

COVID-19: Updates for Hawaii Clinicians

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Disclosures—NONE

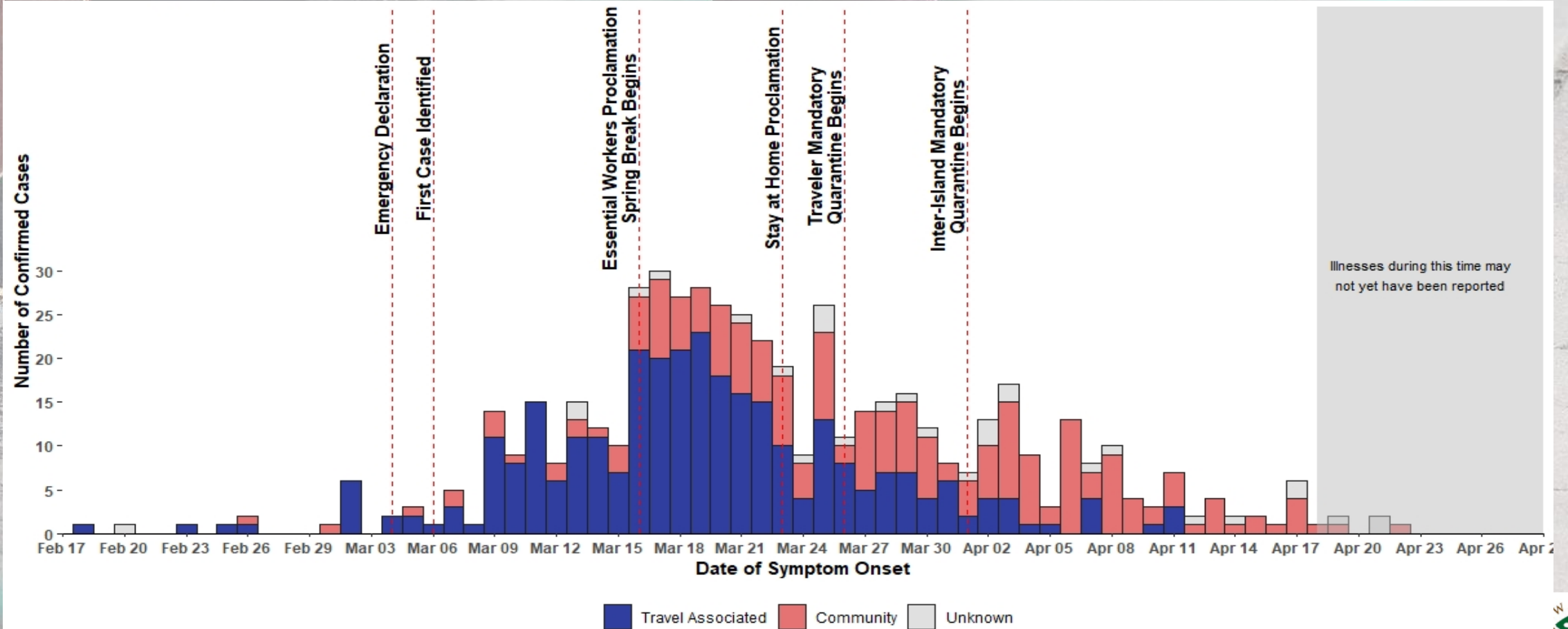
- I have no financial relationships related to this presentation.
- I will not be speaking about any specific commercial product, device, or medication.
- I will not be speaking of any off label use of medications or devices.

Outline

- Review of COVID-19 cases in Hawaii
- Current COVID-19 testing landscape and recommendations
- Infection control and prevention

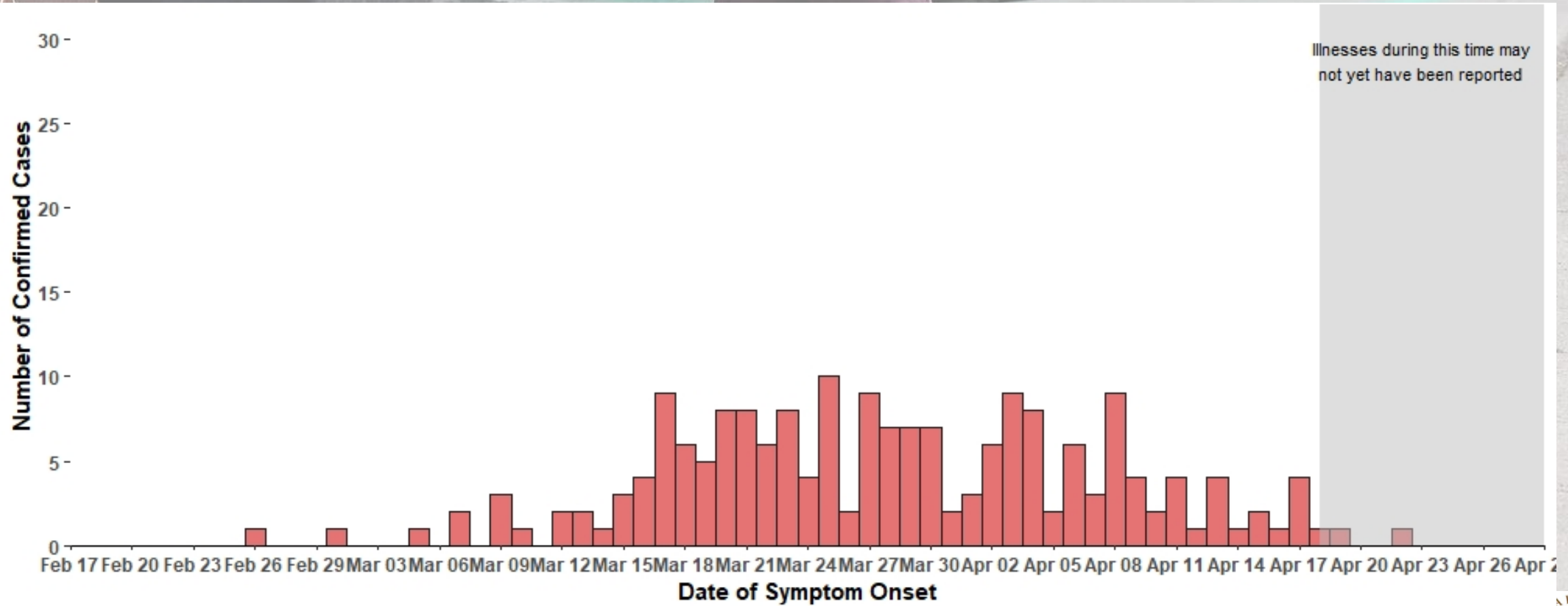
Confirmed COVID-19 Cases by Exposure—Hawaii, 2020 (N=541)

As of 27 April 2020. All cases to date may not be included because of missing or pending data.



Community Associated Confirmed COVID-19 Cases—Hawaii, 2020 (N=191)

Data as of 27 April 2020. All cases to date may not be included because of missing or pending data.



Characteristics of COVID-19 Cases in Hawaii (N=601)

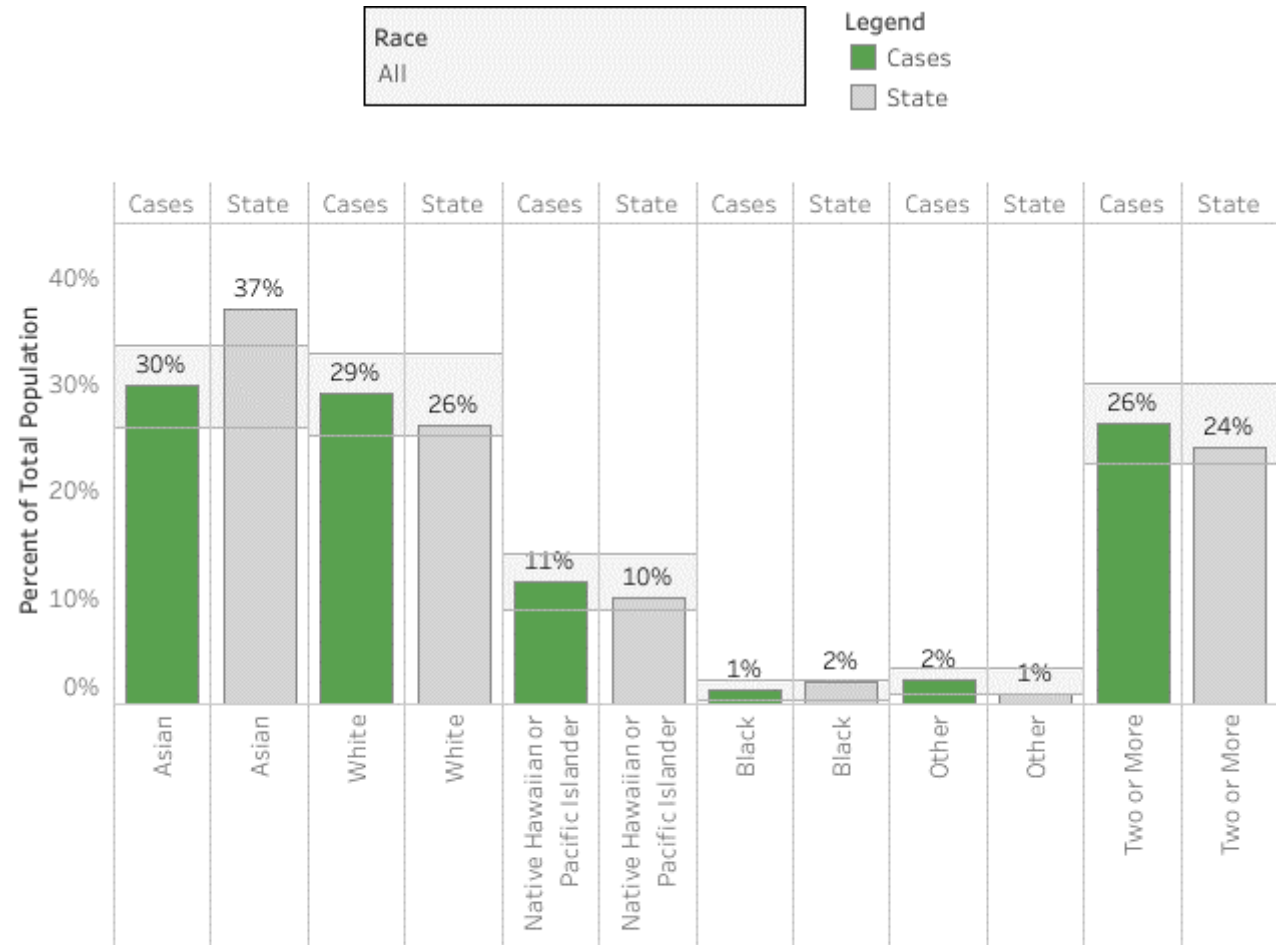
As of 23 April 2020

- 52% male
- Ages 0–96 yrs, median 47 yrs
- Required hospitalization 11%
- Died 2%
- County of diagnosis:
 - Honolulu 65%
 - Maui 19%
 - Hawaii 12%
 - Kauai 4%
- Residence (missing 5%):
 - Hawaii residents 87%
 - Visitors 8%

Preliminary unpublished HDOH data



**Race* of COVID-19 Cases
Compared with
State Population
(N=541[†])
As of 23 April 2020**

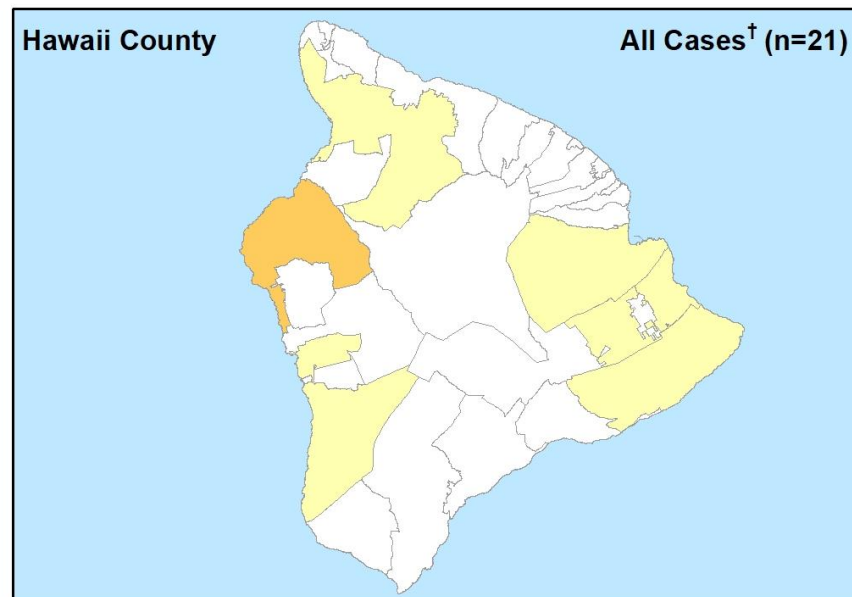
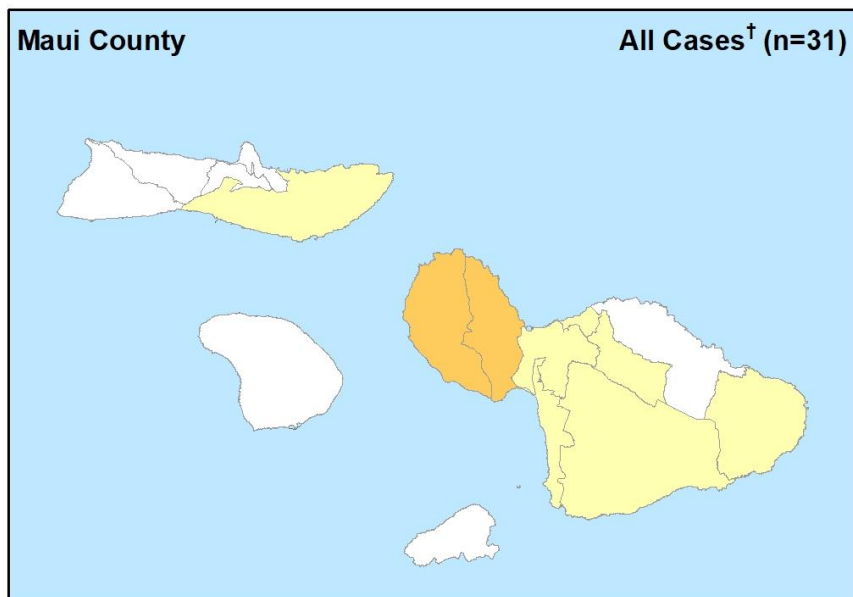
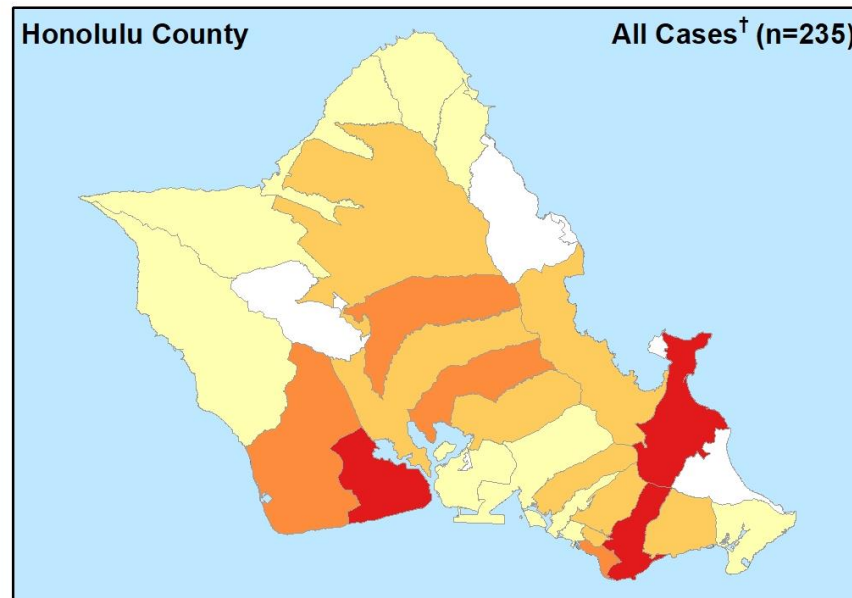
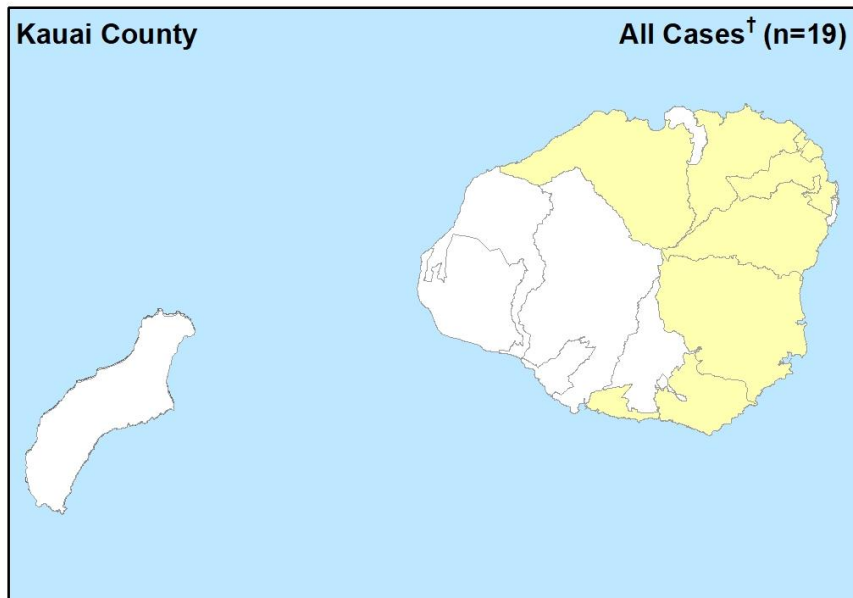


*Race alone, "Two or More" represents multiple/mixed race

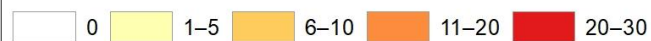
[†]Race missing for n=60 (10%) of cases

Horizontal bands indicate 95% confidence limits for Case %

Travel Associated COVID-19 Cases by ZIP Code Tabulation Area (ZCTA)* (N=306)



COVID-19 Cases - Travel Associated



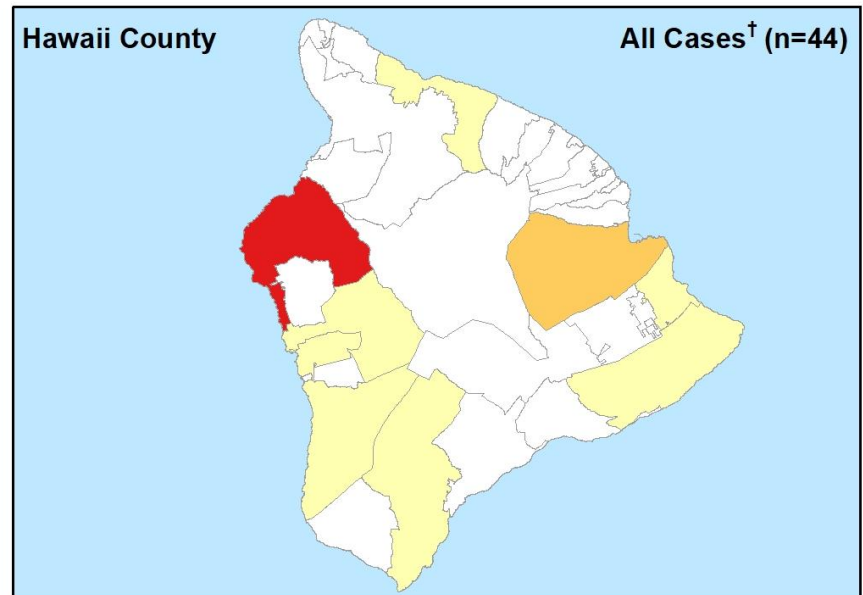
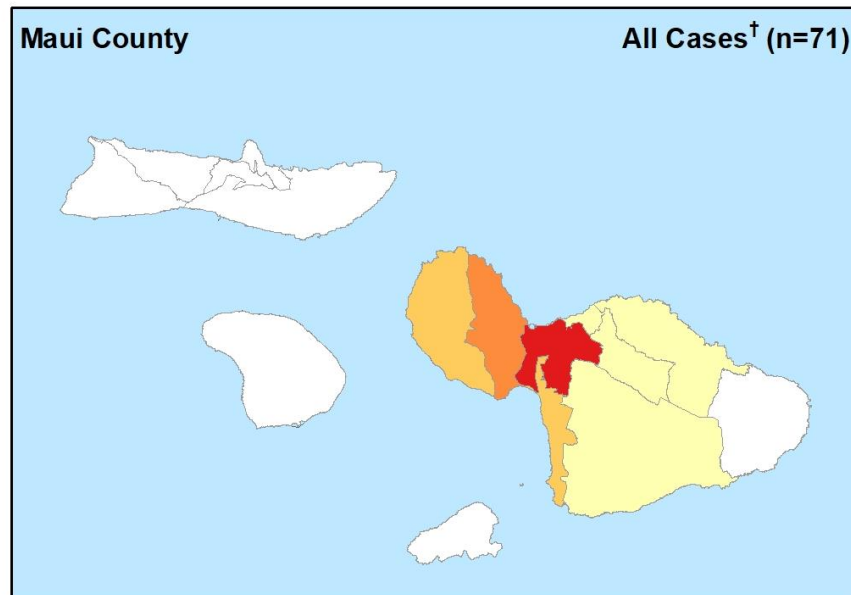
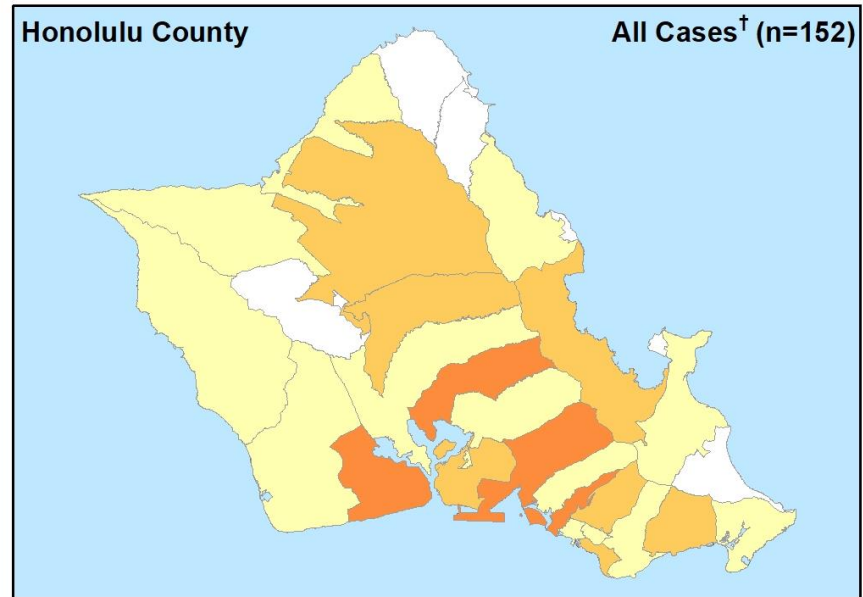
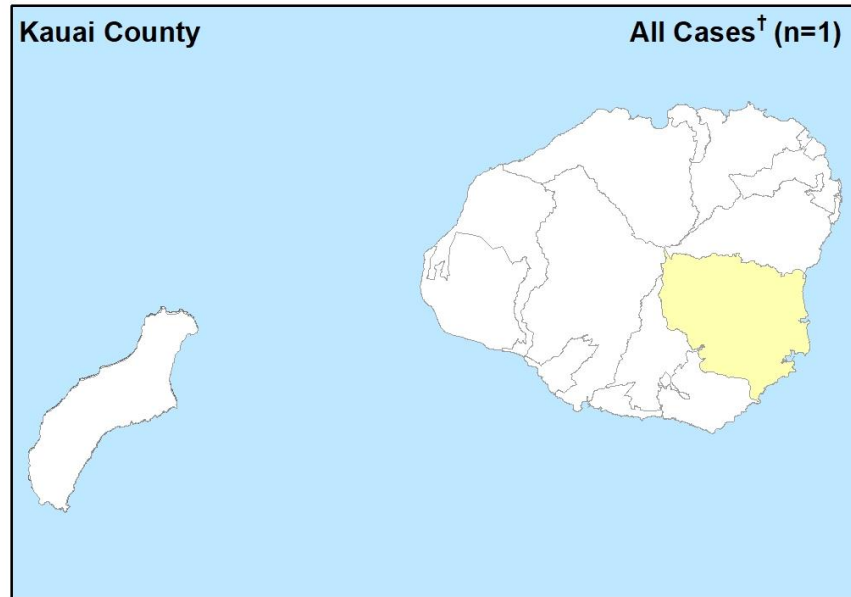
* Data as of April 26, 2020. Data are preliminary and subject to change. Includes all cases for which location data are available. Case location based on ZCTA of case residence or location stayed while in Hawaii

[†]Does not imply that risk of transmission is isolated to these ZCTAs

Preliminary unpublished HDOH data



Community/Unknown Associated COVID-19 Cases by ZIP Code Tabulation Area (ZCTA)* (N=268)



COVID-19 Cases - Community/Unknown



* Data as of April 26, 2020. Data are preliminary and subject to change. Includes all cases for which location data are available. Case location based on ZCTA of case residence or location stayed while in Hawaii

[†]Does not imply that risk of transmission is isolated to these ZCTAs

Preliminary unpublished HDOH data



Characteristics of COVID-19 Cases in Hawaii

Traveler (n=316) vs. Community/Unknown Associated (n=285)

As of 23 April 2020

- No difference in gender ratio, 53% vs. 52%
- No difference in age representation, median 48 yrs vs. 46 yrs
- Differences in race representation (missing race data for 10%)
 - Asian 27% vs. 32%
 - White 34% vs. 23%
 - NH/PI 9% vs. 14%
 - Black 2% vs. 1%
 - Other 2% vs. 3%
 - Two or more 25% vs. 27%

Reported Symptoms in Hawaii COVID-19 Cases by Age Group (N=601) As of 23 April 2020

* Among all cases with symptoms;
% with symptom noted (missing
interpreted as "no")

Symptoms*	Adult (N=584) n (%)	Pediatric (N=17) n (%)
Any fever	350 (70)	5 (42)
Measured	279 (56)	4 (33)
Subjective	185 (37)	2 (17)
Cough	385 (77)	8 (67)
Myalgia	274 (55)	0 (0)
Chills	198 (40)	1 (8)
Shortness of breath	167 (33)	3 (25)
Rhinorrhea	132 (26)	7 (58)
Diarrhea	80 (16)	0 (0)
Abdominal pain	34 (7)	0 (0)
Vomiting	25 (5)	1 (8)
Asymptomatic	85 (15)	5 (29)

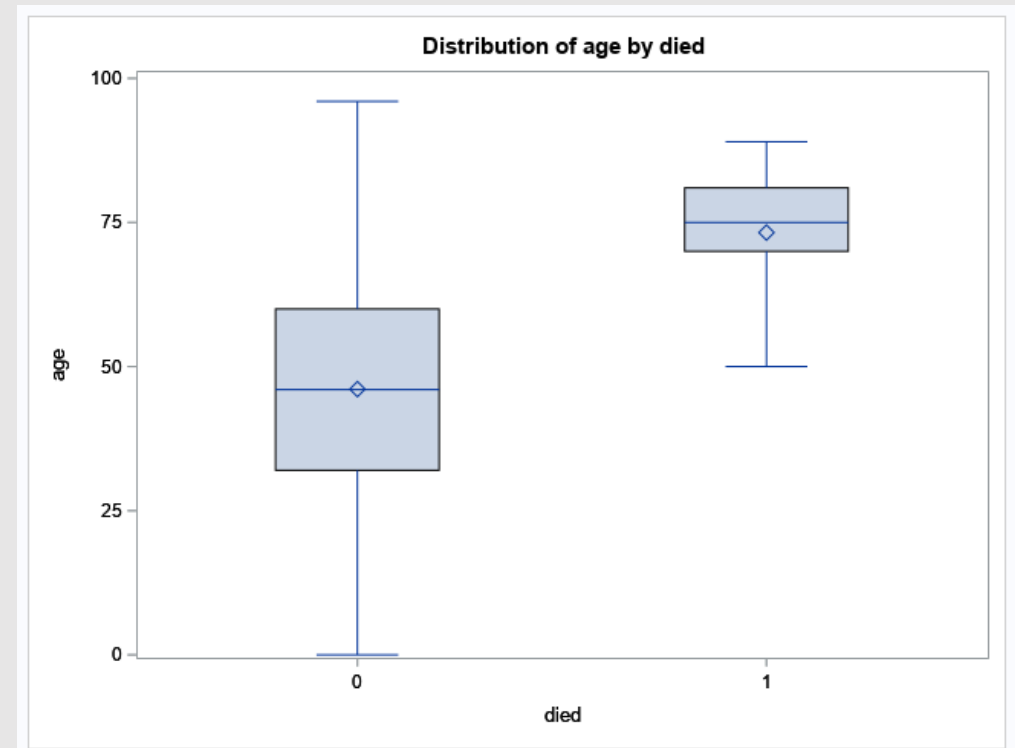
Preliminary unpublished HDOH data



Characteristics of Persons with COVID-19 Who Died, Hawaii, N=16

As of 27 April 2020

- 63% male
- Ages 50–89 yrs, median 75 yrs
- County of diagnosis:
 - Honolulu 69%
 - Maui 31%
- Residence:
 - Hawaii resident 88%
 - Visitor 13%
- Risk factor:
 - Travel associated 56%
 - Community associated 44%
- All but one hospitalized



Preliminary unpublished HDOH data



Characteristics of Persons with COVID-19 Who Died, Hawaii, N=16

As of 27 April 2020

Comorbidities	N (%)
Any underlying condition	12 (75)
Cardiovascular disease	9 (56)
Pulmonary disease	6 (38)
Past smoker	6 (38)
Current Smoker	1 (6)
Diabetes	6 (38)
Renal disease	5 (31)
Neurological disease	4 (25)
Immunocompromised	3 (19)

Preliminary unpublished HDOH data



Intervals of Interest*	Min–Max in Days	Median in Days
Illness onset to admission	0–17	6
Admission to death	4–28	23
Illness onset to death	11–32	26

Characteristics of Persons with COVID-19 Who Died, Hawaii, N=16

As of 27 April 2020

* Anomalous dates for n=2

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COMPLICATIONS	N (%)
Pneumonia	11 (69)
ICU admission	11 (69)
Mechanical ventilation	9 (56)
ARDS	7 (44)

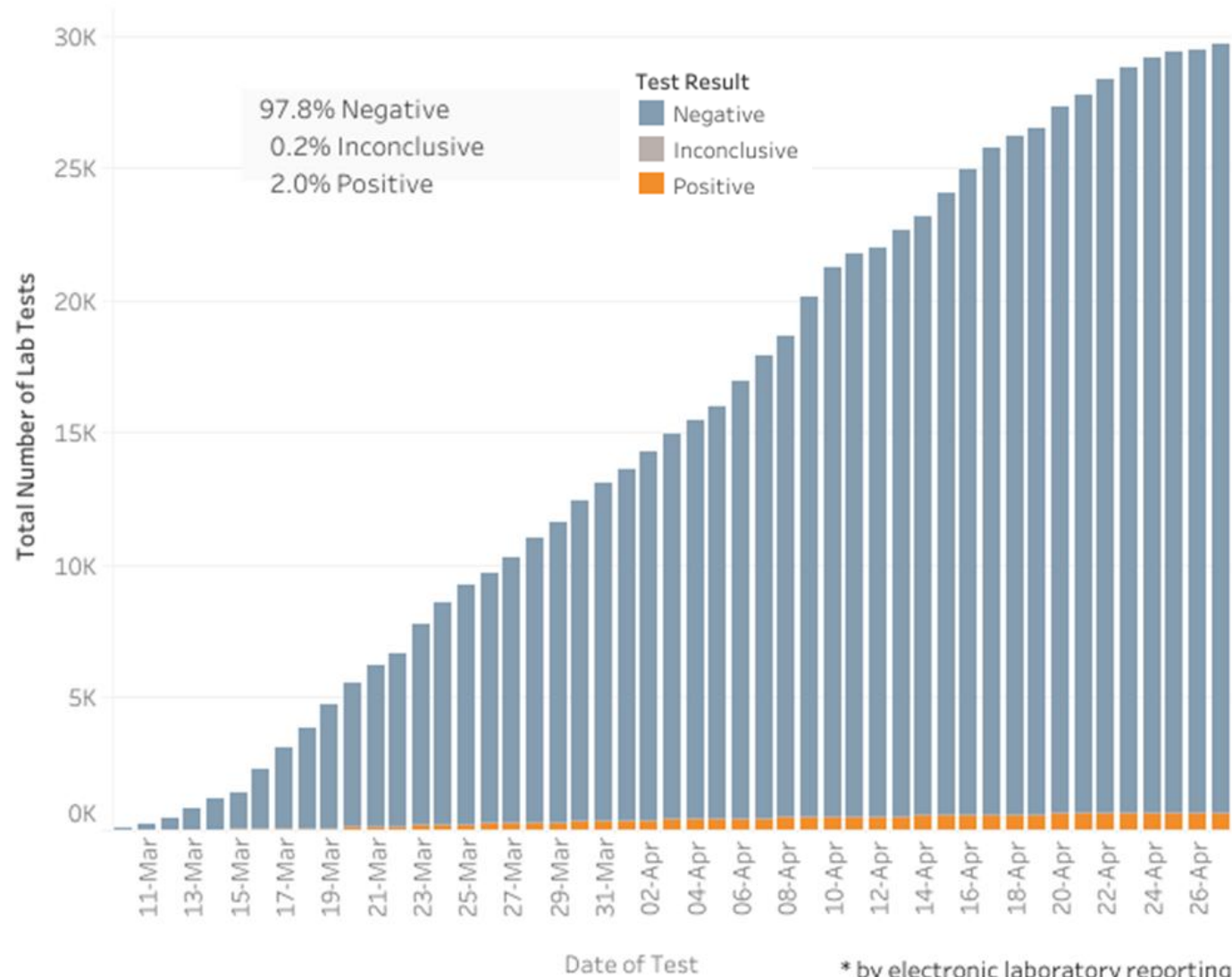
Characteristics of Persons with COVID-19 Who Died,
Hawaii, N=16
As of 27 April 2020

COVID-19 Testing

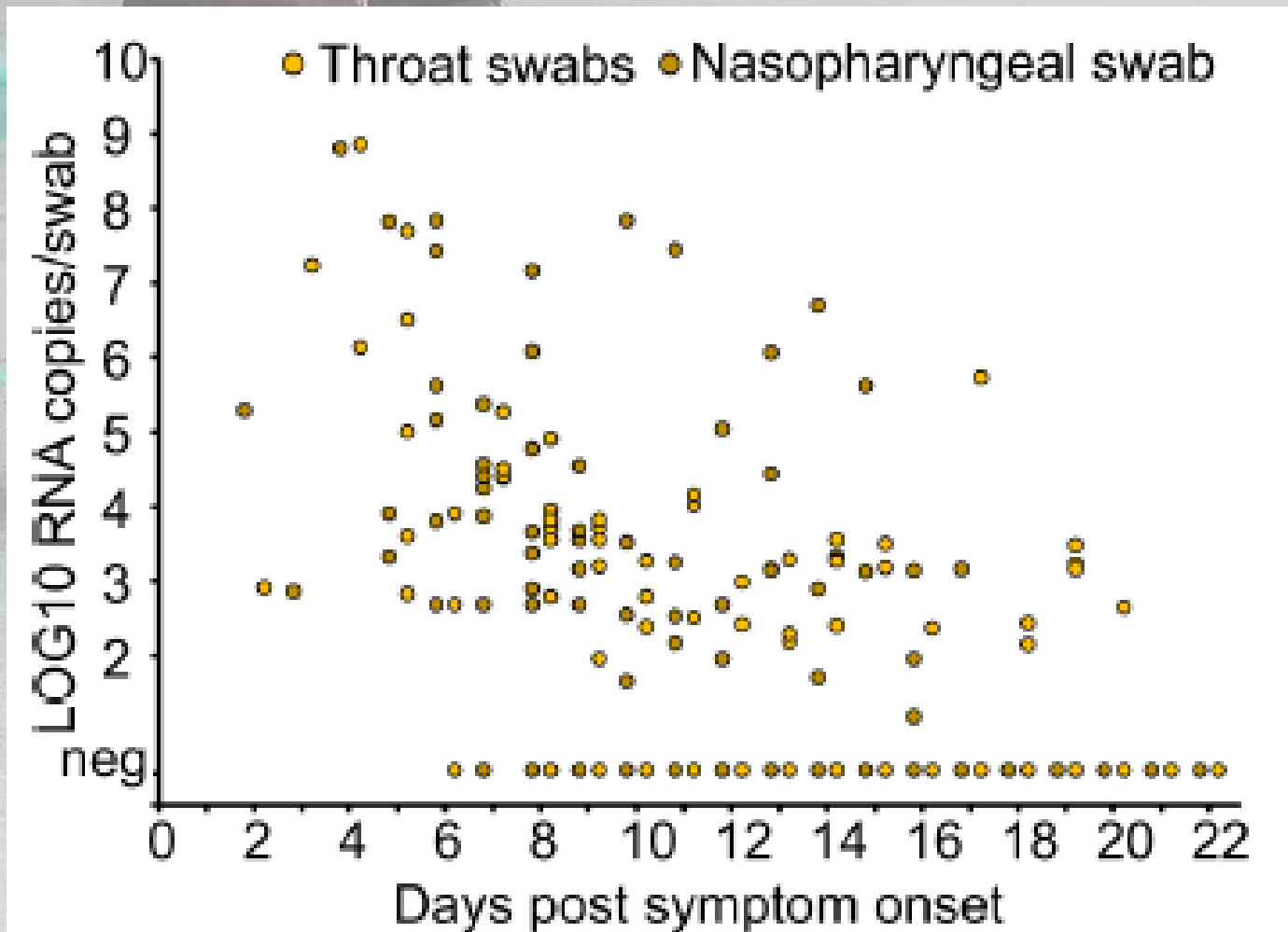
Know when to test



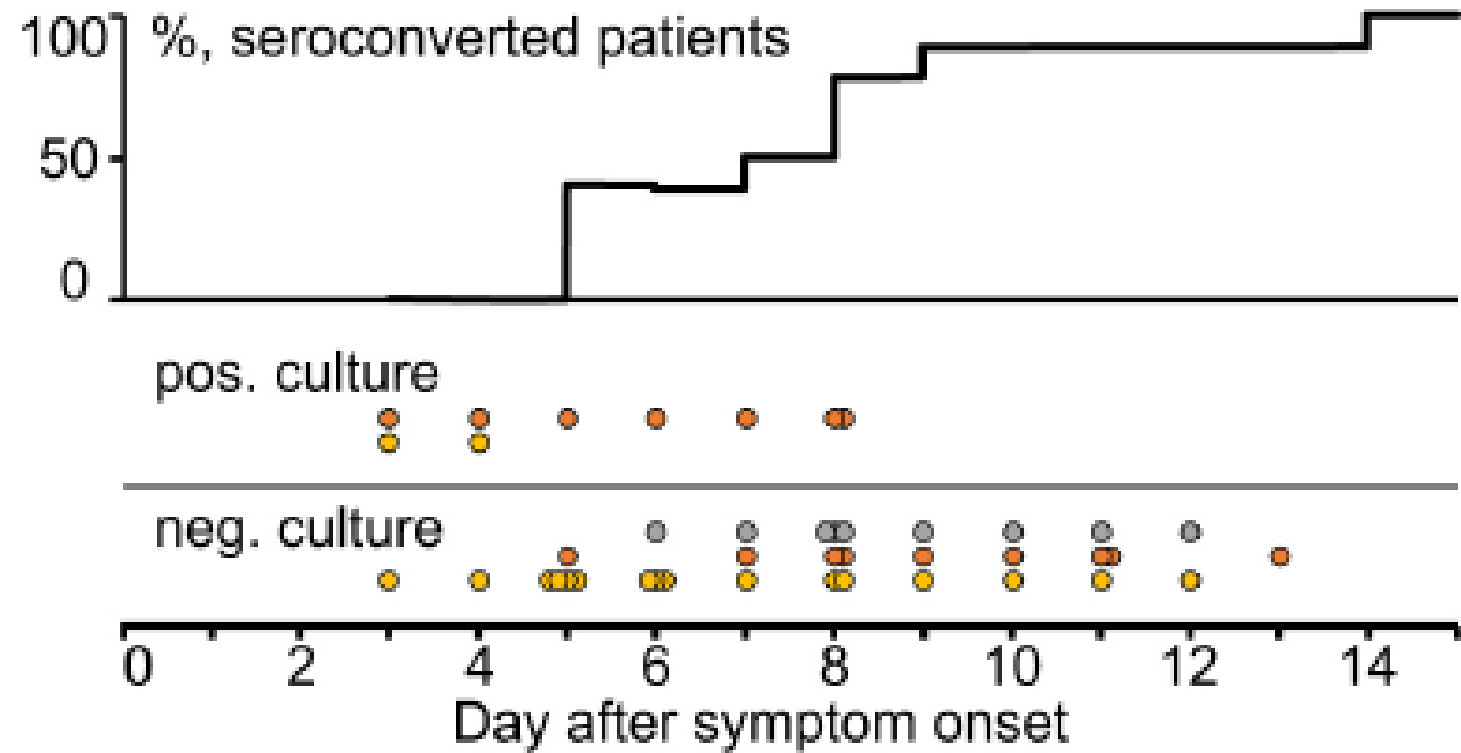
Cumulative Number
of Persons with
Reported* COVID-19
Laboratory Tests,
Hawaii 2020
(N=29,862)
As of 27 April 2020



Viral RNA Concentrations in Upper Respiratory Tract



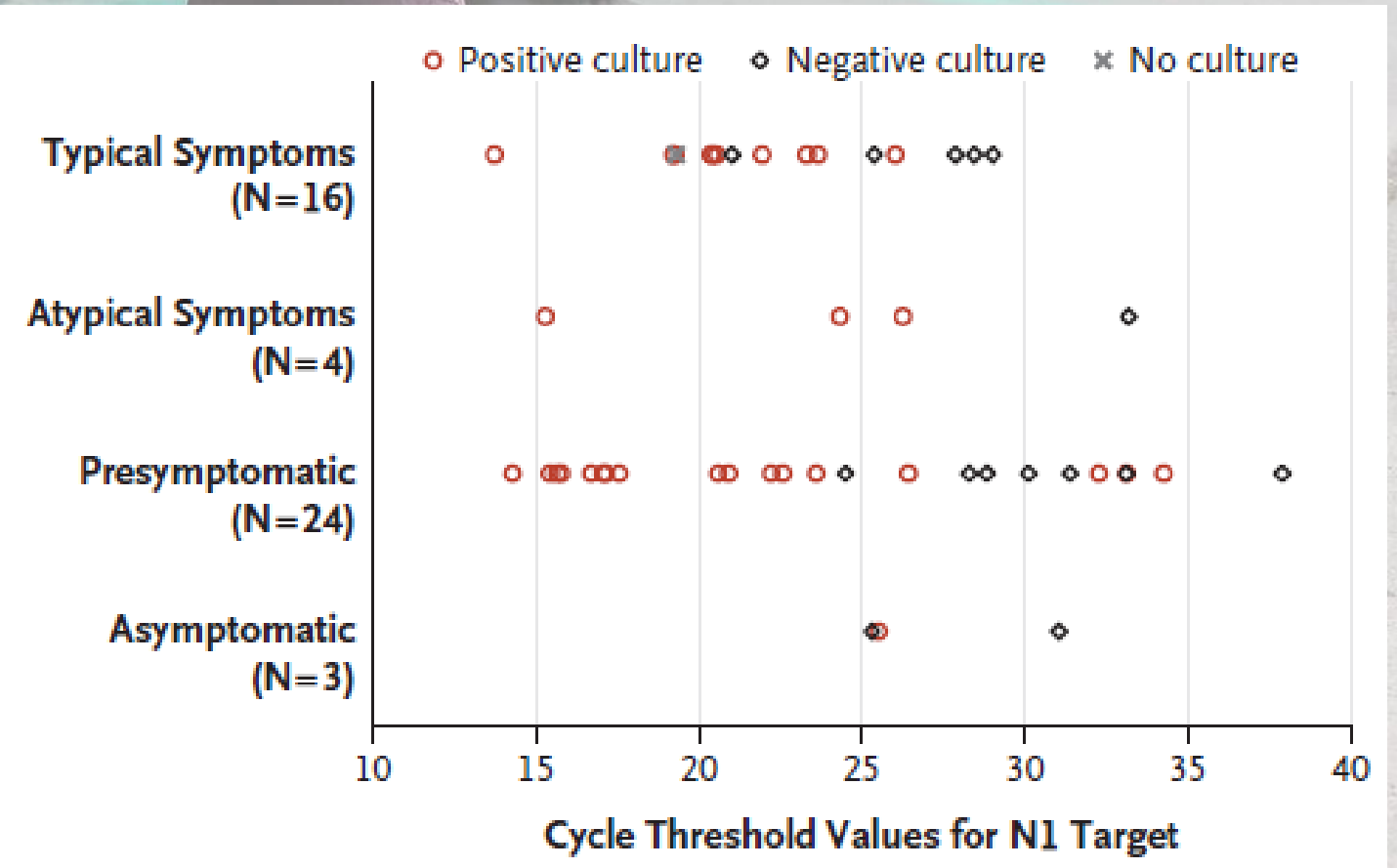
Seroconversion
and Virus
Isolation
depending on
Days Post
Illness Onset



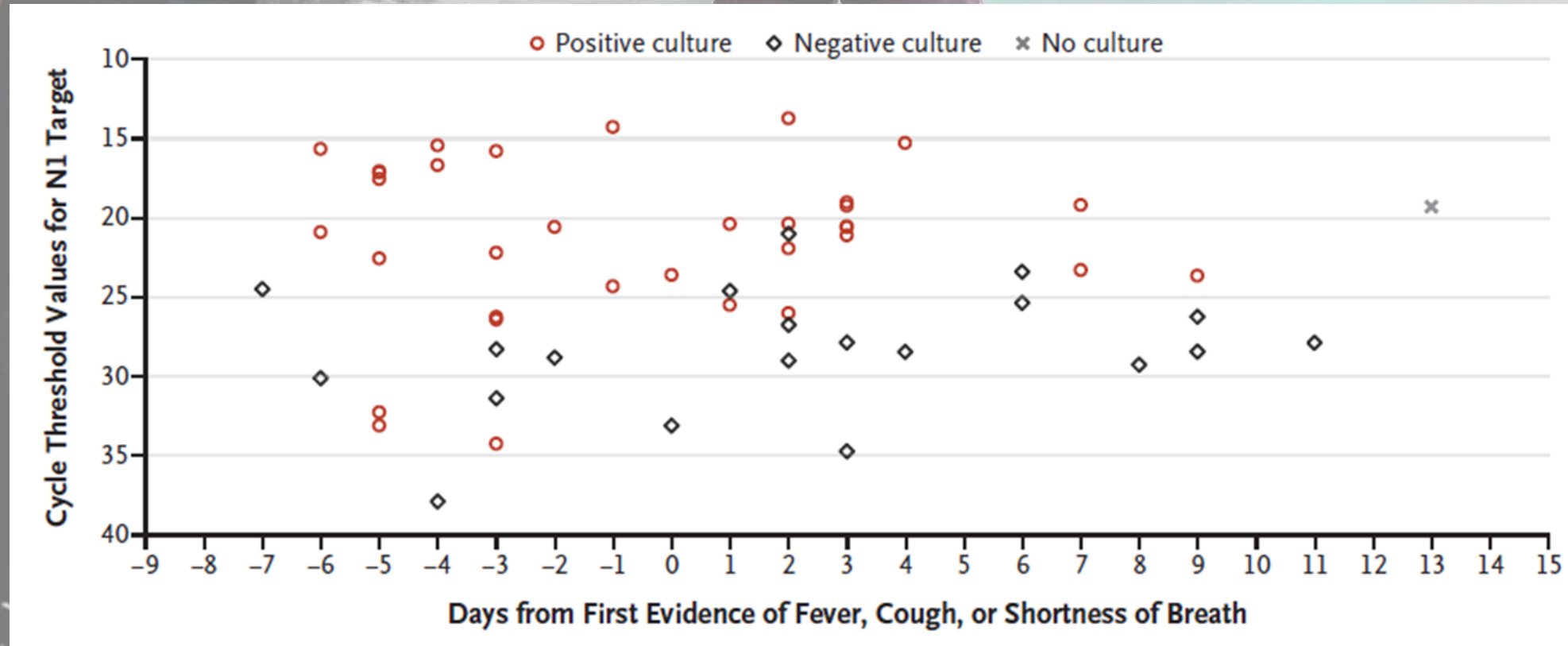
How Does a PCR Work?

- Detects virus but does not indicate if virus is capable of replicating, *i.e.*, cannot identify whether person is infectious
- Amplifies viral molecular material with each *cycle*
- Ct or threshold cycle value = cycle number at which fluorescence generated within a reaction crosses the fluorescence threshold
- Ct values are inverse to amount of nucleic acid which is in a sample
 - Lower Ct values indicate high amounts of targeted nucleic acid
 - Higher Ct values mean lower (and even too little) amounts of target nucleic acid

Cycle Threshold Values and Results of Viral Culture for Residents with Positive SARS-CoV-2 Tests According to Symptom Status



Cycle Threshold Values Relative to First Evidence of Fever, Cough, or Shortness of Breath





NEW

Recommendations for Release from Isolation

- At least 10 days have passed since sx onset

OR

- At least 3 days (72 hours) after fever and myalgia resolved without the use of antipyretics

WHICHEVER IS LONGER

- In both instances, respiratory sxs (e.g., cough, SOB) should be improved

Serological Assays

- Should not be used for acute diagnosis
- Negative result does *not* exclude SARS-CoV-2 infection
- Positive result does *not* imply immunity
 - Only indicates past exposure to virus of concern
 - Immunity to SARS-CoV-2 not yet characterized—duration if immunity develops, which antibody confers immunity
 - Detection of antibody = immune system response
 - May still have replicating virus as antibody response develops
- At this time, not recommended for individual use
- May be useful for population serosurveys

Retesting— Case Vignette

- >60 yo male with multiple underlying conditions
- Household contact of confirmed case
- Admitted for issue related to underlying condition but noted to have cough
- Exact onset of cough unclear

Time of Collection	N1 (Ct*)	N2 (Ct)
Hospital Day 1	23.16	23.43
Hospital Day 3	29.88	31.05
Hospital Day 7	31.44	32.63
Hospital Day 9	34.4	36.57

Preliminary unpublished HDOH data



Hawaii Department of Health Testing— Disease Surveillance

- Communicate with other states, federal colleagues, and other relevant public health partners
- Monitor surveillance reports from federal and international partners
- Adopt the Council of State and Territorial Epidemiologists (CSTE) surveillance case definition*
- Maintain routine surveillance activities
- Employ enhanced surveillance activities

*https://cdn.ymaws.com/www.cste.org/resource/resmgr/2020ps/interim-20-id-01_covid-19.pdf



Routine Surveillance Activities

- Disease reports from clinical providers
- Electronic laboratory reporting (ELR)
- Influenza surveillance framework
 - Influenza-like illness (ILI) sentinel surveillance network*
 - ILI cluster surveillance
 - Pneumonia & influenza mortality (P&I) surveillance
 - Surveillance for severe, unexplained illness
 - International air traveler passive surveillance

*If interested in becoming a Sentinel Provider, please contact Han Ha Youn, Flu/Respiratory Disease Epidemiologist, hanhan.youn@doh.hawaii.gov.



Enhanced Surveillance Activities

- Port of entry surveillance (Air, Water)
- Hospital admission and emergency department surveillance
- Emergency medical services encounters surveillance
- Long-term care facility surveillance
- Serological surveillance
- Nontraditional data sources

Infection Control and Prevention

It works!



Findings from Testing in Response to Positive Cases in 3 Different Healthcare Facilities

Unit	Universal Masking	Floating of HCWs between units	# Staff tested	# Positive	# Negative	% Positive
Unit 1	No	Yes	49	7	42	14
Unit 2	No	Yes	48	8	40	17
Unit 3	No	Minimal	66	2	64	3
Unit 4	No	Yes	48	5	43	10
Unit 5	Yes	Yes	102	1	101	1
Unit 6	Yes	Minimal	17	0	17	0
Unit 7	Yes	Yes	18	0	18	0
Unit 8	Yes	Minimal	74	0	74	0

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Unit 6	Yes	Minimal	17	0	17	0
Unit 7	Yes	Yes	18	0	18	0
Unit 8	Yes	Minimal	74	0	74	0

*Testing on Unit 5 done “post-implementation” of universal masking in same facility that earlier had “high positive” rate on other units

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Importance of Social Distancing at All Times:

Vignette 1

- Facility A index HCW case worked while ill
- Exposed multiple coworkers
- One exposed coworker became a case and, in turn, had already exposed other coworkers before they were aware of their exposure
- One of those exposed coworkers (from the secondary case) also became a case

Learning point: social distancing in break rooms and office spaces critical

Importance of Social Distancing at All Times:

Vignette 2

- Facility B index HCW case with ill sxs, not tested
- Worked while ill → infected several other HCWs
- One of those floated to another unit

Learning points:

- Prioritize symptomatic HCWs for testing
- Implement sx screening for all staff
- Ensure no HCW works if has sxs
- Minimize staff floating to other units

Importance of Communication and Infection Control: Vignette 3

- Facility C transferred patient, known to be exposed to COVID-19 confirmed HCW, to Facility D
- Facility D notified a few days later

Learning points:

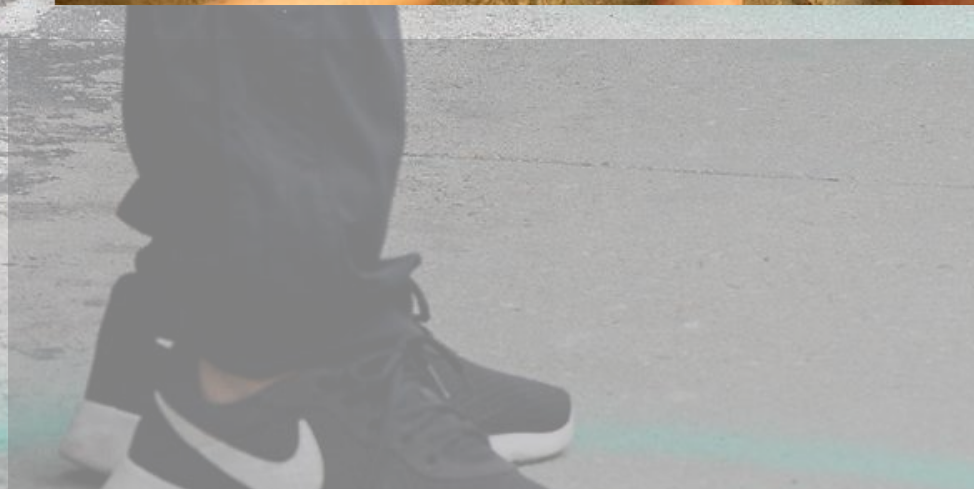
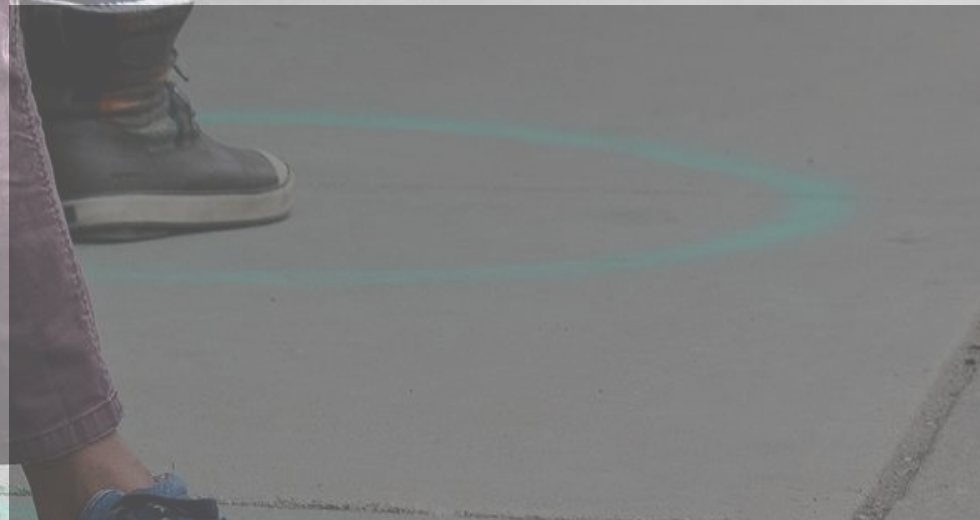
- Ensure timely communications between facilities
- Ensure recommended infection control measures in all facilities at all times (e.g., universal masking, hand hygiene, regular cleaning, etc.)

Summary

- Through a combination of strategies, COVID-19 activity in Hawaii has markedly decreased
- RT-PCR testing should be used in the appropriate setting
- Much is still unknown regarding immunity to COVID-19; serological assays in the current period may be useful for population serosurveys
- Social distancing and infection control work to control and prevent COVID-19

Acknowledgements

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 - Joshua Quint
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-
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(Sentinel Surveillance,
hanha.youn@doh.hawaii.gov, 808-587-6572)



Mahalo!

