

# Planning, Land Use and Resilience

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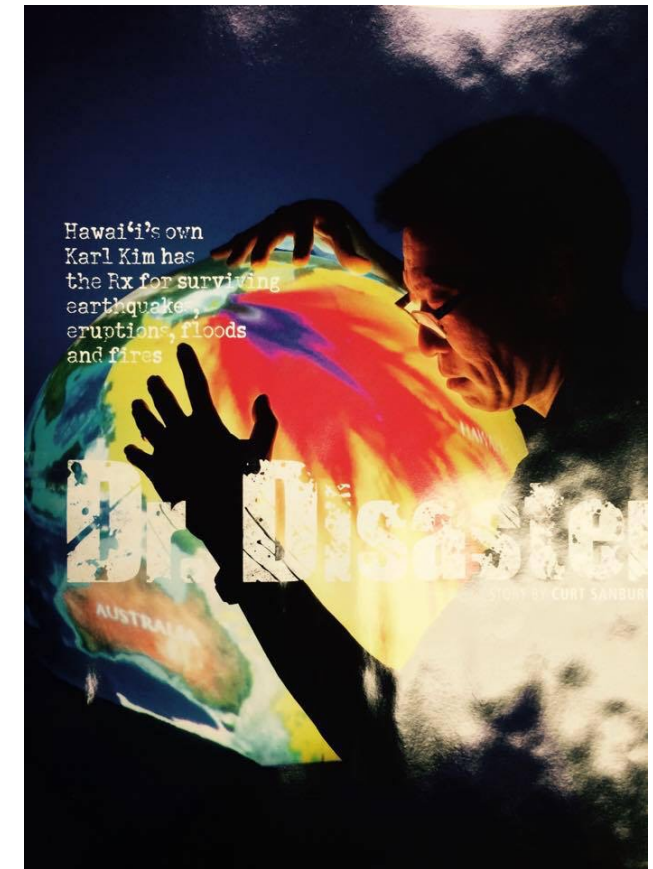
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# *Connecting Science, Engineering, Social Science, Training, Education, Policy, Practice*

- 1. COVID-19**
- 2. Planning and Response to Disasters*
- 3. Mainstreaming Resilience** into Comprehensive/Functional/Community Planning

# Cities, Development, Safety and *Disasters*...



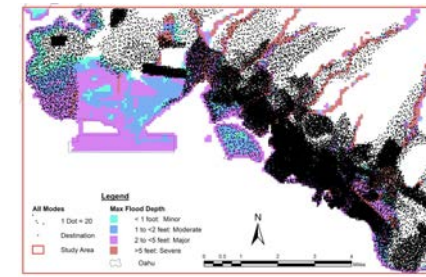
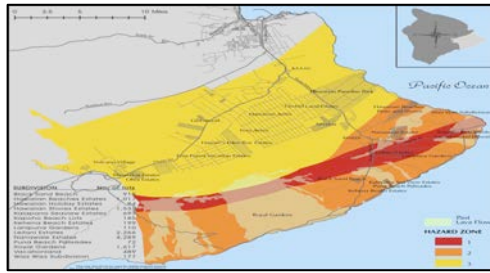


FIGURE 4 Total Trip Destinations and Flooding Category

# *Accidents, Emergencies, Disasters, Catastrophes*

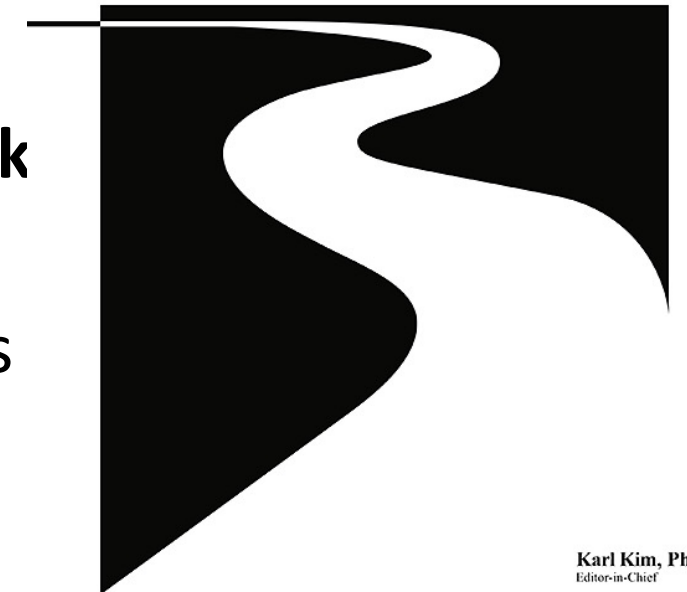
- Low probability, high consequence events
- Human, vehicle, roadway, environment
- **Science, Engineering, Social Science**
- Preparedness, Response, Recovery, Mitigation
- **Seat Belts, Seawalls, Trip Reduction, Face Mask**
- Social Distancing, Quarantine, Isolation
- Sensors, Information Systems, Communications
- **Risk, risk management, risk governance**



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TRANSPORTATION  
 RESEARCH  
 INTERDISCIPLINARY  
 PERSPECTIVES



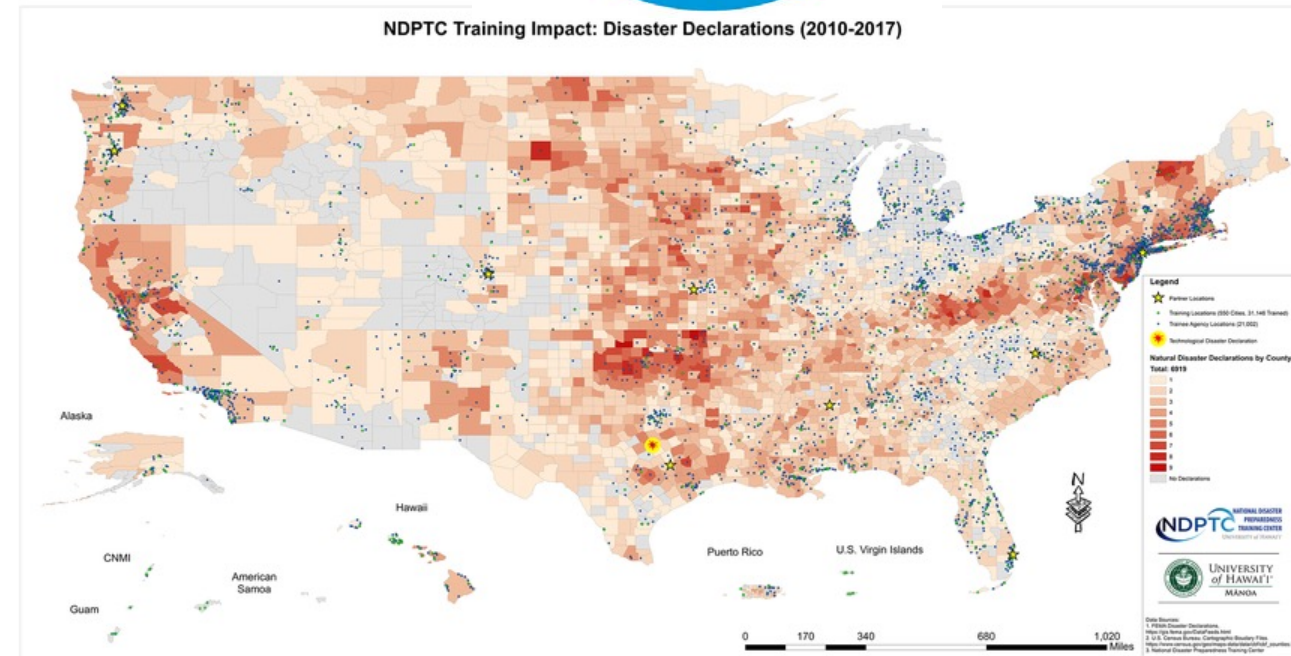


# ndptc.hawaii.edu

- Authorized by U.S. Congress
- **Funded by FEMA**
- Natural hazards/coastal/island
- **Response and Recovery**
- Tsunami, volcano, hurricane, climate change, etc.
- **Tech: detection/alert/warning/**
- Evacuation/Sheltering
- Member of National Domestic Preparedness Consortium: **ndpc.us**



# FEMA



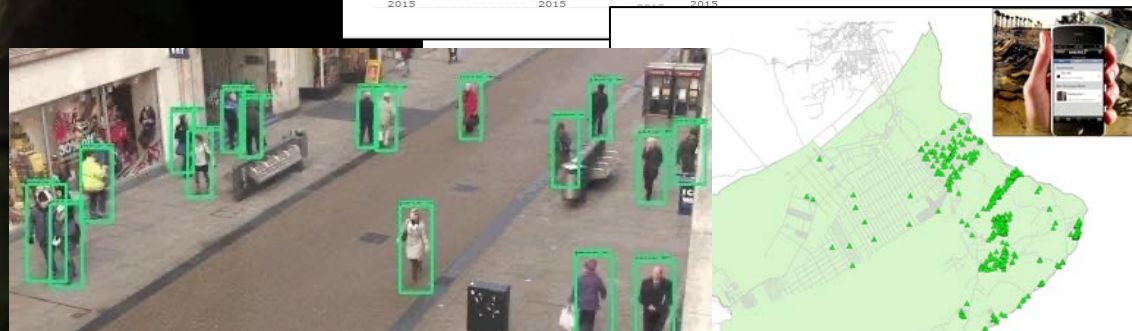
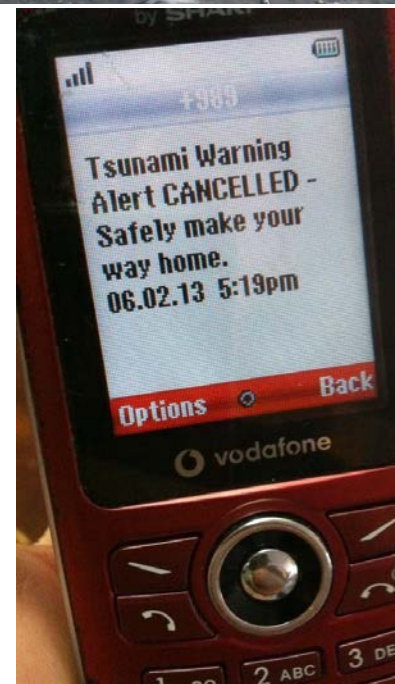
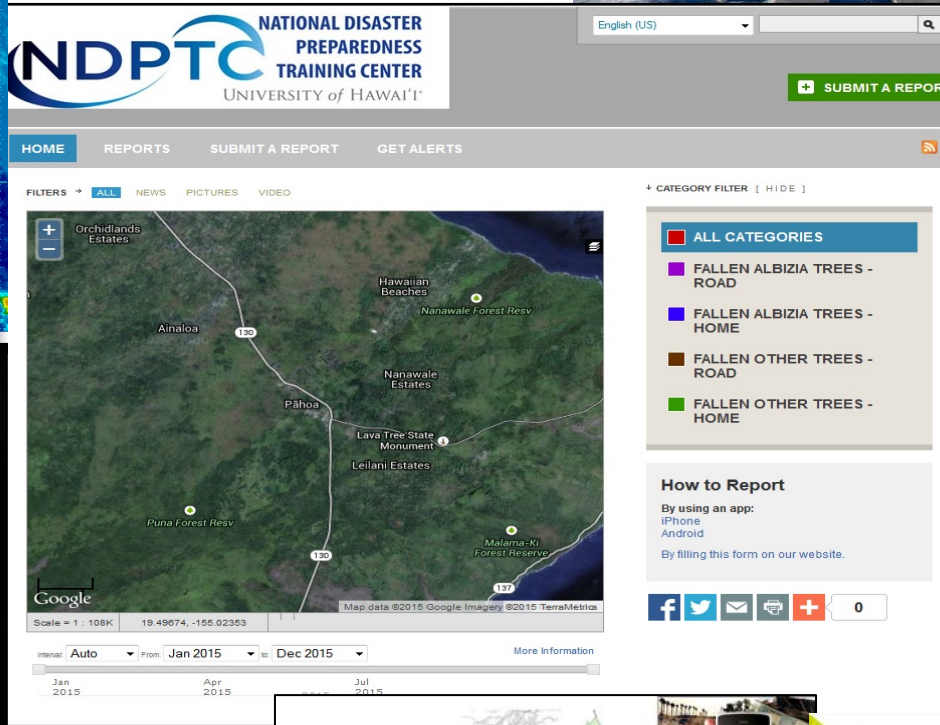
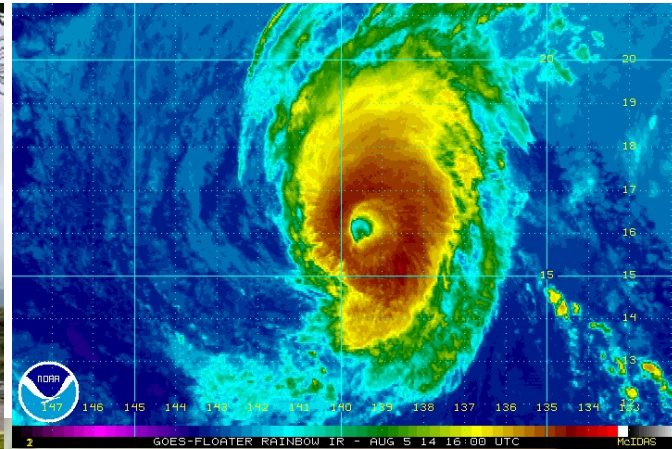
# COVID-19 and Transportation

- **Centrality of Transportation**
- Disease spread by movements of people
- **Mitigation by Isolation, Quarantine, Social Distancing**
- Voluntary and Involuntary Travel Restrictions
- ***Re-engineer Accessibility, Mobility, Congestion, Safety***
- Refocus on cleaner, greener, active, outdoor transport
- **Challenges with data, technologies, implementation**
- Governance, planning, engagement and collective action



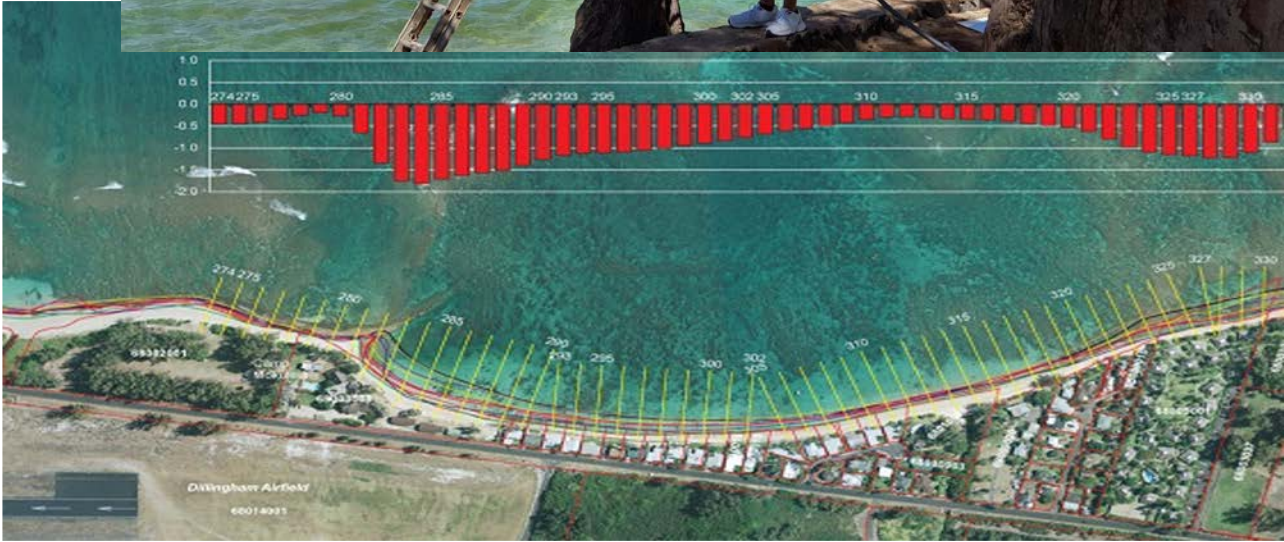
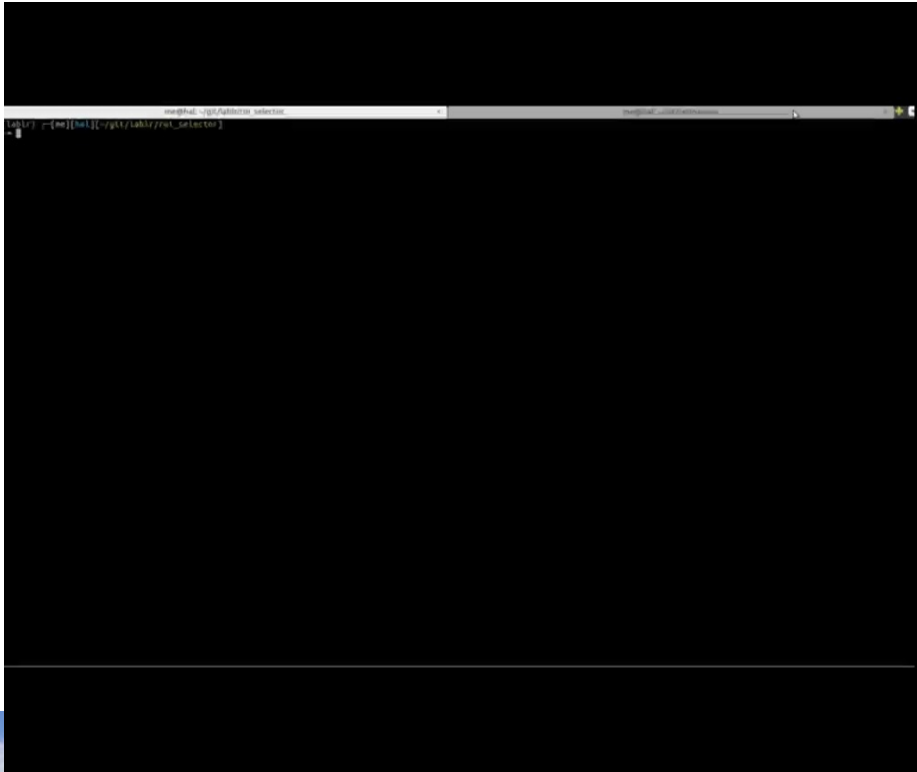


# Technologies supporting NPIs (Non-pharmaceutical Interventions...)



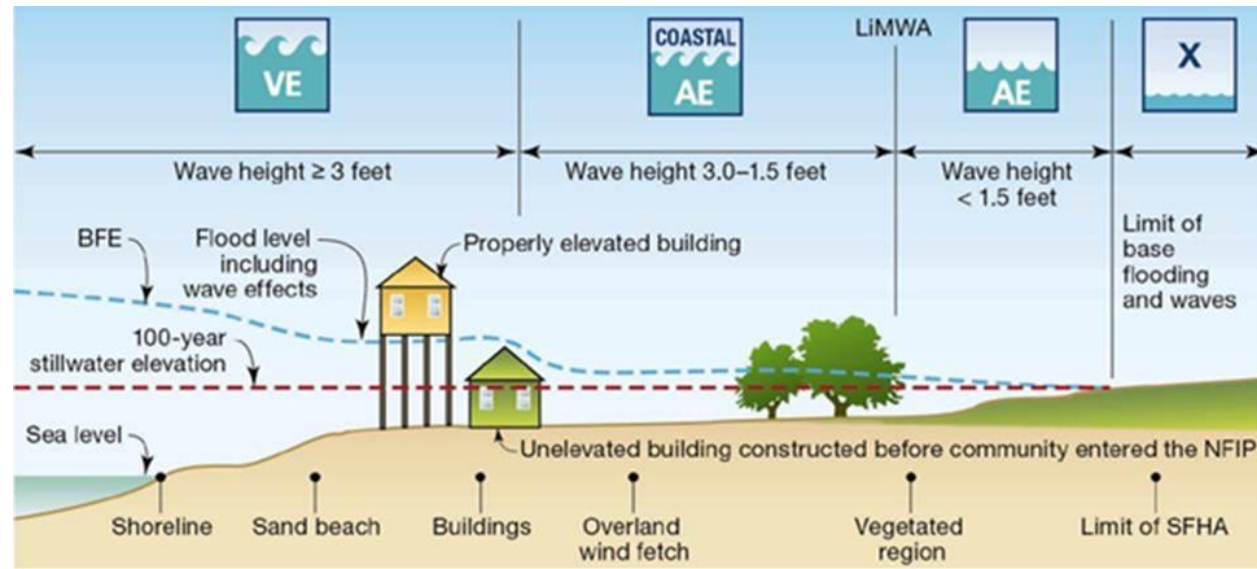


# CHART *Coastal Hazards Adaptation Research & Training Project*, Mokuleia



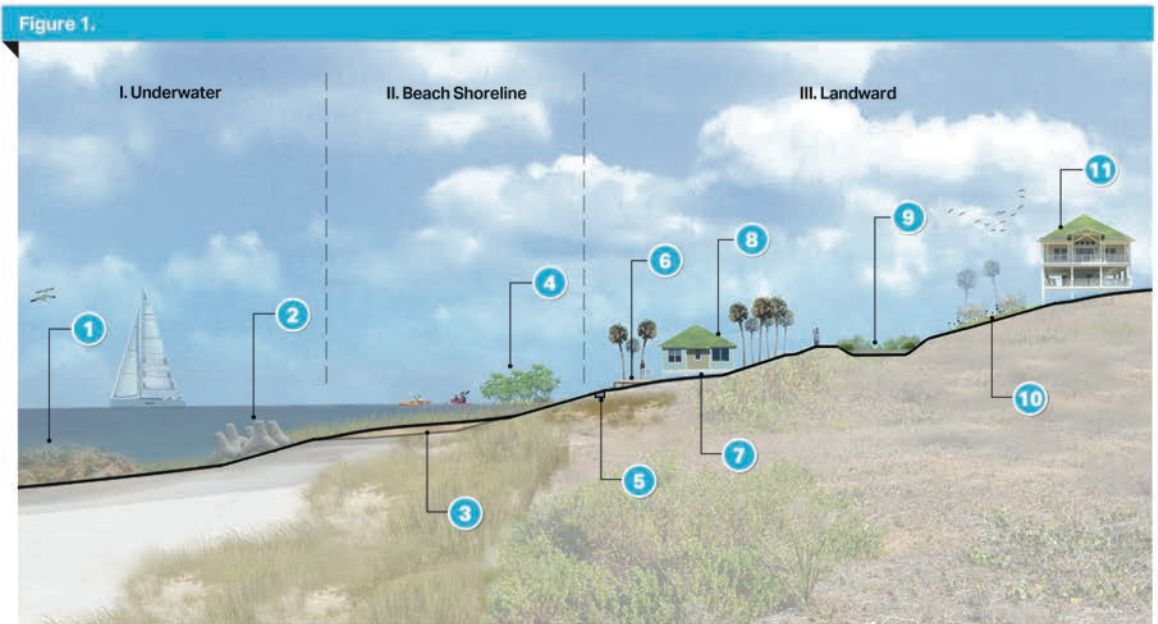


# Design with Nature...Living Shorelines



## Living Shoreline Strategies

Figure 1.



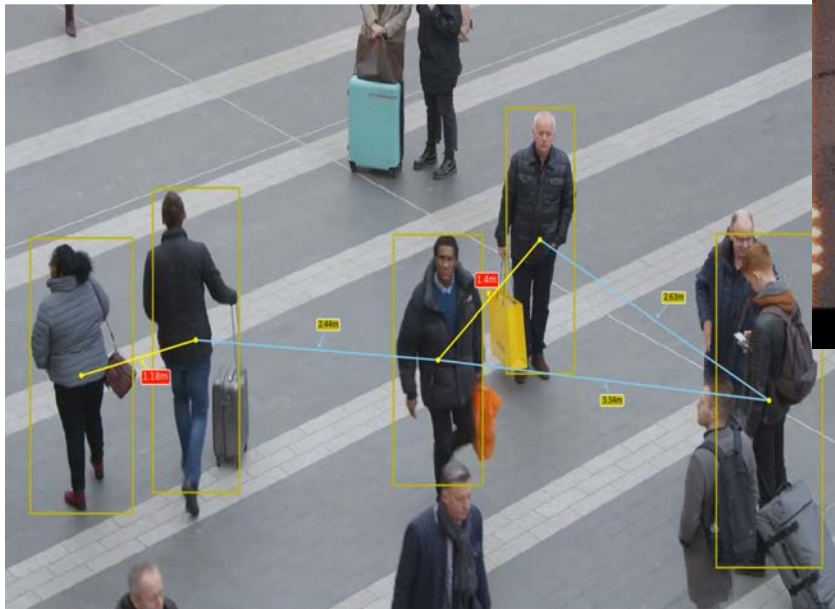
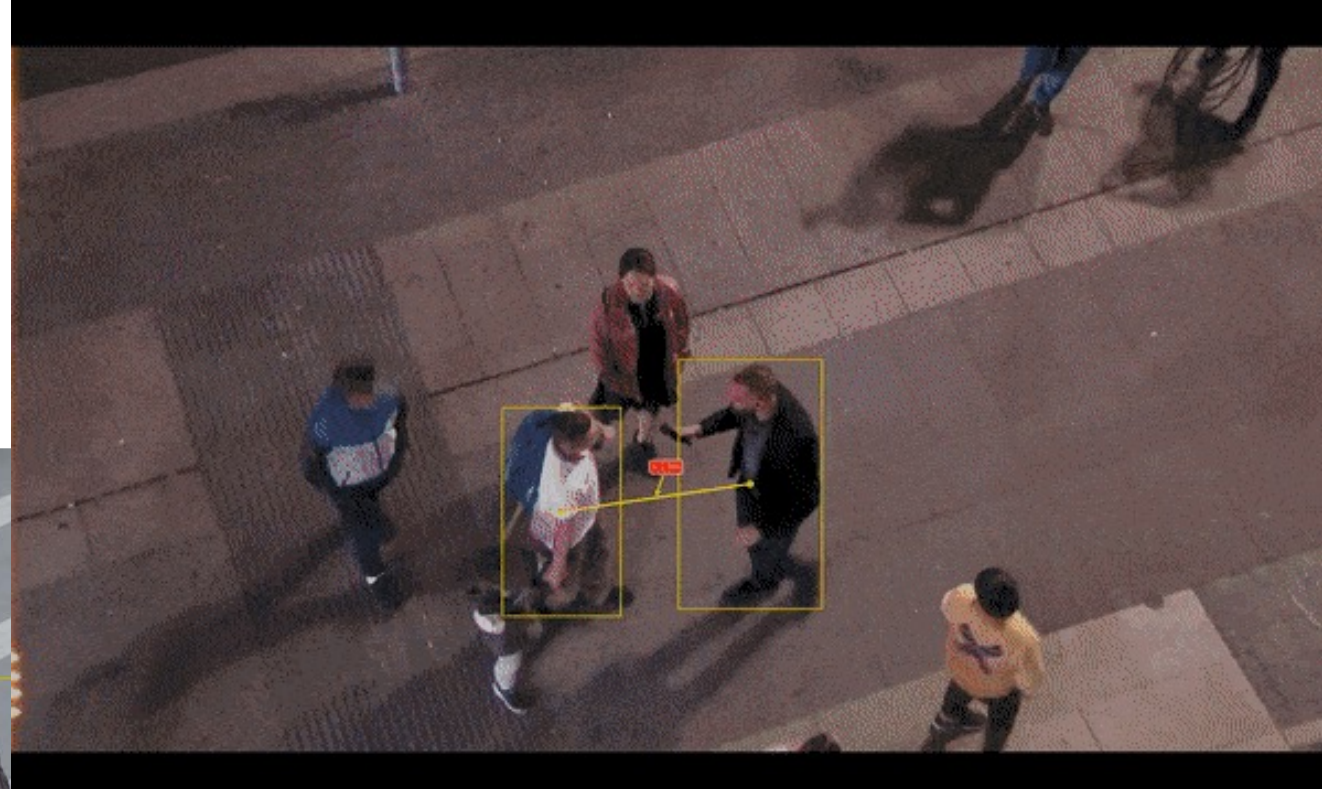
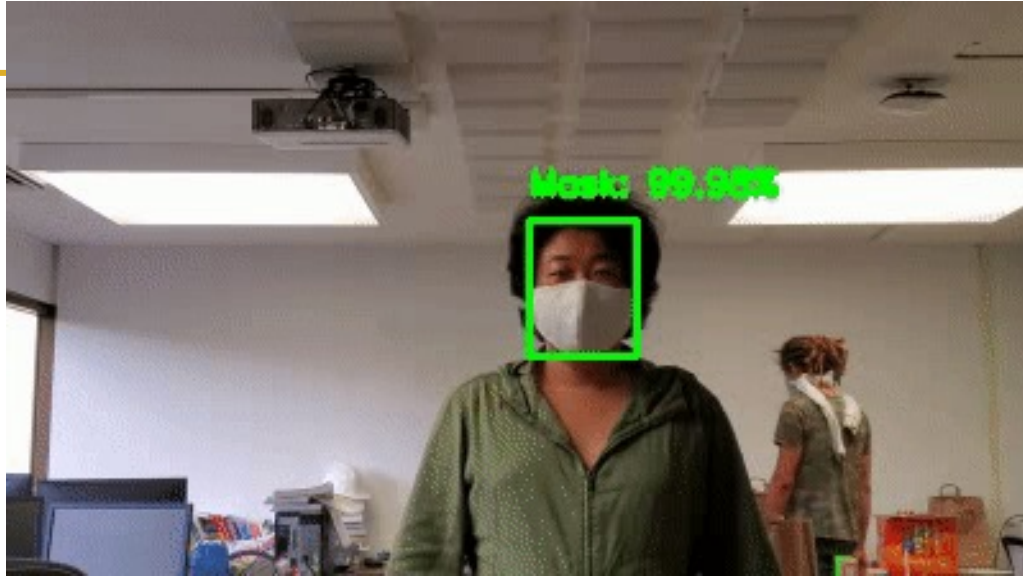
### LEGEND

- |                          |                            |                              |                |                        |                       |
|--------------------------|----------------------------|------------------------------|----------------|------------------------|-----------------------|
| 1 Coral Reef Restoration | 2 Underwater Wave Breakers | 3 Beach Nourishment          | 4 Vegetation   | 5 Drainage             | 6 Permeable Surfacing |
| 7 Elevation of Property  | 8 Green Roofing            | 9 Detention / Retention Pond | 10 Landscaping | 11 Property Relocation |                       |





# Social Distancing Compliance

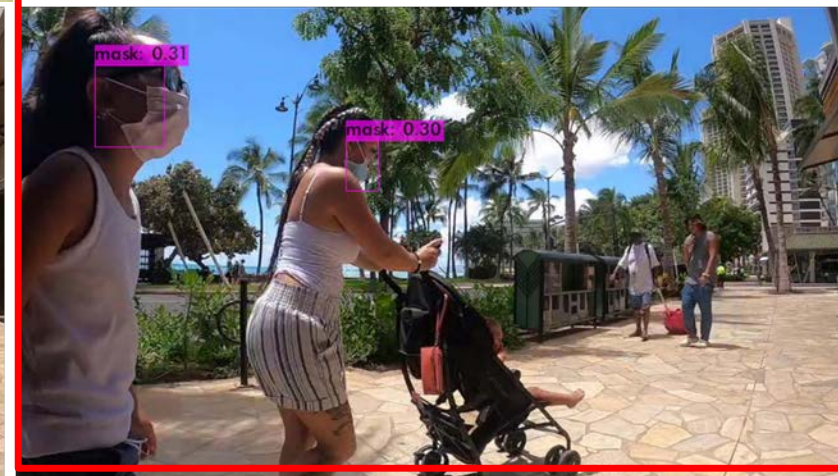




# Face Mask Detection - Waikiki



Four hours of footage taken on Kalakaua Ave; Detection with side profile was most difficult; red box example shows **improvement in mask detection**.





# Integration of mobile sensors real time networks





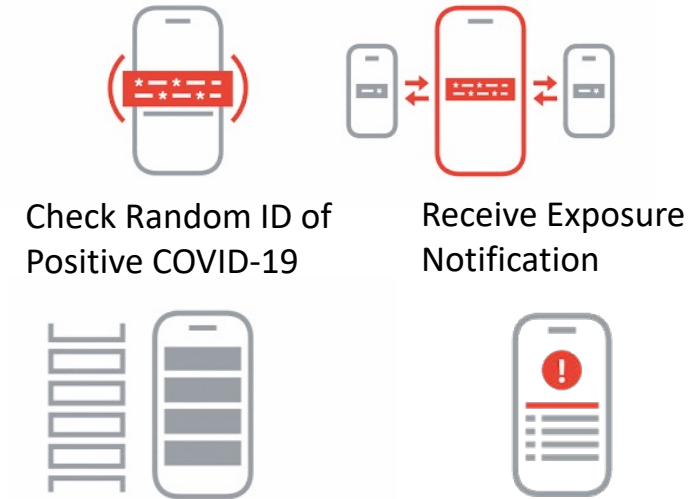
# Contact Tracing/Exposure Notification Apps

COVID Navigator  
Medikeeper

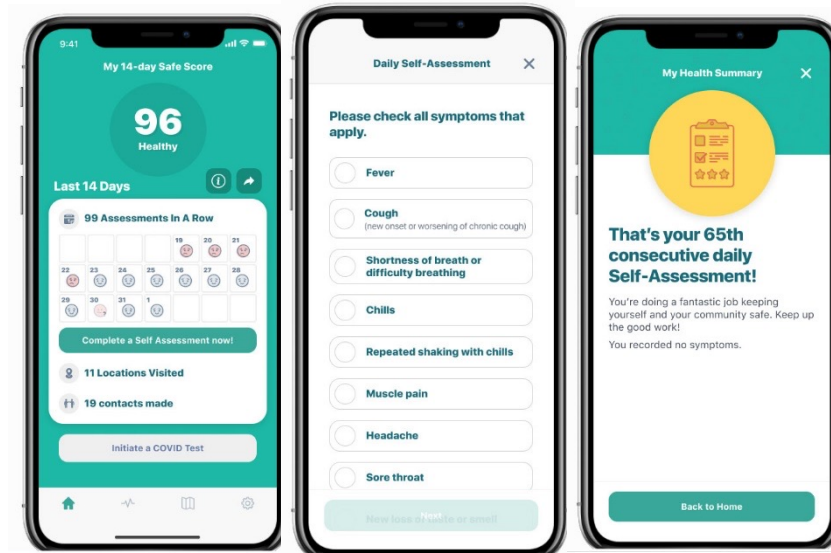
Safe2  
Safe2 Foundation

AlohaSafe  
AiO Digital

Generate Random ID      Exchange Random ID via Bluetooth

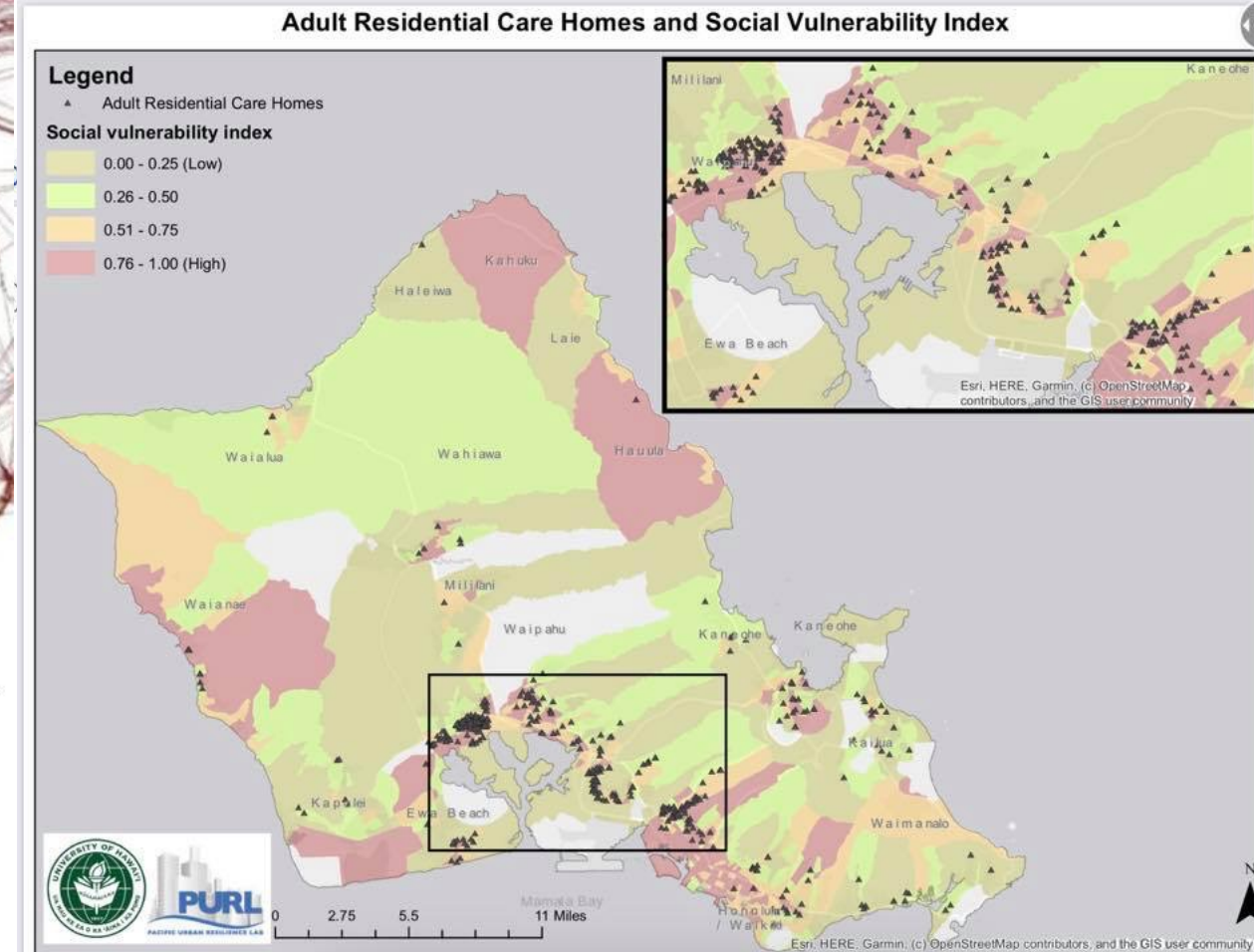
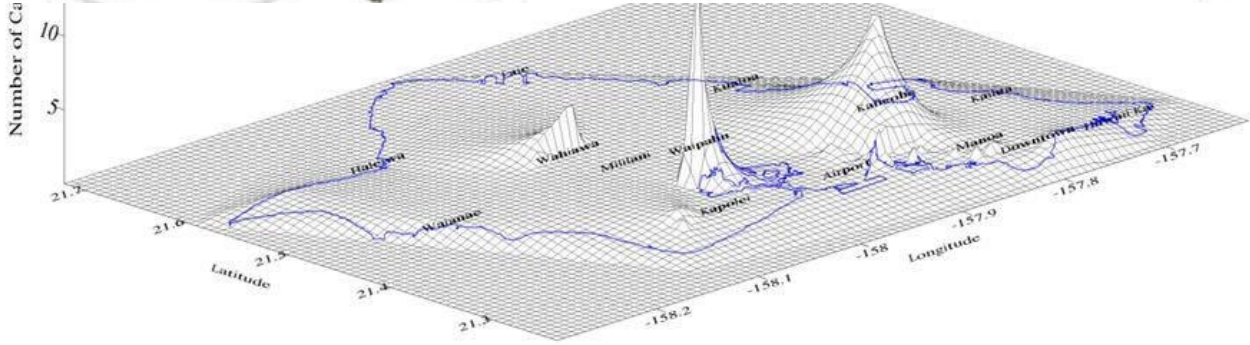


Based on MIT's SafePaths Using  
Google Apple Exposure Notification



**Download AlohaSafe app to phone 1 million+ users [alohasafealert.org](https://alohasafealert.org)**

# Movements of People, Disease and Risk

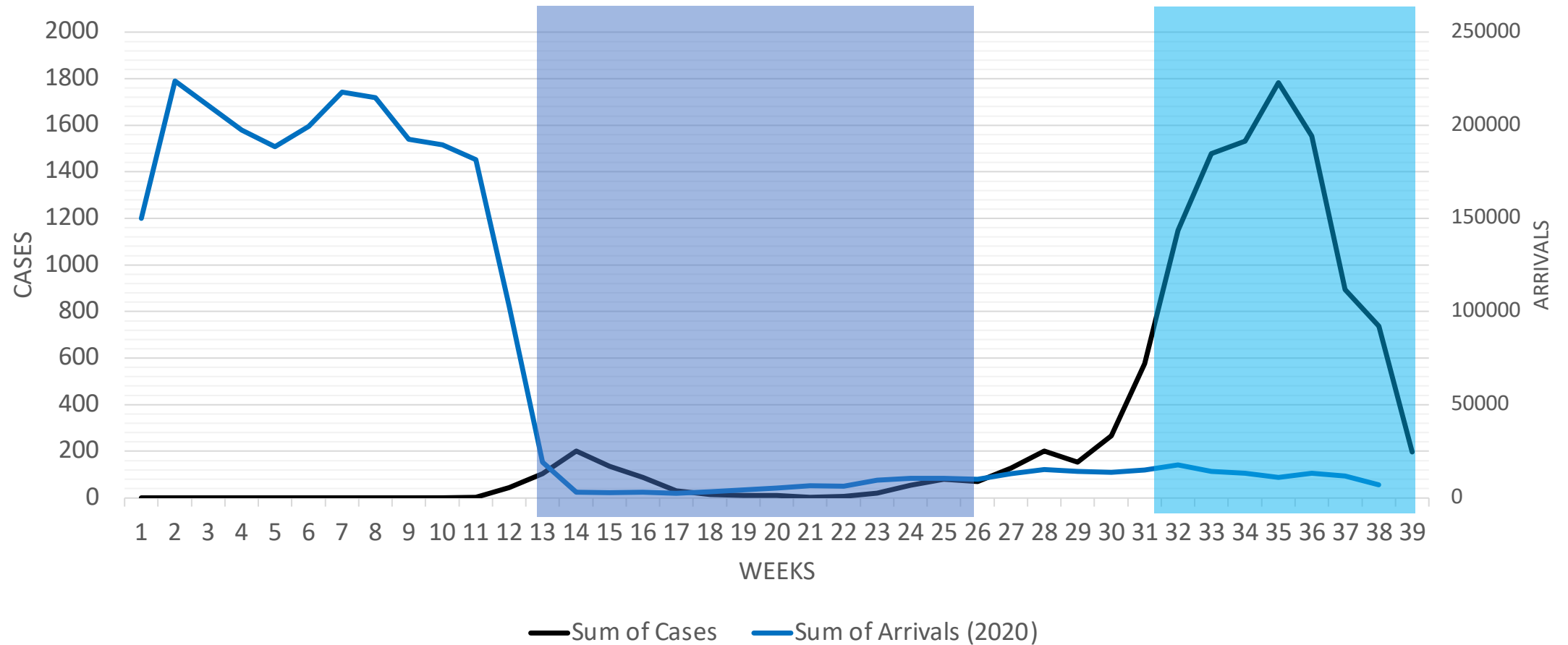


Mahalo to Eric Yamashita, Jiwnath Ghimire, Ryan Ozawa...

0 0.1 0.2 0.3 0.4



# *Impacts of Reopening Economy? Tourism?*

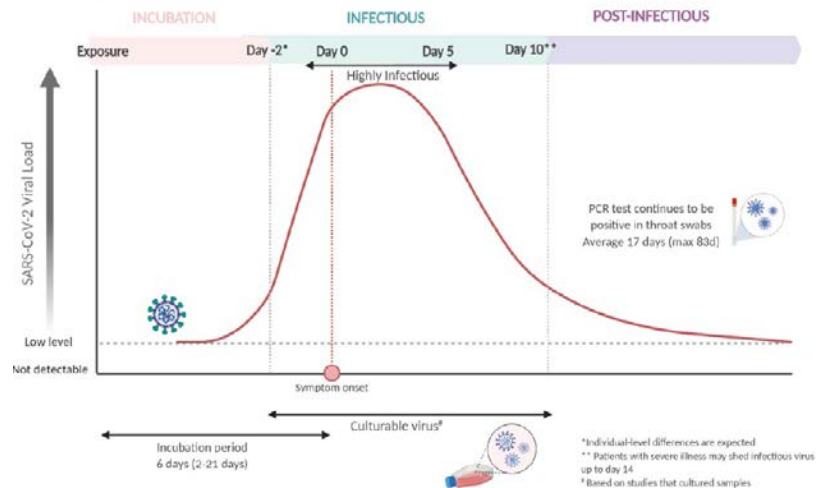


# 5 Ts to stop COVID-19: TESTING-TRACING-TRACKING-TECHNOLOGY-TRAINING

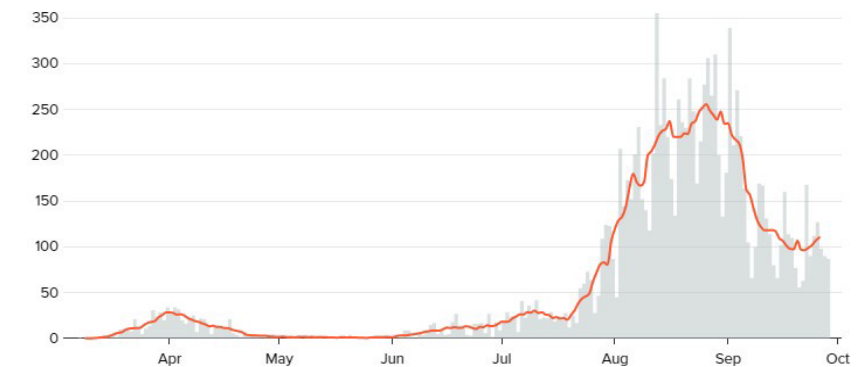


SARS-CoV-2 viral load and period of infectiousness

Cevik M et al. <https://doi.org/10.1101/2020.07.25.20162107>



Daily New COVID-19 Cases



Source: Hawaii Department of Health

**Hospital Capacity - Elderly/Children - SPREADERS**



# *Adaptation to hazards; living with risk...planning*



*Connecting Science, Engineering, Social  
Science, Training, Education, Policy, Practice*

Widening CHOICE

Evaluating Outcomes

**PLANNING = Knowledge to Action**

ALTERNATIVES

IMPROVEMENT

governance

*Managing uncertainty*



Multi-disciplinary, *multi-scalar* and multi-cultural

ENDS/GOALS

AGREE

DISAGREE

KNOWN

programming

bargaining

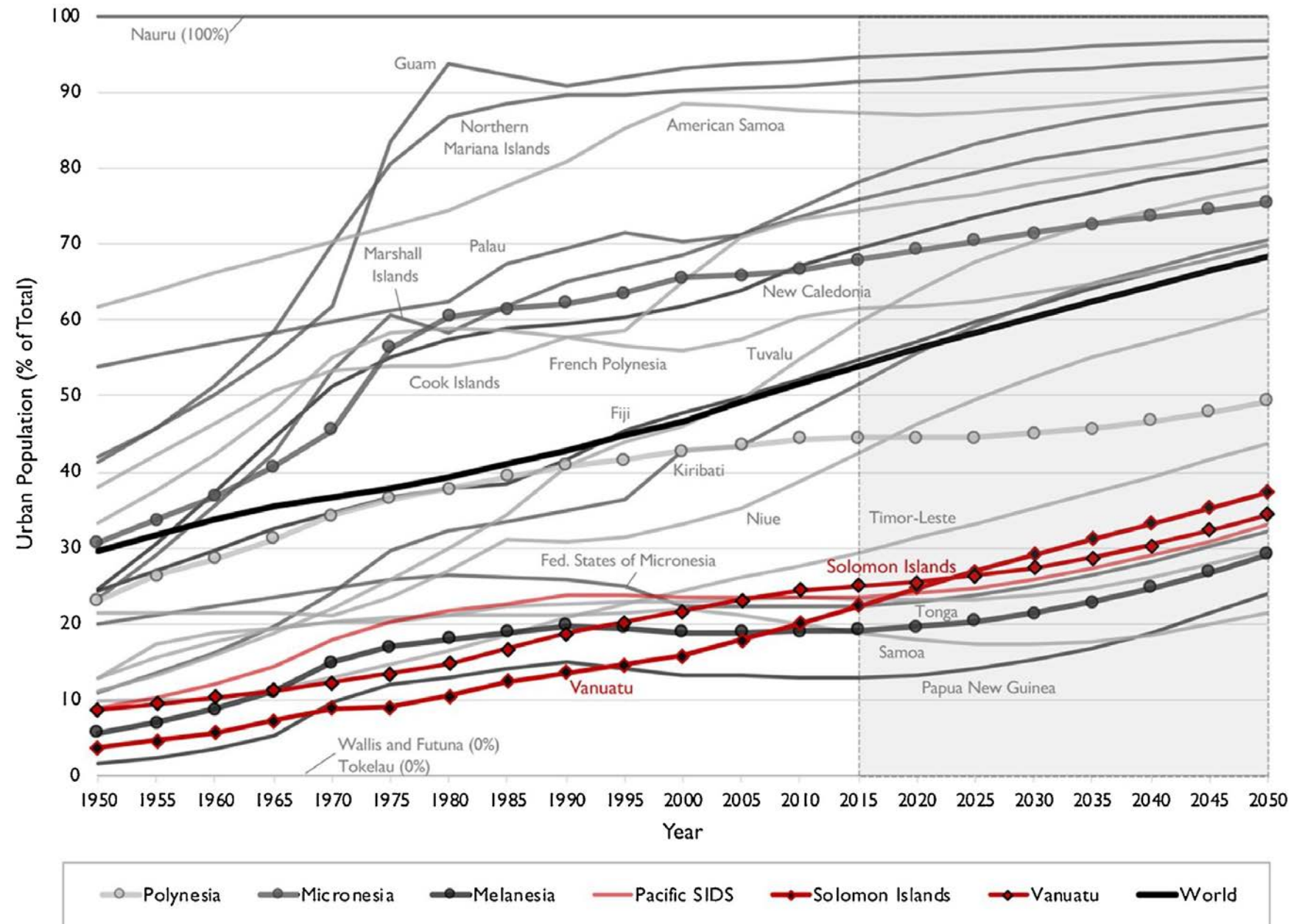
MEANS

UNKNOWN

*experimentation*

**CHAOS**

# Urbanization





# *Use transportation as asset for response*



Lee, D. and Lee, J. (2020) *Testing on the move South Korea's rapid response to the COVID-19 pandemic*. TRIP. Vol. 5. 100111.

- Adapt vehicles, parking, assets
- Control access/egress
- Use motor vehicles as barriers
- **Drive-thru testing**
- Protects screeners and those getting tested
- **INTEGRATE SMART-PHONES**
- Share public health data
- **Integrate into sheltering**
- **Motor vehicles as mobile generators**
- Communications centers
- **INTEGRATE into Recovery Planning**





My brother in law returned to Seoul from Hawaii and was required to quarantine 14 days, monitored by his smart phone, violation punishable by a fine of ~ \$10k, up to a year in prison, a day later a huge box containing food and water hand sanitizer Hazmat disposal bags along with thermometer and instructions for monitoring arrived at his home including: seaweed soup, abalone porridge, beef soup, chicken ginseng soup, rice, cookies, chocolate, chicopie, soda, tangerine juice, Pocari Sweat...

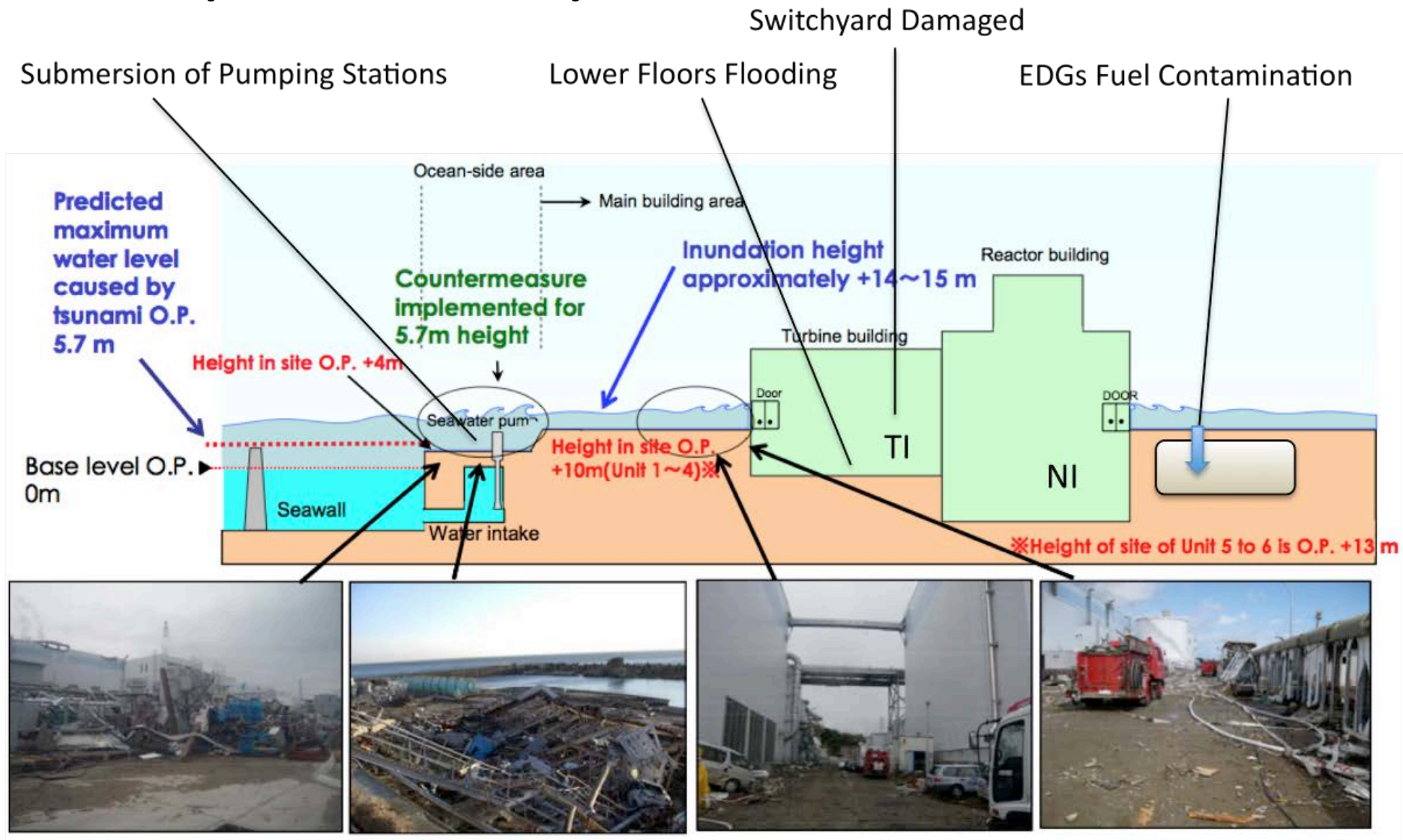


# *Manage the* roads/access/mobility

- No roads – limited development
- Other infrastructure follows roadways
- **ESF#1 = transportation – critical to EMS/fire/police/public works**
- Moving people and freight and commerce and supply chains
- **ESPECIALLY FOR ISLANDS**
- Ports – Airports – transport hubs – warehouses/distribution
- Disasters AND day-to-day commerce/economic activity

# Fukushima Disaster

## Islands are particularly vulnerable...





# Fukushima Recovery/Remediation



# Concerns



- Release of contaminated radioactive wastewater into ocean
- Longer term impacts on environment, health and safety
- **Many other countries dependent on nuclear power**
- Alternative to fossil fuel, greenhouse gas emissions
- **Outdated, antiquated, dangerous technologies**
- Inadequate safety and regulatory and environmental protections
- HUMAN ERROR, COMPLEX SYSTEMS, BAD DANGEROUS PEOPLE
- **Weaponization of infrastructure and technology**



# Go Green, Design with Nature, Next Gen...





# NDPTC Course: *Mitigating Hazards with Land Use Planning (MGT-474)*

- Status: FEMA Review Pilot August 16-17 (virtual)
- 8-hr instructor-led training
- Target audience: urban planners, emergency managers, government officials
- Topics:
  - Connections between land use and hazard mitigation
  - Opportunities to incorporate hazard mitigation and land use tools into community scale plans (e.g., comprehensive plans, hazard mitigation plans)
  - Site-scale implementation tools to mitigate hazards (e.g., zoning, setbacks, easements, TDR, etc.)



West Kauai Community Plan



[illegible]

- Status: certified, available for delivery
- Topics: Overview of coastal hazards, factors of vulnerability, basic risk assessment

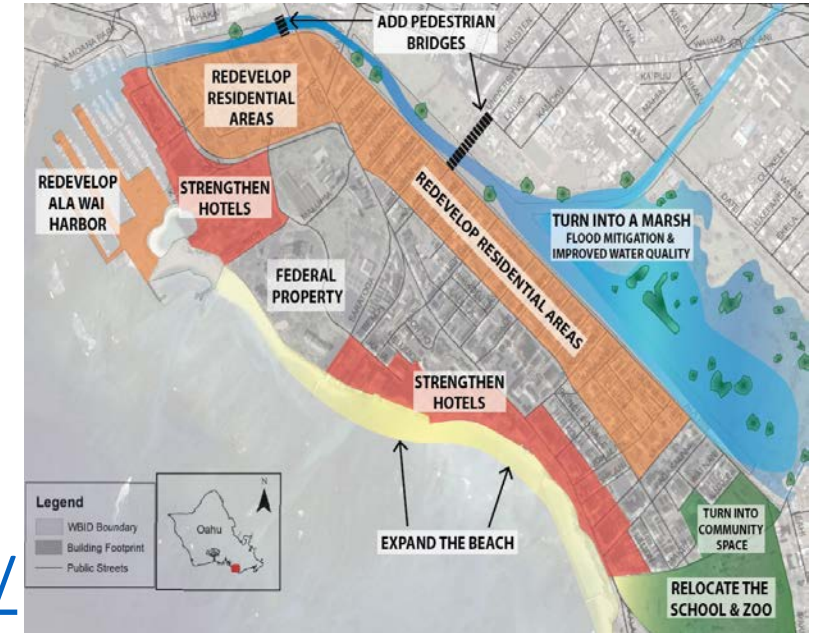
- Status: certified, available for delivery
- Topics: Types of assessments, data needs and sources, web-based planning tools (e.g., NOAA Digital Coast tools)

- Status: in-development, demo late 2021/early 2022
- Topics: adaptation, hazard mitigation, coastal governance, planning mechanisms, plan evaluation methods

# NDPTC Recovery Planning

## Waikiki Pre-Disaster Recovery Planning Project

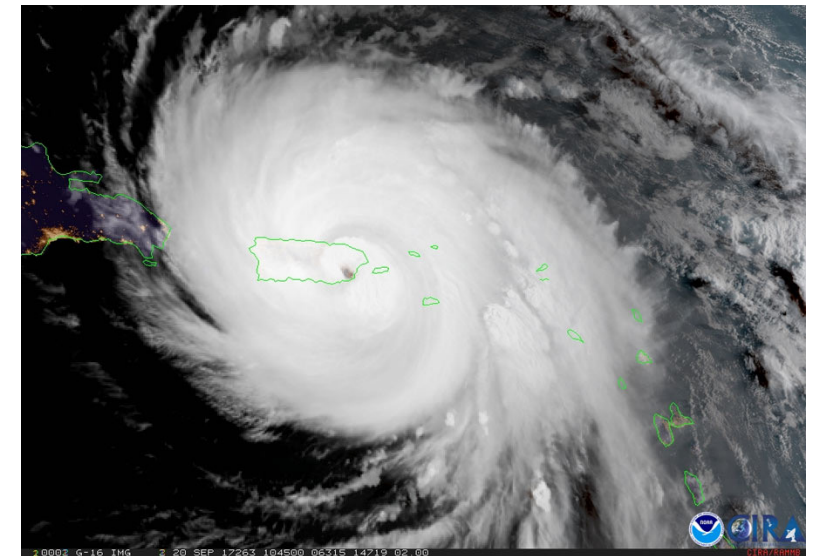
- Roadmap for Recovery Planning in Waikiki
- Lessons from Puerto Rico
- Small-business resilience training
- <https://sites.google.com/site/waikikirecoveryplanning/>



Waikiki Conceptual Recovery Map

## Puerto Rico Hurricane Maria Recovery

- Delivery of *AWR-356 Community Planning for Disaster Recovery* in Puerto Rico
- UH Planning Practicum (2018), Lessons for Resilience
- Recovery planning survey – equity, participation, and planning in Puerto Rico



Hurricane Maria landfall, Puerto Rico



# Conclusions: *Knowledge to Action*



**Diverse hazards and threats**

***Nature and technology***

Complacency

**IGNORANCE**

Incompetence

**Politics**

Human values

*Greed, Racism, Evil*

**Power of positivity**

# Five Actions

- Ramp up ongoing training and educational activities
- Online, distance learning, virtual engagement AND F2F modalities
- **PARTNERSHIPS:** NOAA, FEMA, USGS, USACE, USAID, UOG/UH, **PRiMO** and others...
- Invest in research, development, technologies, data, modeling
- Manage **uncertainty**, risk (especially harm to **vulnerable, at-risk, underserved populations**) and go **green**, nature-based systems, and **transform** systems of **planning**, land use, and development...





*Thank you, Aloha* and Hafa Adai



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