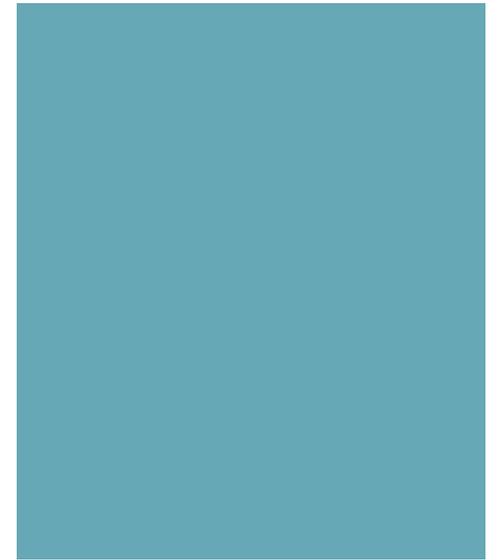
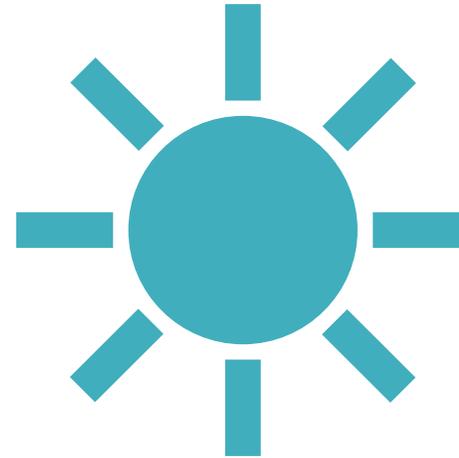


Stockton: Heat Risk Assessment

Using Rising Sun Green
House Call data

Indicia Consulting

March 2020



What was collected and analyzed



Utilized the data collected from 823 green house calls during Summer and Fall 2019



We were assessing vulnerability and risks to extreme heat in households



We utilized existing RS questions and included a few additional questions to investigate this topic

What we learned from Green House Call data

We developed composite scores to better understand vulnerability and risks



- **Household Vulnerability Score:**

- Disabled household members
- Seniors in household
- Household with children less than or equal to 2 years of age
- Household ethnicity is Hispanic/Latino or African or African American
- Non-English language spoken in household
- Household income is less than \$55,000*



- **Home Heat Risk Score:**

- No Exterior shade on building
- No Access to AC
- Dark Exterior wall color
- If has AC, has Portable or Window AC
- If has AC, operates AC 4 hours or less
- Lack of quality windows
- Lack of window coverings

*Household income was missing for the majority of participants

Why composite scores?

Many attempts to segment populations use singular attributes such as income or below poverty level to establish a household's propensity for risk/vulnerability

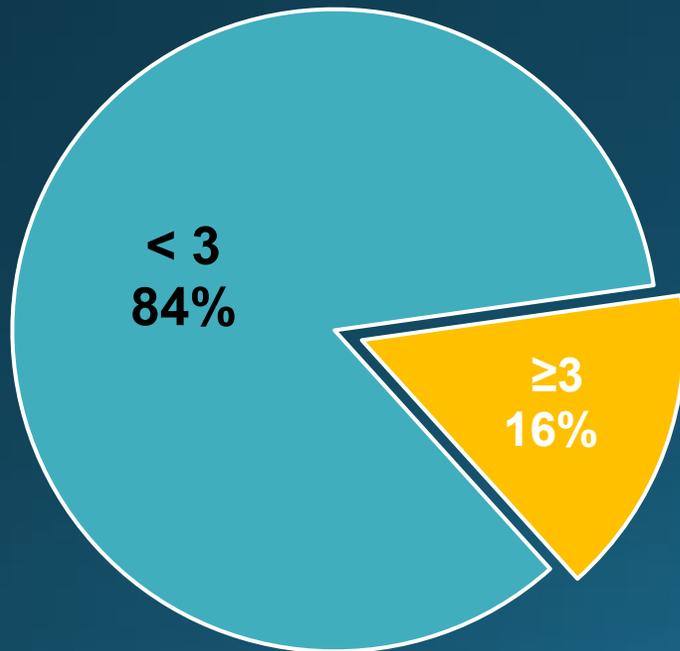
Our research has shown that, due to the complex nature of how social, cultural, and economic capitals intertwine, such 'gross' measures of risk/vulnerability are inadequate

These composite scores take into account a variety of demographic attributes known to correlate with risk/vulnerability and also traits in the built environment similarly known to correlate with risk/vulnerability

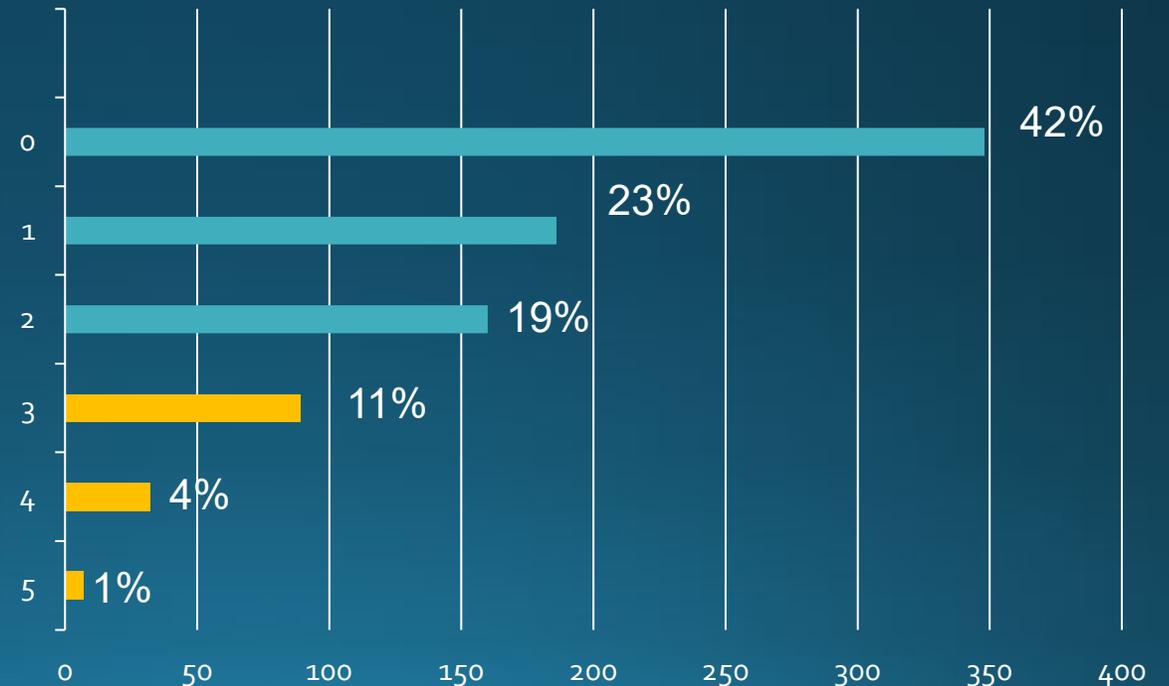
Household Vulnerability score

- Out of 822 households: 128 or 16% have a household vulnerability score greater than or equal to 3

Household Vulnerability Scores



Household Vulnerability Score Breakdown



Household Vulnerability score is linked to several compounding factors



65% of respondents had household vulnerability scores of 1 or less



58% of households with seniors had scores ≤ 3
(56 of 97 senior households)



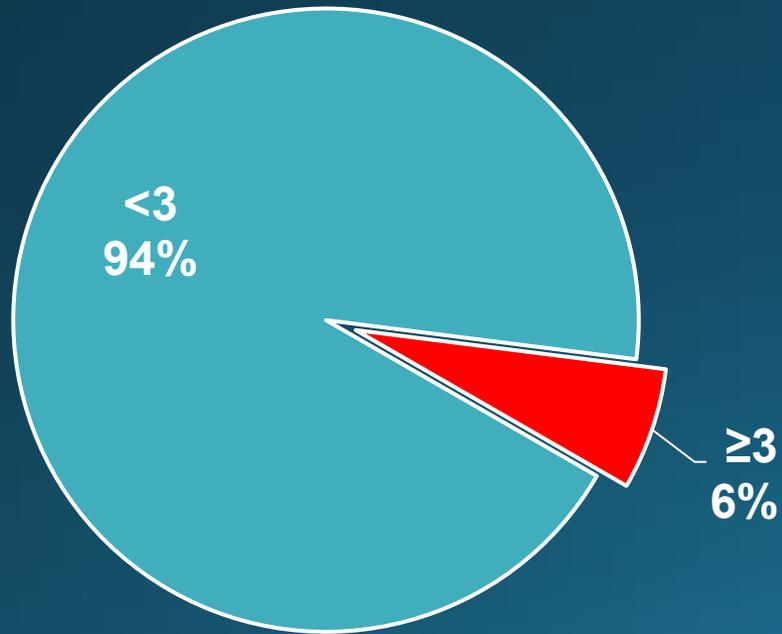
48% of disabled households had scores ≤ 3
(64 of 134 households)

***52 households disabled & senior**

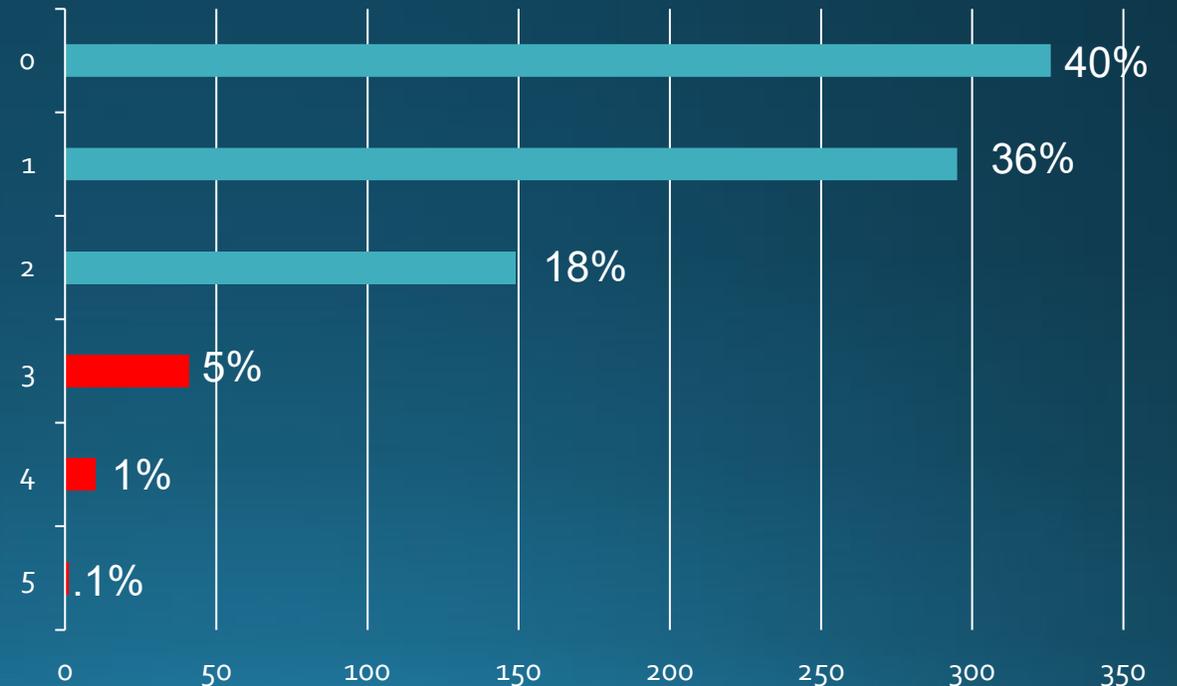
Home Heat Risk Score

- Out of 822 households: 52 or 6% have home heat risk score greater than or equal to 3

Home Heat Risk Score



Home Heat Risk Score



Home Heat Risk



76% of respondents had home heat risk score of 1 or less



5% of households with seniors had scores ≤ 3
(5 of 97 senior households)



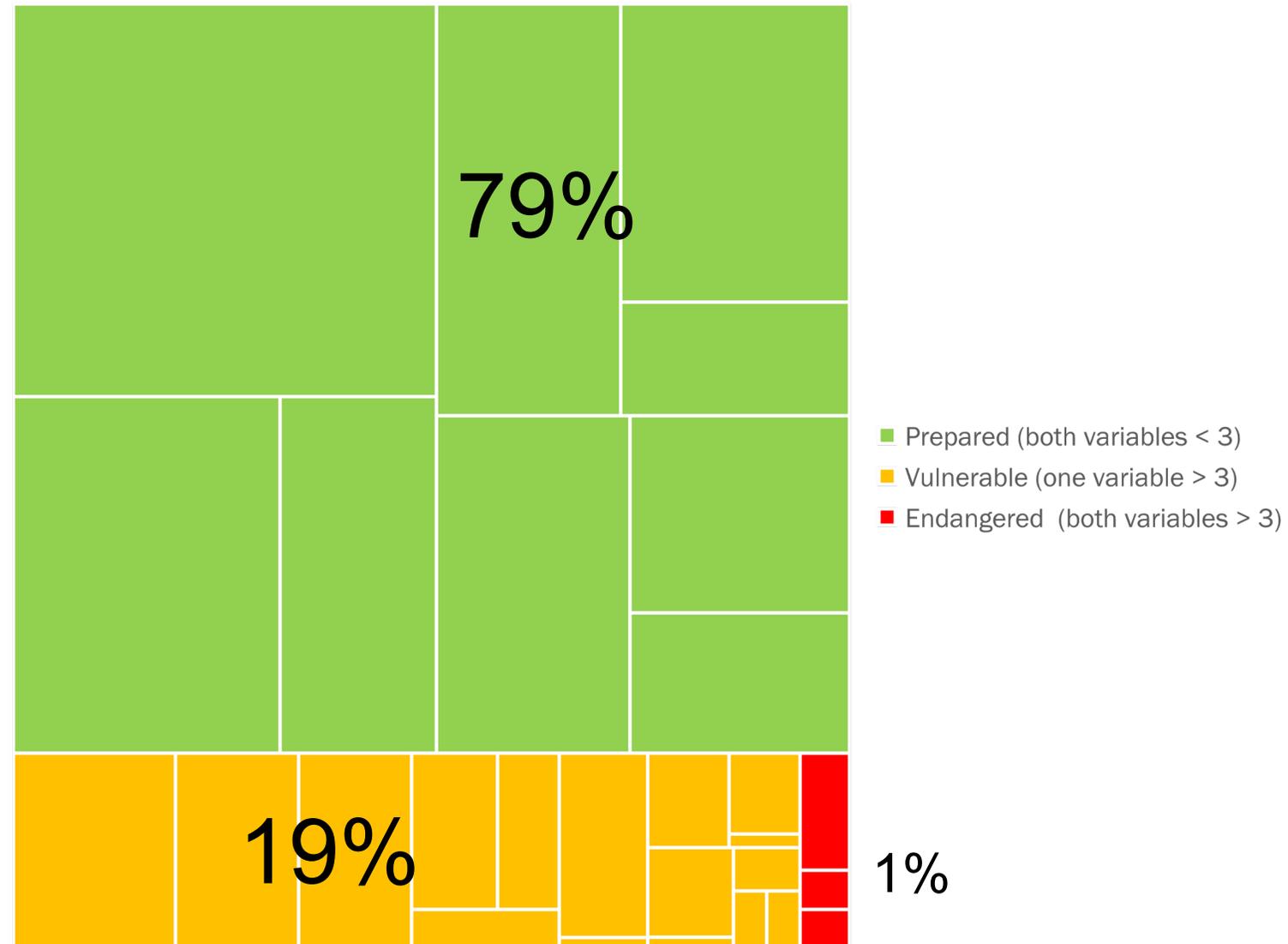
10% of disabled households had scores ≤ 3
(14 of 134 households)

***52 households disabled & senior**

Household Vulnerability & Home Heat Risk

- 10 households (1%) have both a household vulnerability score greater than or equal to 3 and an home heat risk score greater than or equal to 3
- These are the truly endangered households

Household Vulnerability x Home Heat Risk



Heat Endangered households



Heat Endangered households = vulnerability score ≥ 3 + home heat risk score ≥ 3 = 1% participants



These households need assistance across several axis, whether it is having very young, or elderly household members, language barriers, and at the same time a lack of home measures to reduce home heat risks



There were a lot of missing responses to individual questions so these composites could be underreporting

Need to sort out HOW we can do this to be sensitive to residents

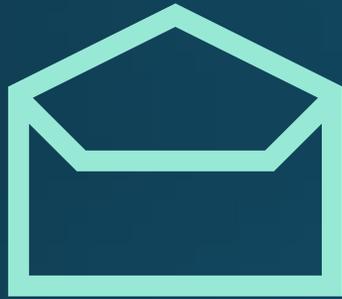


Identify spatial clusters – blocks, neighborhoods the City of Stockton could target for programs/resources

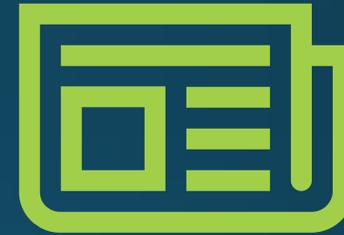


Work with Rising Sun's relationship with these households to share resources

Good news!

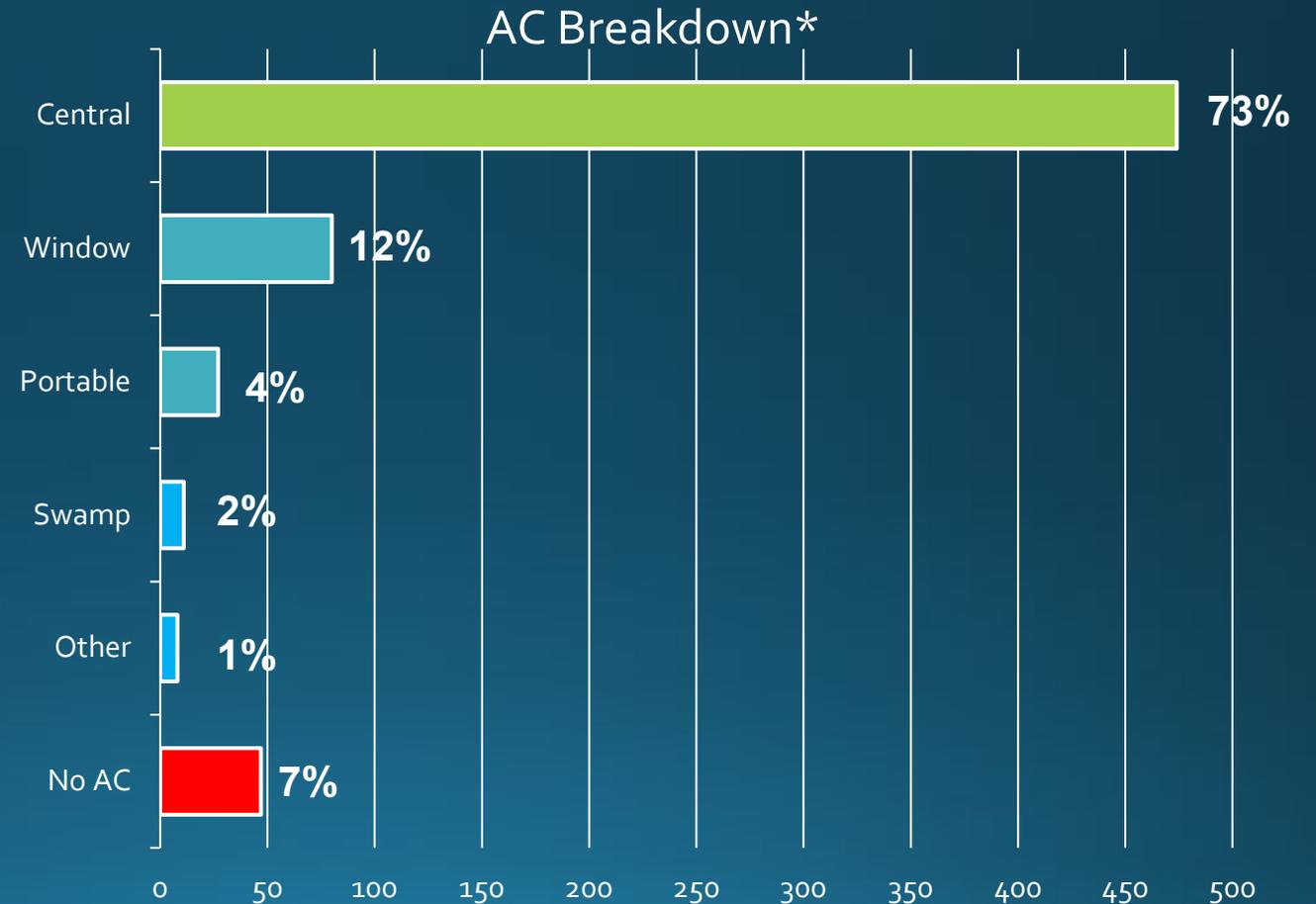
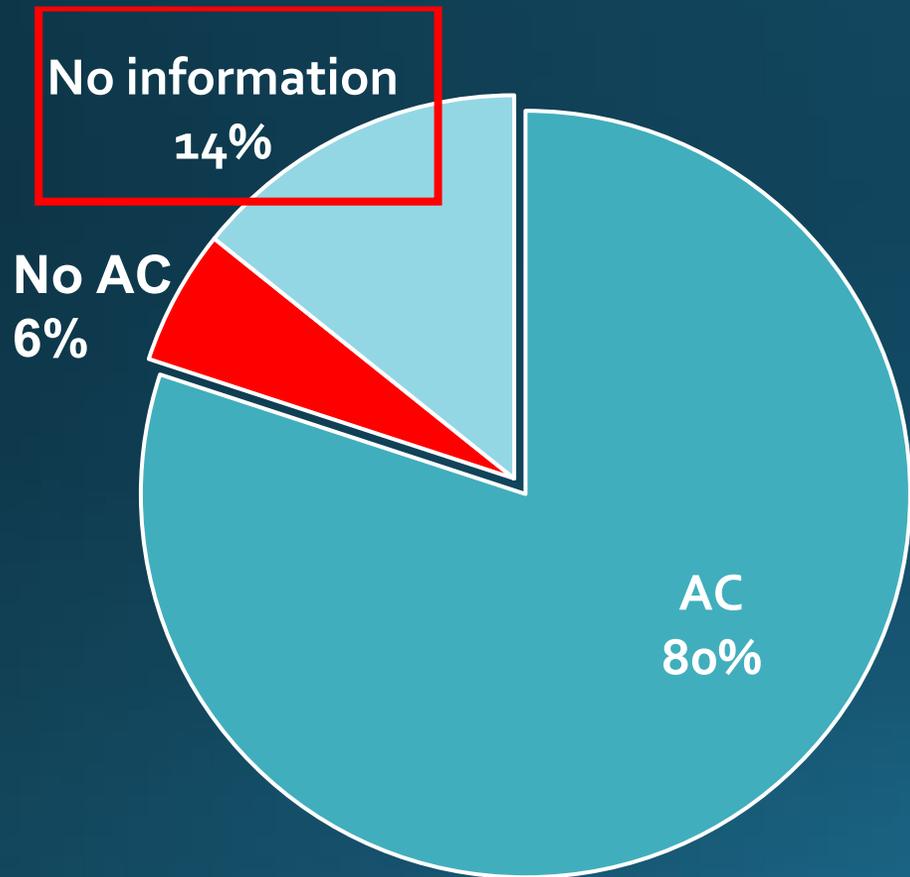


Data can identify these households



City of Stockton can target these households with programs

Air Conditioning is very important for reducing heat risk



*Count excludes "no information" responses

Takeaway/Messaging



The important takeaway, which should inform messaging going forward, is that moderate use of air conditioning improves health.



Households should be encouraged to use air conditioning on the hottest of days



Households can also be encouraged to set the air conditioning higher (e.g. 78 degrees Fahrenheit) to achieve maximum efficiency



Households should also be encouraged to regularly change the filter on the unit, and have it maintained by a qualified technician.



Households should NOT be encouraged to 'skimp' on A/C!

Participants signed up for our heat pledge

1

Pledge to keep my windows covered during daylight hours to reduce heat from entering my home

2

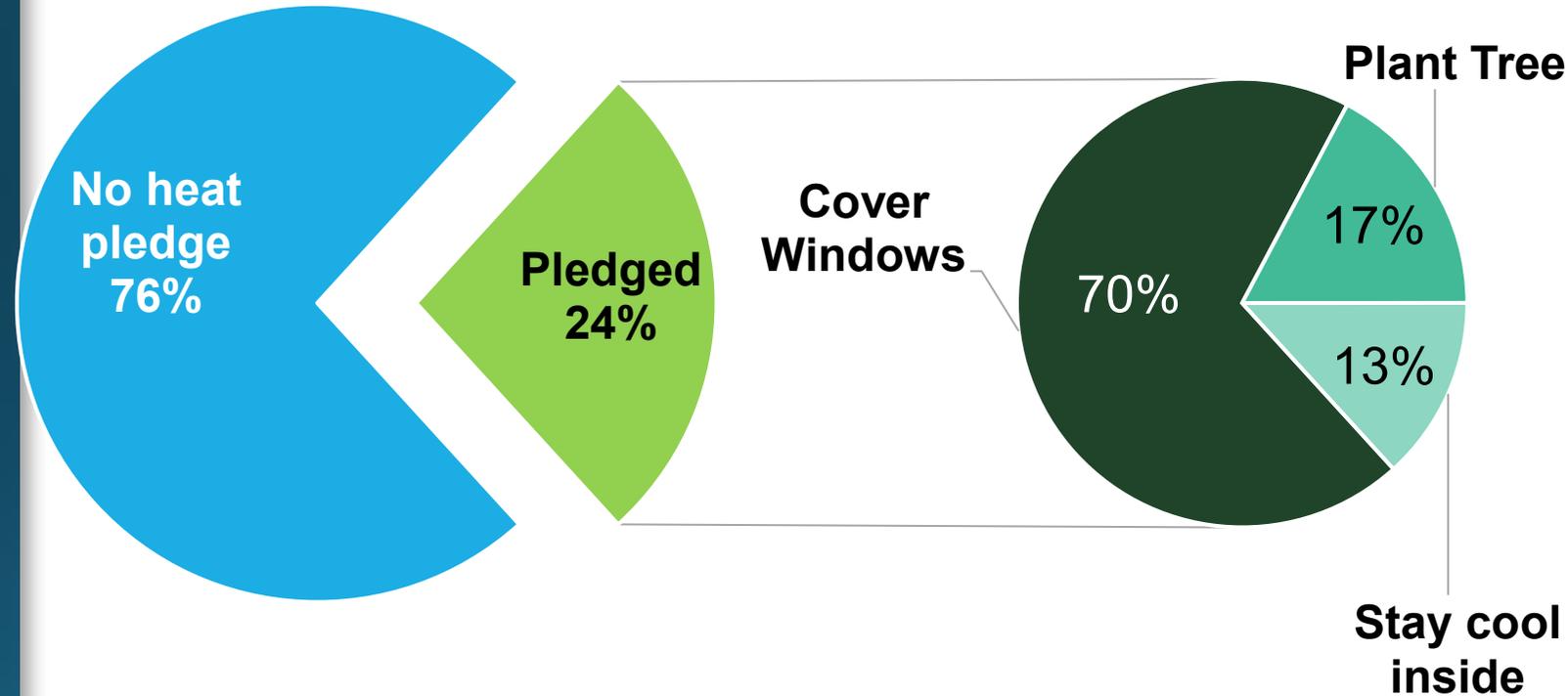
Pledge to head to a local cooling center or stay cool indoors during 11am-6pm

3

Pledge to plant a tree (or request a tree to be planted) to shade my home from the sun

Heat pledge participation

- 196 total pledgers (24%)



Pledges taken

The overwhelming majority of Pledge-takers chose the option, "to keep my windows covered during daylight hours to reduce heat from entering my home."

This is in-line with other research we are conducting in Fresno, where the majority of focus group respondents reported investing in blackout curtains

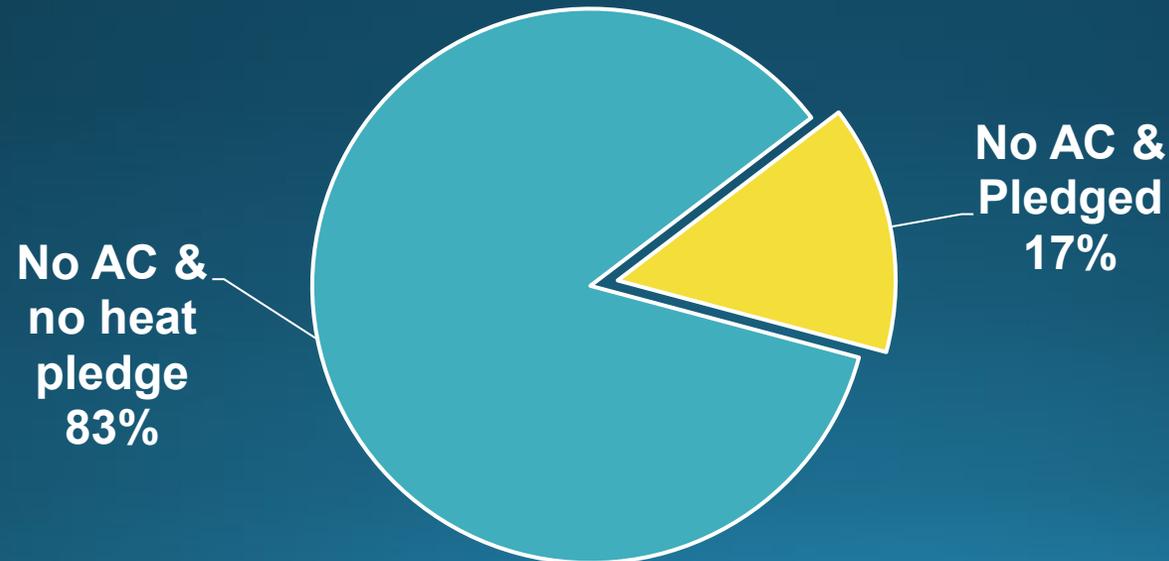


These are relatively inexpensive options that can be generally encouraged, and possibly subsidized.

Heat pledge – no access to ac

- Out of 196 total pledgers, 8 or 4% reported having no AC.
- Out of 47 total people who reported no AC, 8 or 17% pledged.

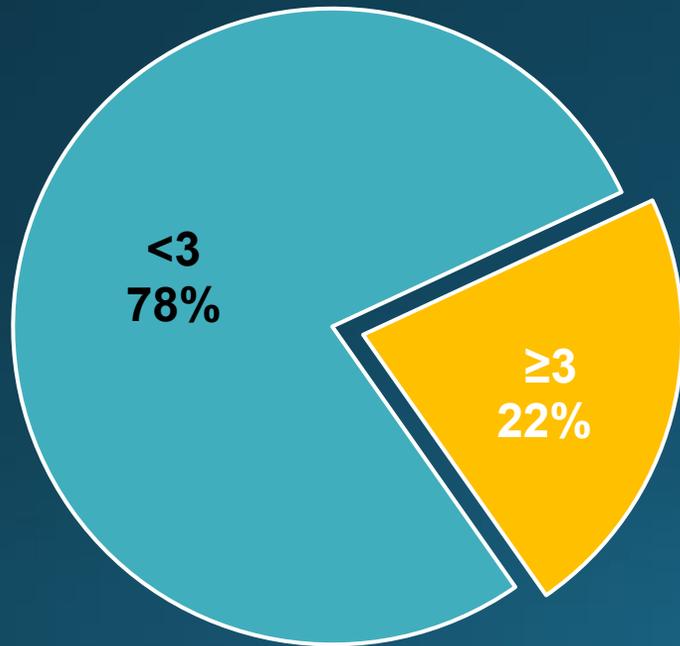
No AC Participation in Heat Pledge



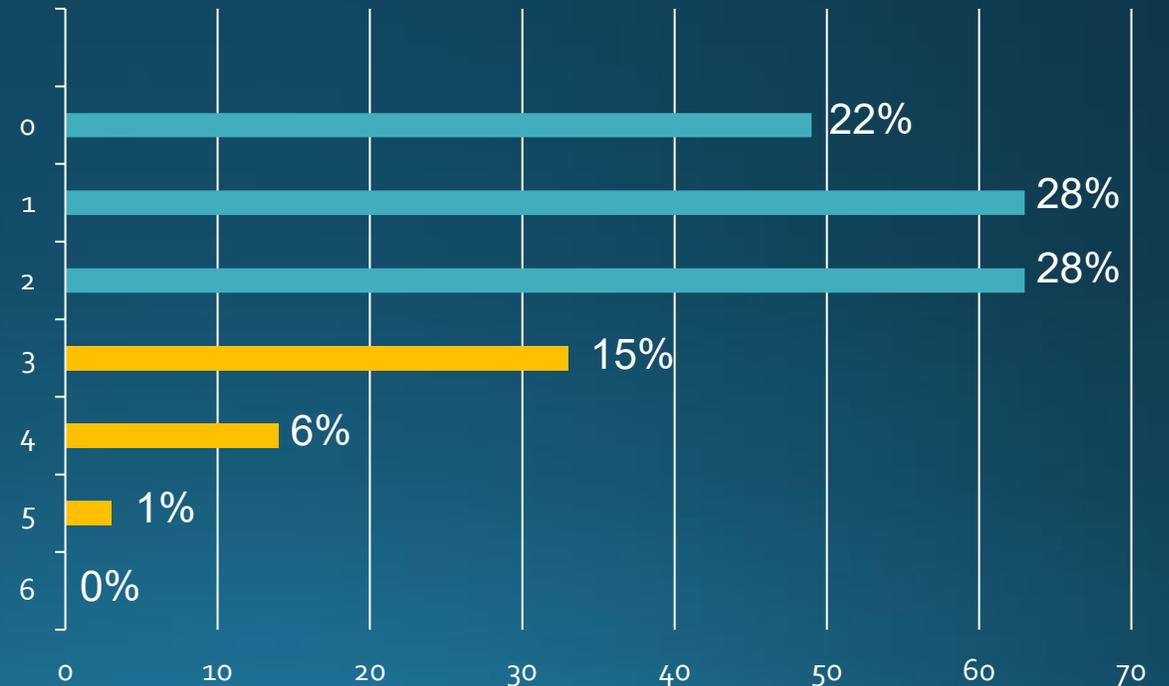
Heat pledge – household vulnerability score

- Out of 225 total pledgers, 50 or 22% have a household vulnerability score greater than or equal to 3.

Vulnerability Scores of Pledgers



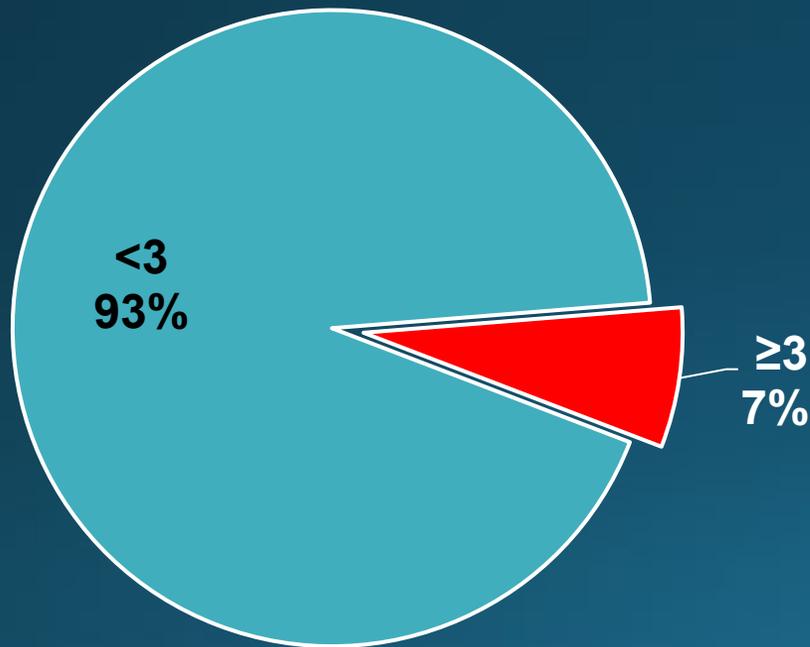
Vulnerability Scores of Pledgers



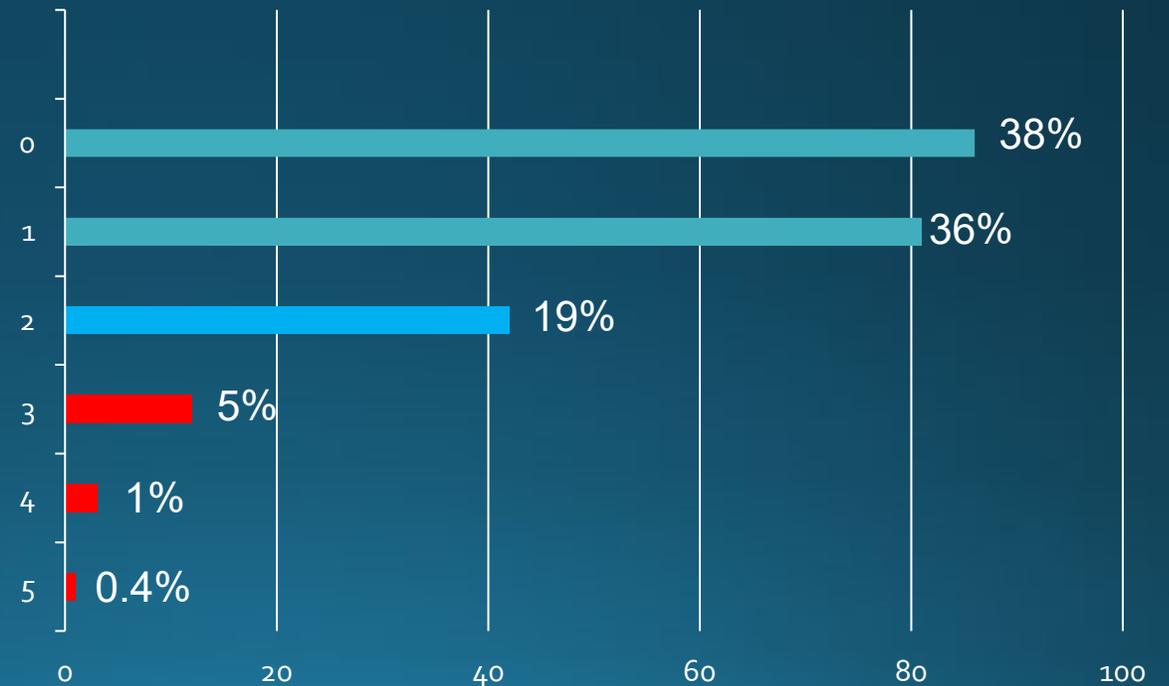
Heat pledge – Home heat risk score

- Out of 225 total pledgers, 16 or 7% have a home heat risk score greater than or equal to 3.

Heat Adaptive Scores of Pledgers



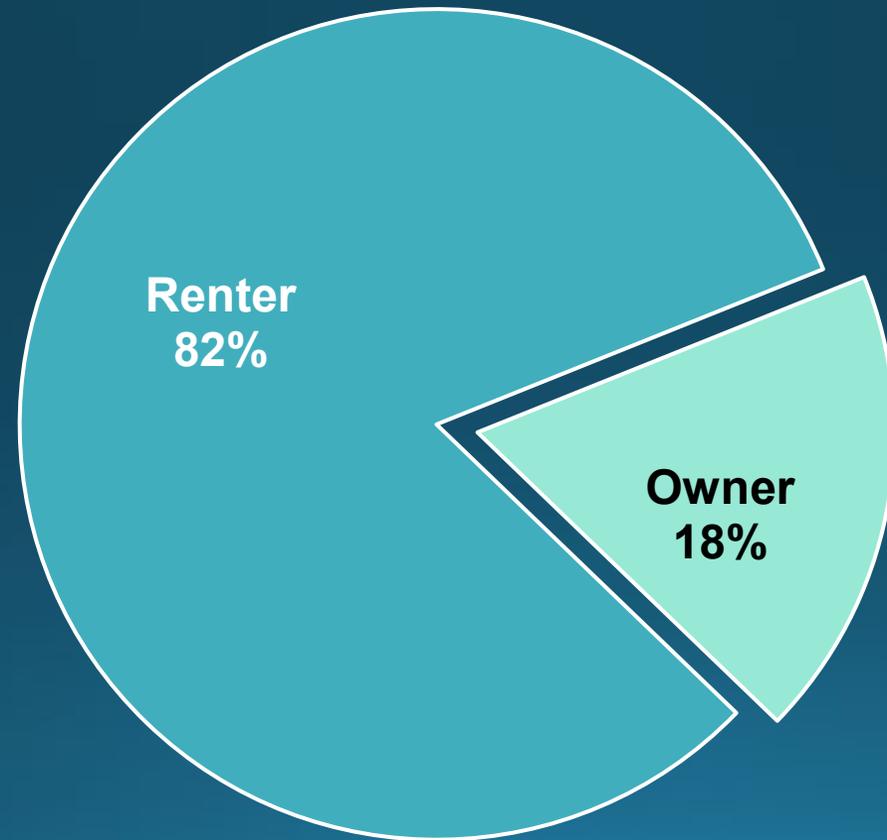
Heat Adaptive Scores of Pledgers



In summary...

Heat pledge participants were not aware (subconsciously or unconsciously) of their vulnerability or need of heat mitigation measures

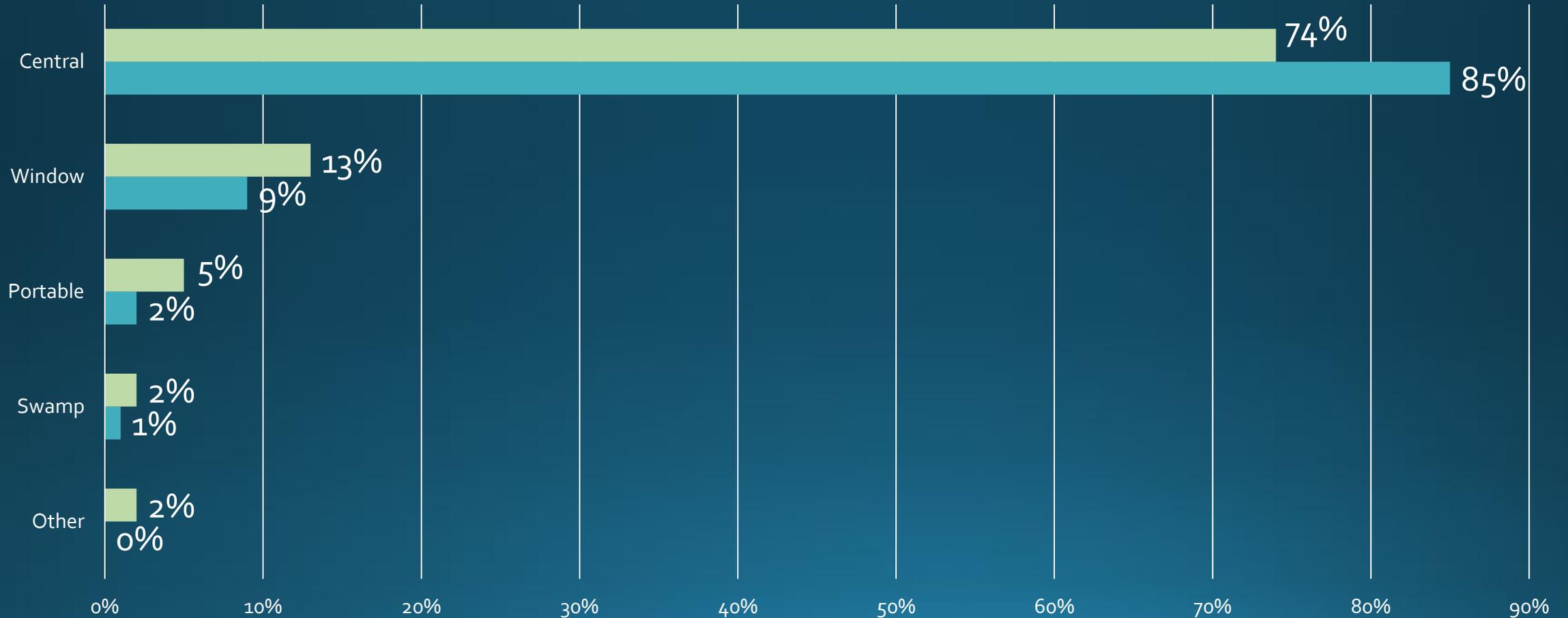
Homeownership



726 of 822 respondents (88%)

AC type does not vary between renters or owners

■ Renter ■ Owner 554 of 822 respondents (67%)





A/C Type and operation



41% of homes with central units, and 38% of homes with window units, claim to run them between 4-7 hours a day.

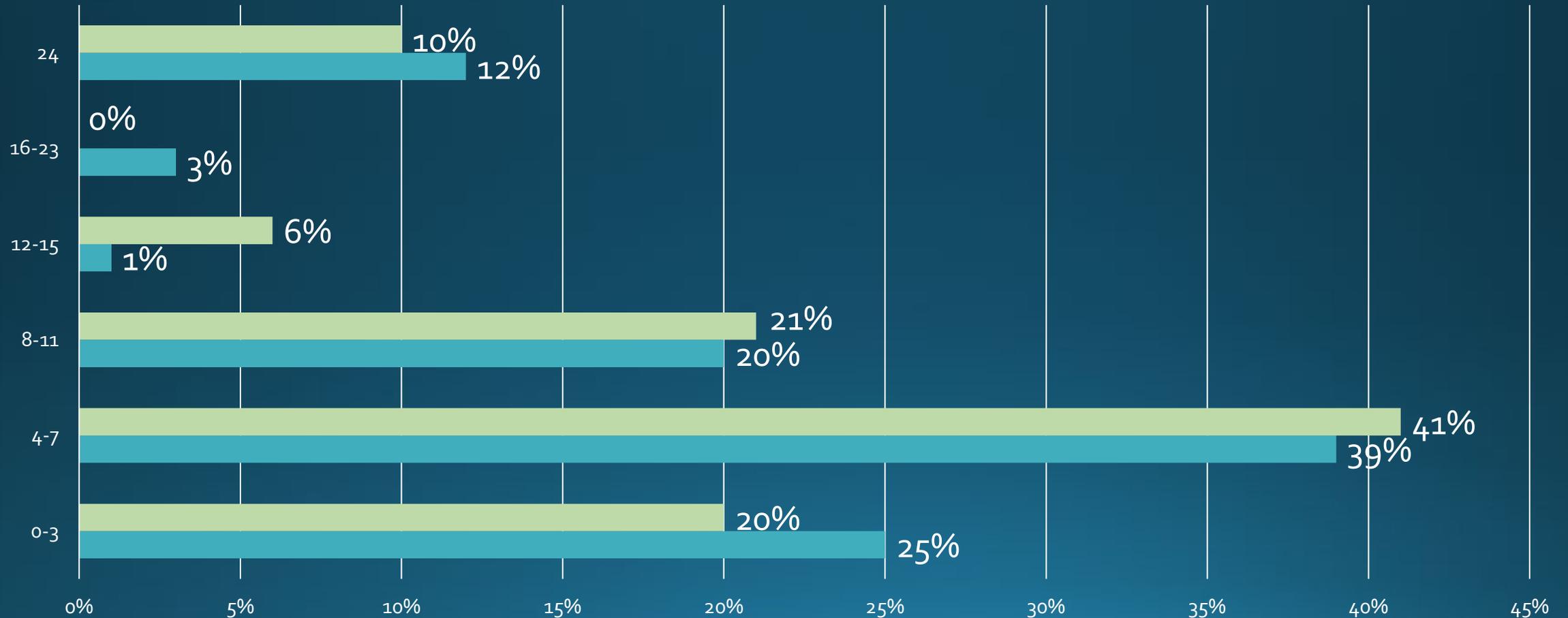


Participants who claimed to run their AC most hours of the day, 90% were using central A/C units

AC operation does not vary widely based on home ownership

■ Renter ■ Owner

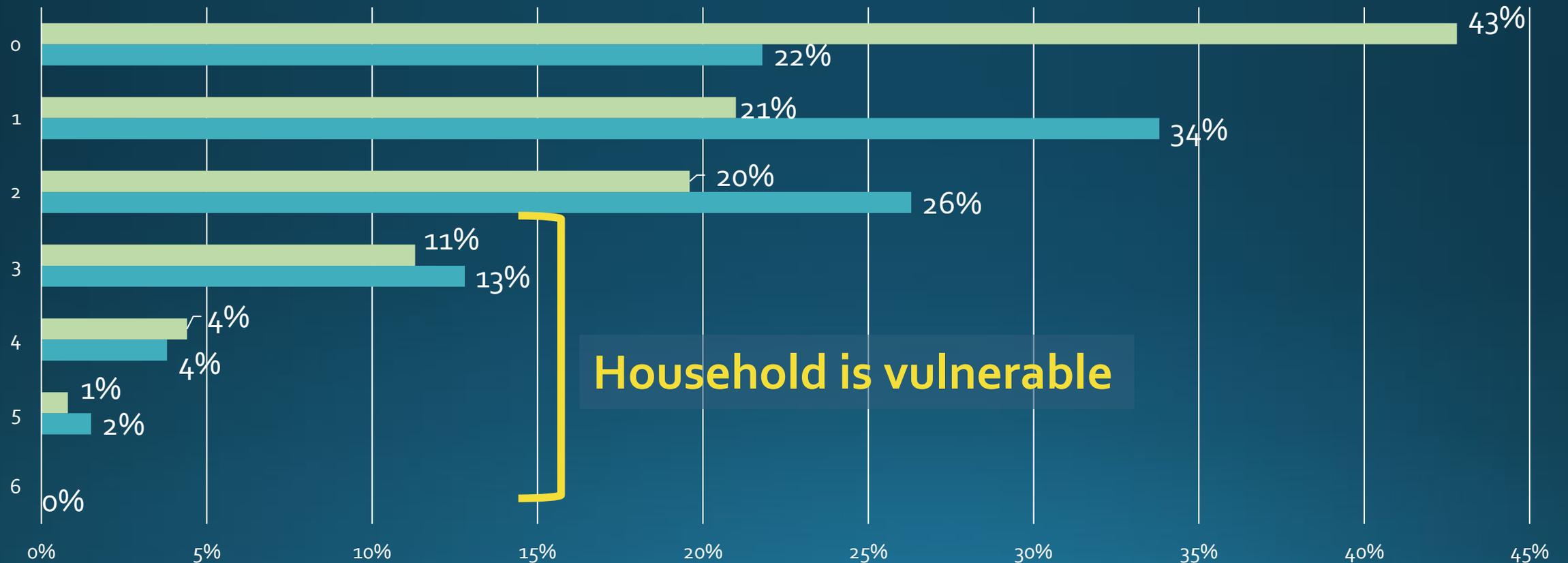
600 of 822 respondents (73%)



Household vulnerability does not vary by home ownership

■ Renter ■ Owner

726 of 822 respondents (88%)

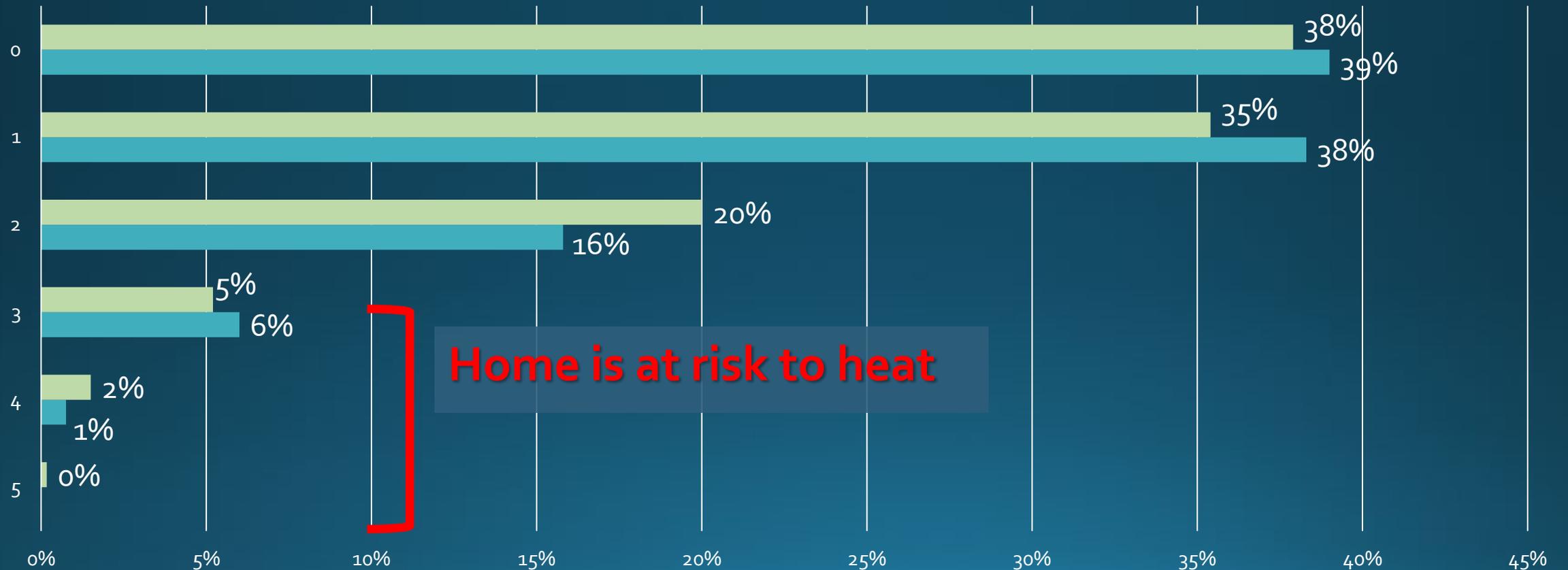


Household is vulnerable

Home heat risk does not vary by home ownership

■ Renter ■ Owner

726 of 822 respondents (88%)



In summary...



There is not a significant difference between renters and owners.



Prioritizing extremely vulnerable households for central AC might be one recommendation for Stockton to explore

Did heat pledge
participants remember
their pledges?



Rising Sun reached 39 of the 196 households that participated in the pledge



28 of the households (72%) contacted could recall the visit by Rising Sun



10 of 28 households (35%) recalled their heat pledge

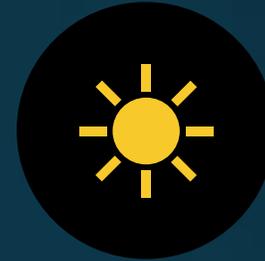


However, only 5 households (18%) correctly recalled their heat pledge

8 households followed-up on their pledge



USED CURTAINS &
BLINDS
STRATEGICALLY TO
REDUCE SOLAR
HEAT GAIN



OCCASIONALLY
WENT OUT
DURING PEAK
HEAT HOURS



PLANTED TREES

However, 2 households responded they turned off their A/C which was not related to a pledge & is alarming

What about pledge
participants memory of
summer heat events?

No one recalled a
heat event from
last summer

However, heat events were tied to pressing news in the area



- There was a heat event end of July 2019 that was covered in local news
- Also, there was a story in local news in June 2019 where a baby was found in a dumpster during a heat event

Source: <https://www.wnep.com/article/news/local/bradford-county/newborn-found-alive-in-dumpster-amid-california-heatwave/523-954c110c-9a91-461c-99fb-119e067dc788>

We asked “Did you do anything else to 'beat the heat' last summer?”



10 of 22 participants responded that they reduced their use of AC

Not including the participants that turned off AC when leaving the house

Some increased fan use in lieu of AC



This could be a health risk

AC use significantly improves health of residents during heat events

Fans blowing hot air directly on a resident is a health risk



Need to heed caution with messages (energy efficiency v heat health)

Need to promote moderate AC use for EE & heat health benefits

Thank you for your
time

Questions?



Indiciaconsulting.com



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