Pandemic Preparedness: Enhancing Readiness to Respond to and Manage Infectious Disease Outbreaks

Workshop: Addressing Pandemics through Population Health-based Approaches

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#### Overview

- Framework for decision making, policy and intervention as part of a pandemic response
- Example of Connecticut during its COVID-19 surge
- Workshop questions, breakout session and discussion

# Key steps for decision making and intervention during a pandemic response

- Framework for governance and policy making
- Guiding principles and clear goals
- Generation of timely and effective evidence (actionable data) to inform policy
- Policy implementation
- Generation of timely and effective evidence (metrics and thresholds) to monitor policy implementation and effectiveness

## What policy framework do you inform with data and evidence?

Financial and **Regulatory Policies** 

- Lack of timely, compelling evidence has led to worse decisions, Marc Lipsitch
- A policy framework for mitigating the economic impact of COVID-19, Brookings Institute, 20/4/20
  - Pandemics depress the economy, public health interventions do not: Evidence from 1918 Flu.
  - "While pandemics have large short-term costs, NPI can lead to both better economic outcomes and lower mortality rates"
- Four sets of policy instruments
  - Do not be bound by convention
  - Pay special attention to sequencing
  - Distinguish between the terms of the trade-offs.
- Challenges to translating evidence to policy
  - Governance
  - Integration of evidence across disparate fields
  - Complex interactions
  - Validity as the pandemic evolved

**Policy Instruments Targeted Outcomes Health and Social Protection Monetary Policy Fiscal Policy** 

A Policy Framework for Mitigating the Impact of the COVID-19 Crisis

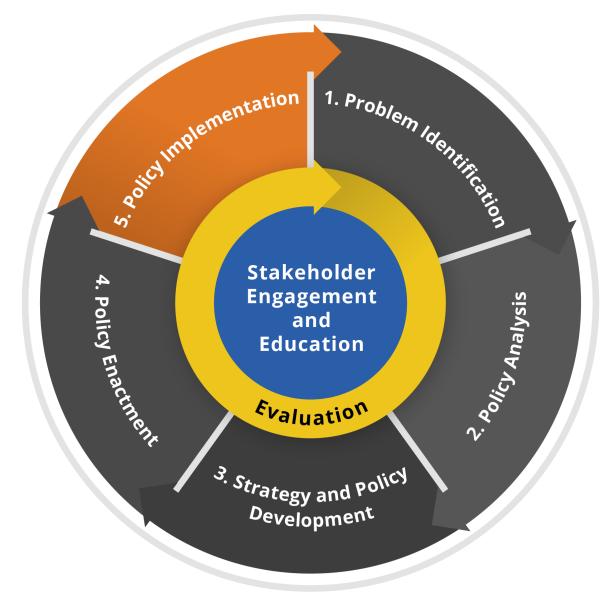
https://www.brookings.edu/blog/future-development/2020/04/20/ a-policy-framework-for-mitigating-the-economic-impact-ofcovid-19/

Flattening the

https://papers.ssrn.com/sol3/Papers.cfm?abstract\_id=3561560

# Processes for policy during the COVID-19 pandemic

- Criteria for policy analysis
  - Public health impact
  - Feasibility
  - Economic and budgetary impacts
- Constraints to translating evidence to policy
  - Initial thinking is often resource or experience constrained
  - Convening the right people
  - Identifying the right question that is amenable to being informed by evidence (actionable data)
  - Time scale of decision making
  - Knowledge gaps and uncertainty, especially on feasibility and ability to enforce
  - Communicating risk and uncertainty



https://www.cdc.gov/policy/polaris/policyprocess/implementation/index.html

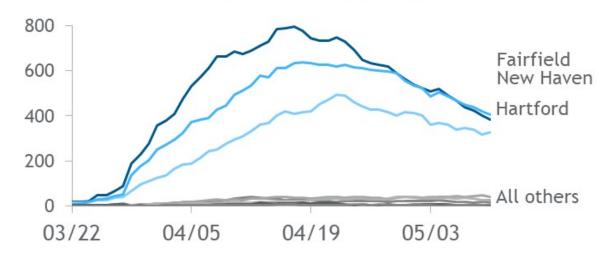
#### Public Health Interventions for COVID-19

- Decreasing contact rates (physical and social distancing)
  - Travel restrictions
  - Decreasing gathering size
  - School and work closure
  - Lockdown
- Barrier approaches
  - Facemasks
- Source reduction (individual level)
  - Hand hygiene, disinfection
  - Ventilation and outdoors
- Source reduction (population level)
  - Testing symptomatic individuals and isolation
  - Contact tracing of index cases and quarantine
  - Screening of high risk asymptomatic populations
- Medical Countermeasures
  - Therapeutics (steroids, remdesivir, supportive care)
  - Vaccines

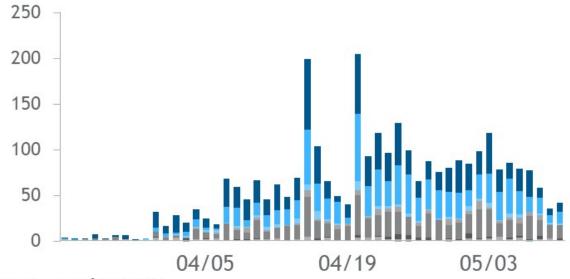
# COVID-19 in Connecticut, 03/2020

- CT: 3.6m inhabitants
- March 8: 1<sup>st</sup> confirmed case in CT
- March 10: PH emergency
- March 13-18: Stay home, stay safe
  - Restriction on NH visits
  - Travel and meeting restrictions
  - Schools closure
- April 13: Governor convenes the Reopen Connecticut Advisory Group
  - 13,381 cases
  - 602 deaths

#### Confirmed COVID-19 hospital census by county (daily)



#### Confirmed new COVID-19 deaths by county (daily)



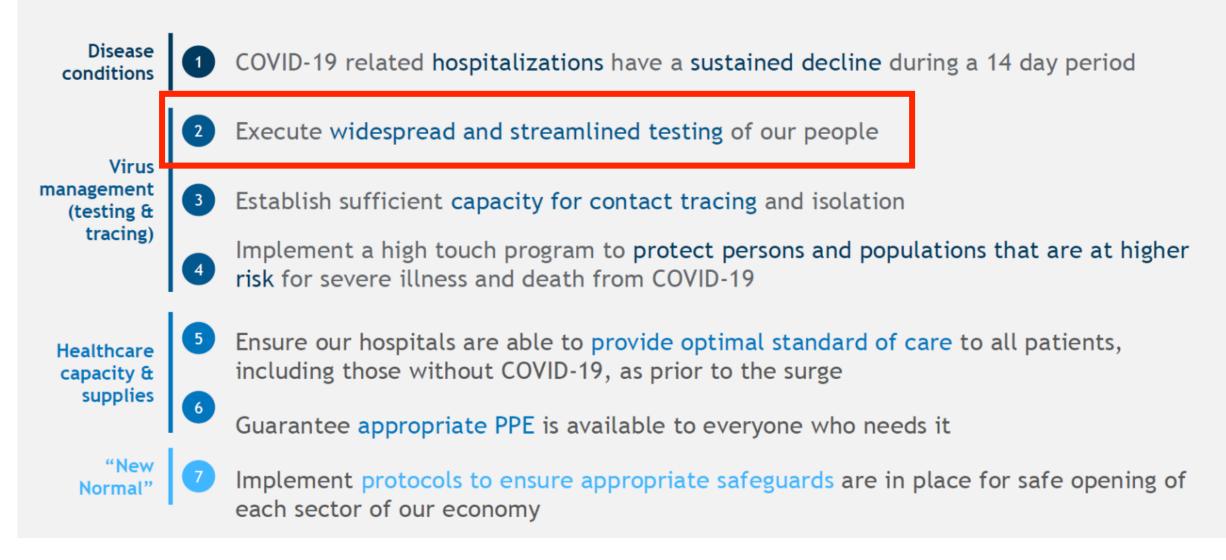
Note: Data as of 5/10/2020

Source: CT Department of Public Health COVID-19 Updates

# Guiding principles in the Connecticut's COVID-19 response and plan to reopen the economy

- Science-driven to ensure safety while reopening
- Protect our citizens who are at the highest risk
- Ensure our healthcare system is ready to handle the needs of patients (both with and without COVID-19)
- Minimize the harm to our economy, speed up recovery and restore Connecticut's quality of life, while protecting public health
- We will be fully equipped to respond to future crises, as infection rates may rebound

# Initial priorities for phase 1 reopening



# The State will support phased reopening with progressively increased and widespread testing

Now (May 18)

May 20 - Jun 20

Jun 20 - Phase 3 start

Approx. Sept 1

# Tests per week (end of period)

~45k

Build to 100k

Build to 170k

healthcare and other essential

Expand efforts to protect

• Expand efforts to protect

persons and populations at

higher risk for severe illness

# Build to 200k + Additional for public educational institutions

Goals

- Monitor transmission and safeguard the health of the community
- Protect critical and higher risk residents
- Inform better decision-making on ongoing re-open strategies, protocols
- Symptomatic individuals

Symptomatic individuals

workers

and death

- Nursing home & assisted living (ALF) staff
- Nursing home & ALF residents
- Corrections facility staff & inmates
- Members of high risk communities
- Health care workers
- First responders
- Direct care employees & residents

 Provide broad testing to enable full reopening and reduce the probability of future outbreaks

Focus populations

- Symptomatic individuals
- Point prevalence testing begun in focus populations including nursing homes and correctional facilities

Phase in repetitive testing of:

- Nursing home staff
- Nursing home residents
- Corrections facility staff & inmates
- Members of high risk communities
- High risk health care workers
- First responders
- · Direct care employees and residents

- Symptomatic individuals
- Nursing home & assisted living staff
- Nursing home & ALF residents
- Corrections facility staff & inmates
- Members of high risk communities
- Health care workers
- · First responders
- Direct care employees & residents
- Faculty, staff, students of state universities & schools

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# Initial priorities for phase 1 reopening

# Disease conditions 1 COVID-19 related hospitalizations have a sustained decline during a 14 day period 2 Execute widespread and streamlined testing of our people 3 Establish sufficient capacity for contact tracing and isolation 4 Implement a high touch program to protect persons and populations that are at higher risk for severe illness and death from COVID-19

- Ensure our hospitals are able to provide optimal standard of care to all patients, including those without COVID-19, as prior to the surge
- Guarantee appropriate PPE is available to everyone who needs it

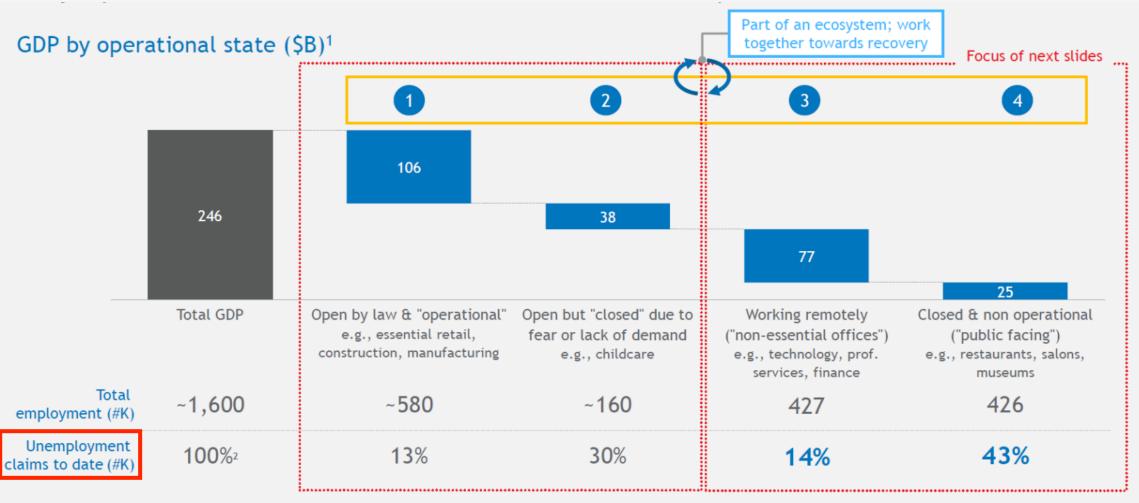
"New Normal"

Healthcare

capacity & supplies

Implement protocols to ensure appropriate safeguards are in place for safe opening of each sector of our economy

# Selecting economic sectors for reopening Prioritizing social protection and unemployment claims as the metric



<sup>1.</sup> Based on 2018 GDP from BEA; 2. Based on unemployment claims processed by May 18, 2020 Source: BEA, DOL, US Census Bureau

#### Each sector received a health risk score based on 2 dimensions

Adapted based on guidance from JHU School of Public Health

#### Contact intensity

Weight: 40%



## Contact proximity From St Louis Fed & O\*NET

Expected proximity between employees, other employees, and customers

Close physical proximity poses higher public health risk given transmissibility of COVID-19

Sub-weight: 33%



# Contact length From JHU\*/qualitative

Average length of interaction between individuals

Higher interaction duration puts employees and customers at greater risk

Sub-weight: 33%



#### Number of contacts From JHU\*/qualitative

Approximate number of people in the setting at the same time

More contacts increases chance of exposure and could increase rate of transmission

Sub-weight: 33%

#### Modification potential

Weight: 60%



#### Disinfection From JHU\*/qualitative

Ability to sanitize & regulate - driven by existing safety regime e.g., current safety focus, government inspection, strong industry groups

Sub-weight: 50%



## Social distancing From JHU\*/qualitative

Qualitative measure of enforceability of physical distancing measures across industry

Worse score for industries where chance of deviation from regulations is high

Sub-weight: 50%

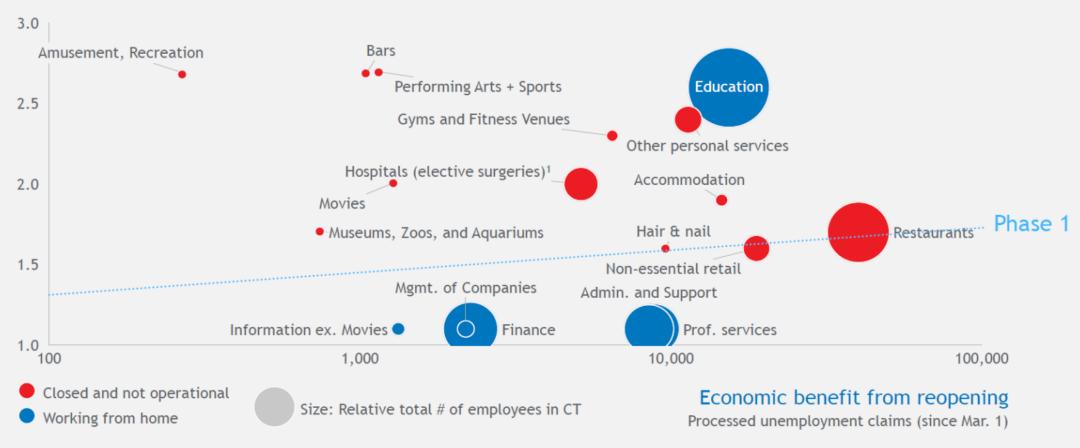
\* Where possible; not available for all categories Source: Johns Hopkins Bloomberg School of Public Health, St. Louis Fed

#### Public health risk and economic benefit vary significantly by sector

Framework to think about what we will open and when

#### Public health risk from reopening

Based on contact intensity and modification protocol



<sup>1.</sup> Includes all unemployment claims & employees for hospitals across CT (does not account for current operations as mostly related to COVID-19)
Source: CT DOL, St. Louis Fed, JHU School of Public Health

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### Reopening criteria for Phase 1 (May 20) have been satisfied





# 1. Sustained decline of hospitalizations

Decline over a 14 day period without evidence of a regional outbreak

Decline since 4/22/20

55% below peak



# 2. Widespread PCR testing

42K tests administered per week with <48 hours turnaround time

45k tests in last 7 days



# 3. Sufficient contact tracing capacity

Contact tracing system (ContaCT) operational

ContaCT is live and operationa LHDs are piloting ContaCT



# 4. Protections for the most at risk

Testing and screening of key workers and high-risk populations initiated

Over 10,000 tests distributed to target populations





# 5. Healthcare capacity to provide optimal care

<20% of beds occupied by COVID-19 amongst total bed capacity at peak ~15% of beds with COVID related patients



# 6. Adequate supply of PPE

30 days of PPE supplies in major healthcare systems

State stockpile in warehouse for ~60 days of supply



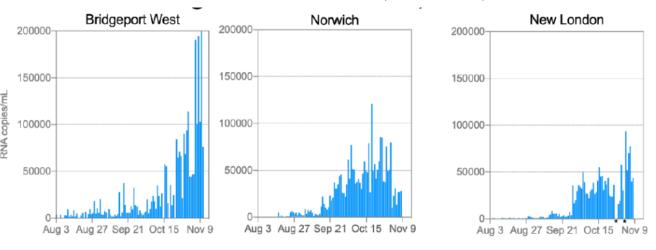
# 7. Safeguards to protect the workplace

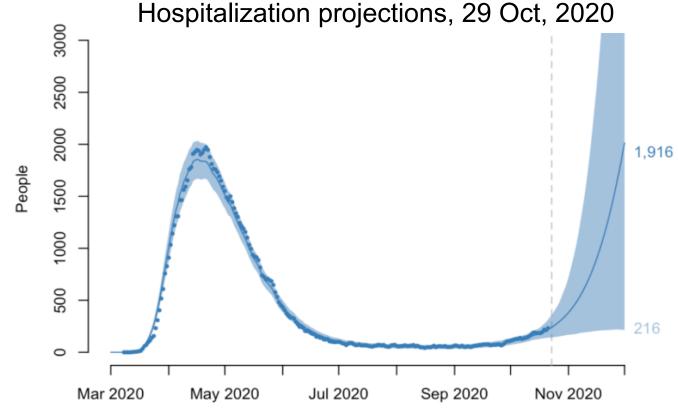
Rules and regulations disseminated and adopted prior to Phase 1 reopening Detailed guidelines published for each business sector

# Mitigating a 2<sup>nd</sup> COVID-19 Surge in Connecticut

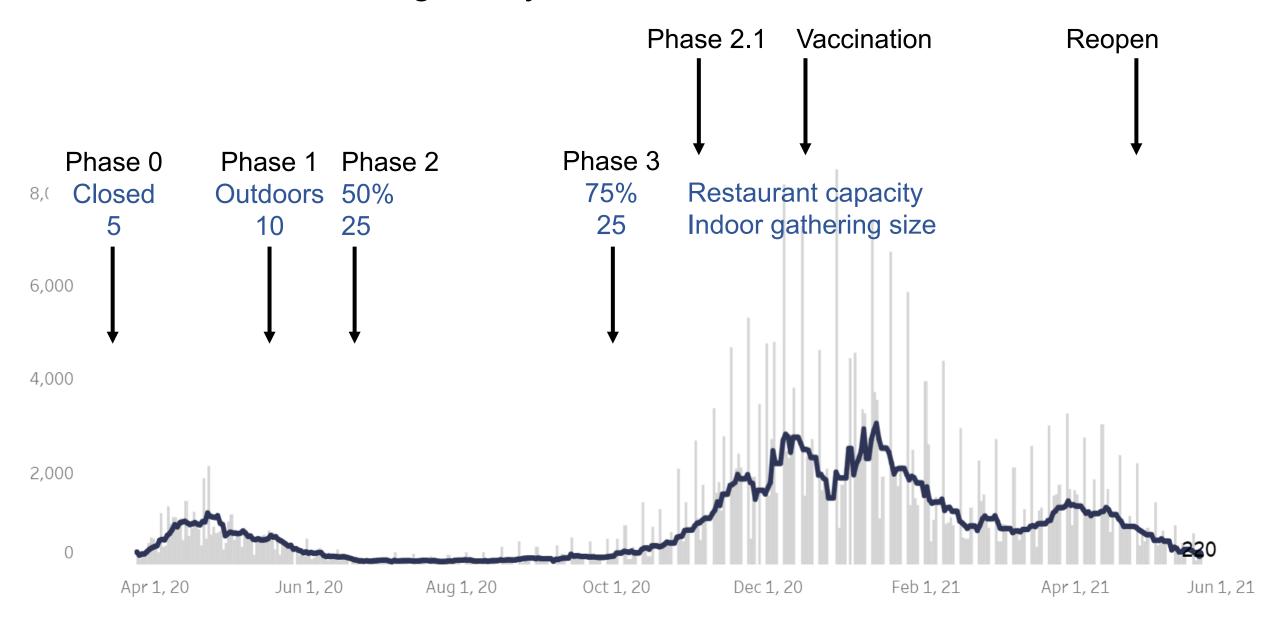
- Surveillance established with leading indicators as metrics
- Increased testing capacity from 1.6k to 600k per month between 04/20-09/20
- Implemented sentinel wastewater surveillance at 8 sites
- Established thresholds (15 per 100k pop) linked with recommendations for municipal level implementation of NPIs

#### Wastewater surveillance, 13 Nov, 2020





## Calibrating Policy with COVID-19 Transmission



# Summary: Translating evidence to policy during CT COVID-19 response

- Evidence can lead to effective policy when provided in timeframes and scales for decision making and implementation
- Perfection is often the enemy of the good in the process. But the lack of translating evidence is a lost opportunity to learn and respond effectively (eg health inequities).
- Requires multi-disciplinary expertise from difference sectors and leadership
- There are continued critical evidence gaps in implementation, including feasibility, acceptability and public health communication
- Assertion: Governance is the key determinant for effective translation of evidence by establishing the policy framework and identifying priorities.

## **Small Group Discussion Questions**

- What metrics do your countries use to drive policy decision making for COVID-19 response in your country, why were these metrics chosen, and how is surveillance designed to measure these metrics during pandemic
- What are public health interventions that comprise the COVID-19 response policy in your country and what triggers or thresholds are used to phase in or phases out these interventions during the evolution of the pandemic.