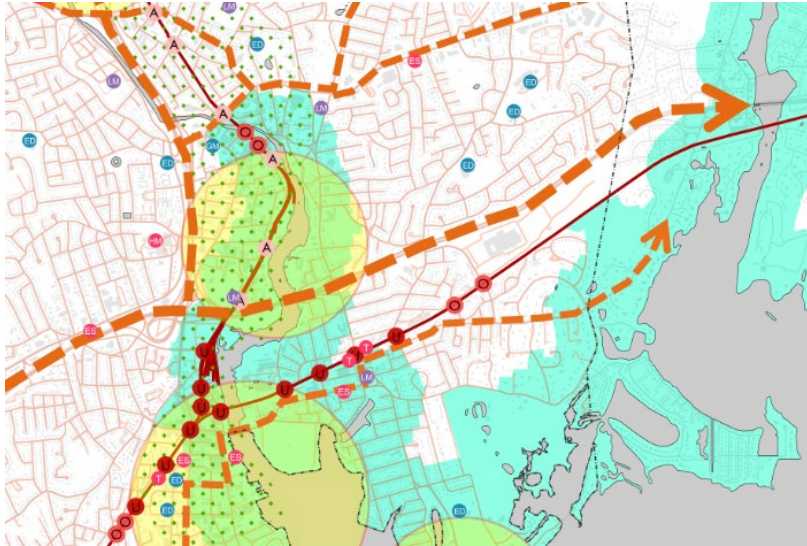


Resilient Connecticut Webinar: Climate Vulnerability Mapping for Municipalities



March 12, 2020



Critical Infrastructure

Estuary

Natural Conservation

Reservoir

River






Waves, Sea level & Surge

Coastal Development

Urban Infrastructure

Coastal Defense

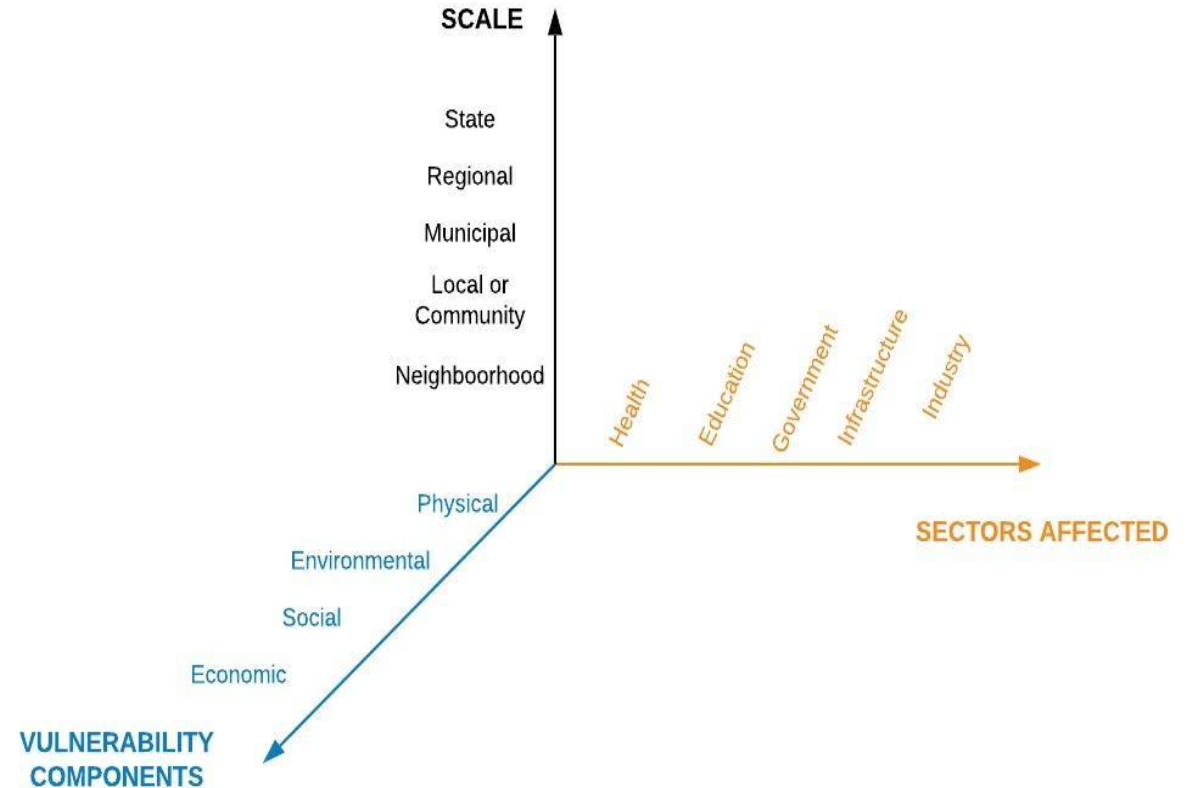
Why Vulnerability Assessment?

-  Understanding when and how to adapt
-  Evaluating existing and future vulnerabilities to climate change
-  Inform & prioritize projects in urban land use planning
-  Identify impacts to community assets
-  Strategically allocate limited resources

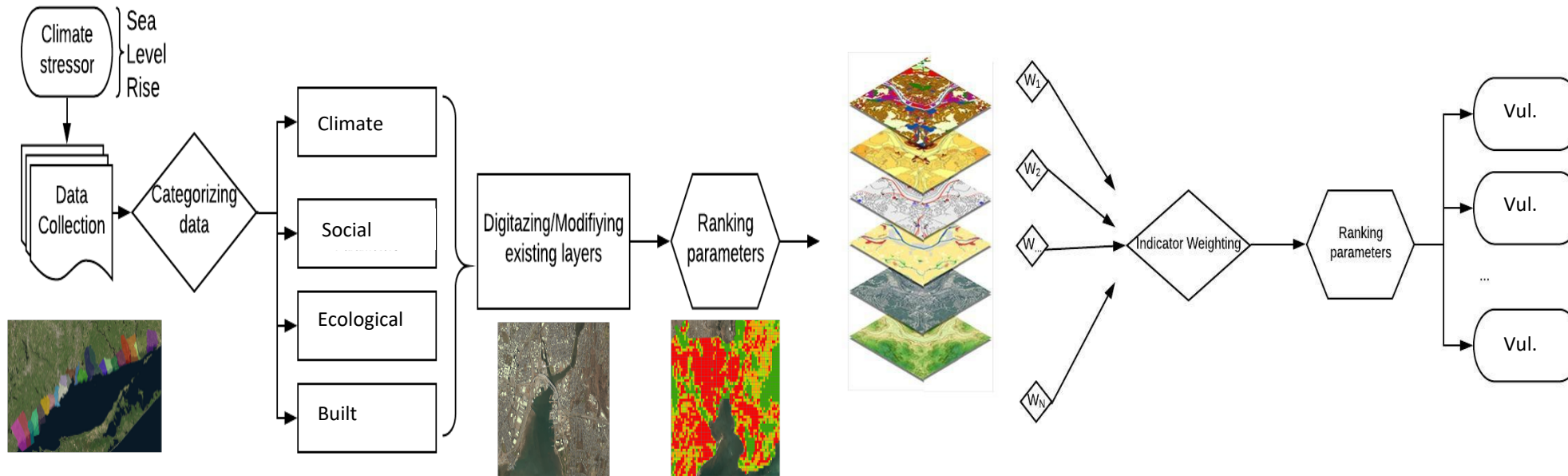
Vulnerability Assessment Mapping projects

Multiple scale prioritization advantage

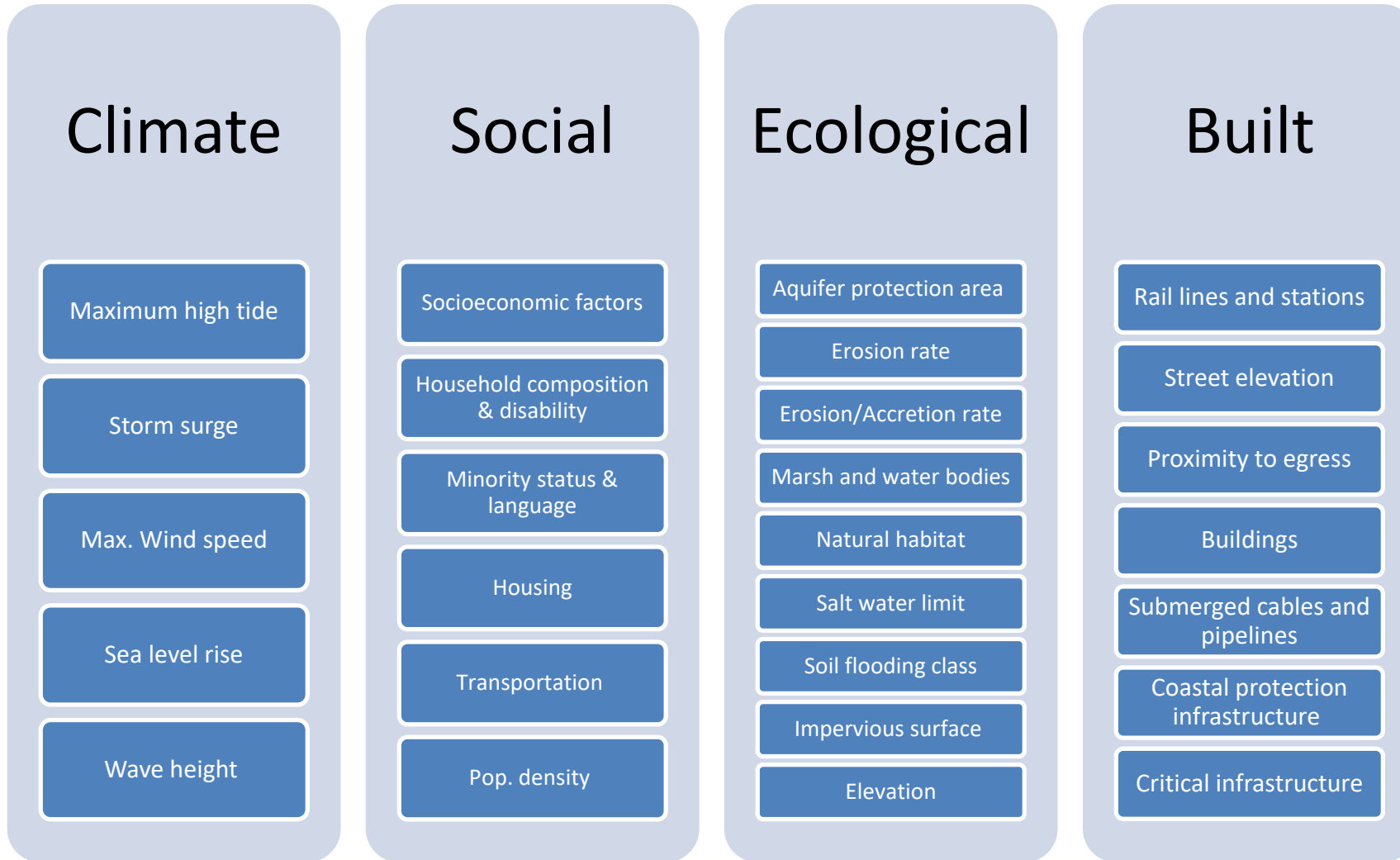
- Statewide
- Regional
- Town
- 1-acre resolution
- Relative to the selected area distribution



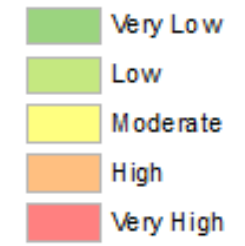
Understanding the complexities of the coastal system



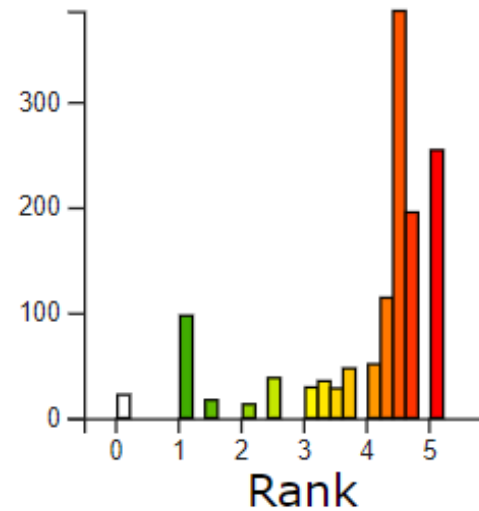
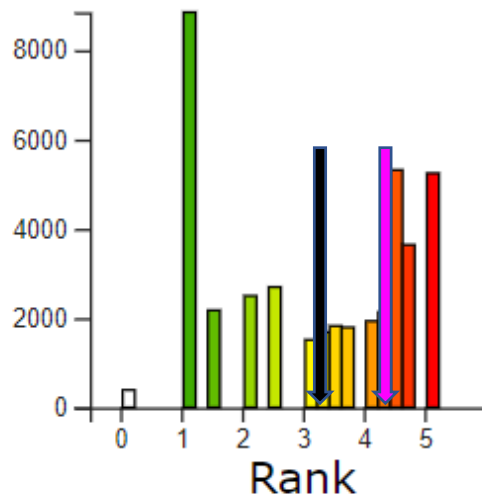
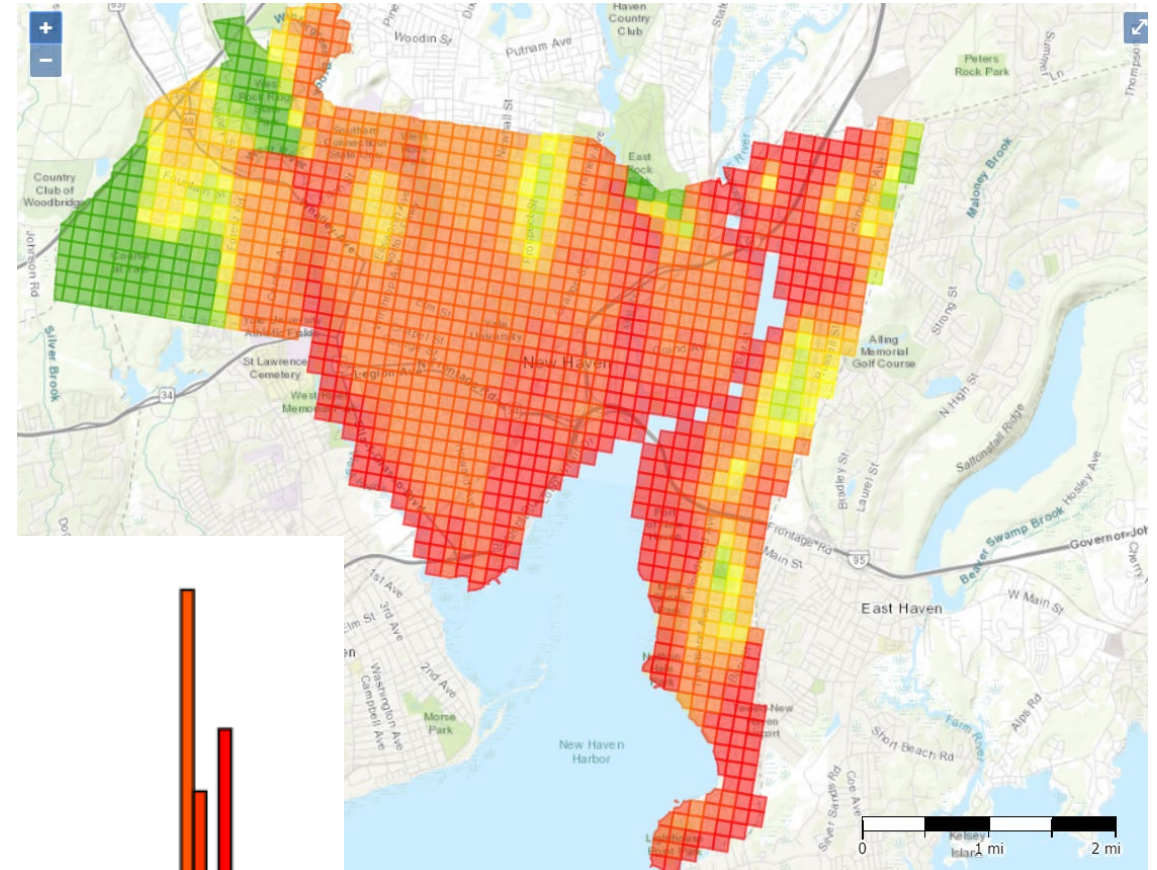
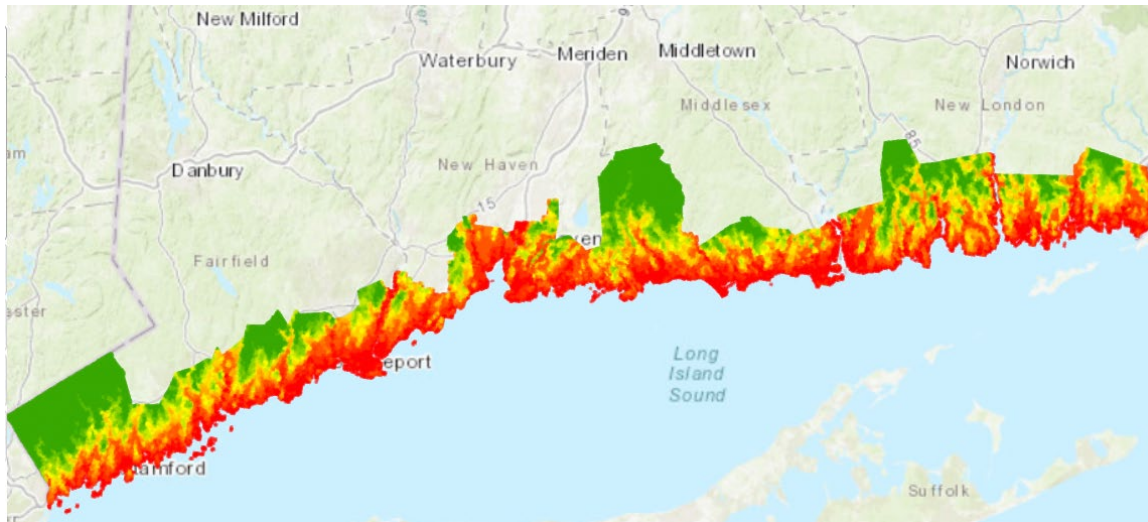
Input Variable Categories



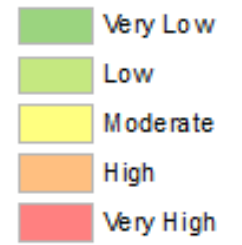
Input Variable Contributions



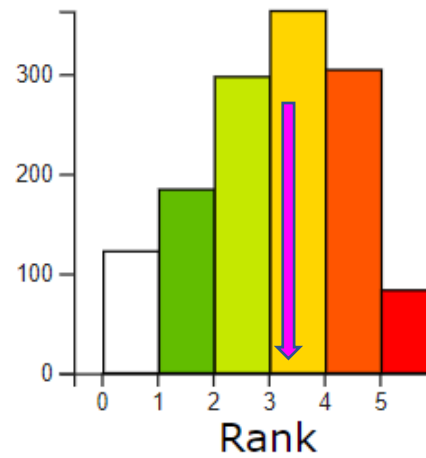
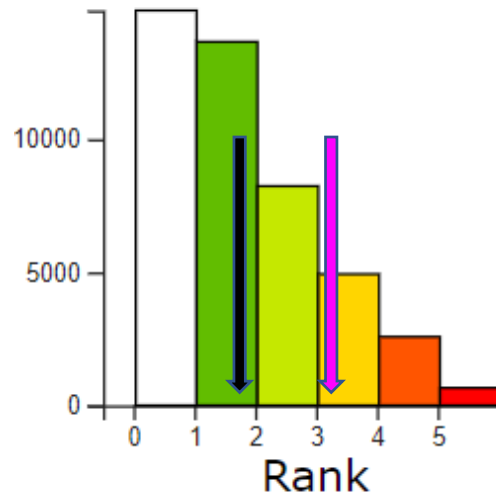
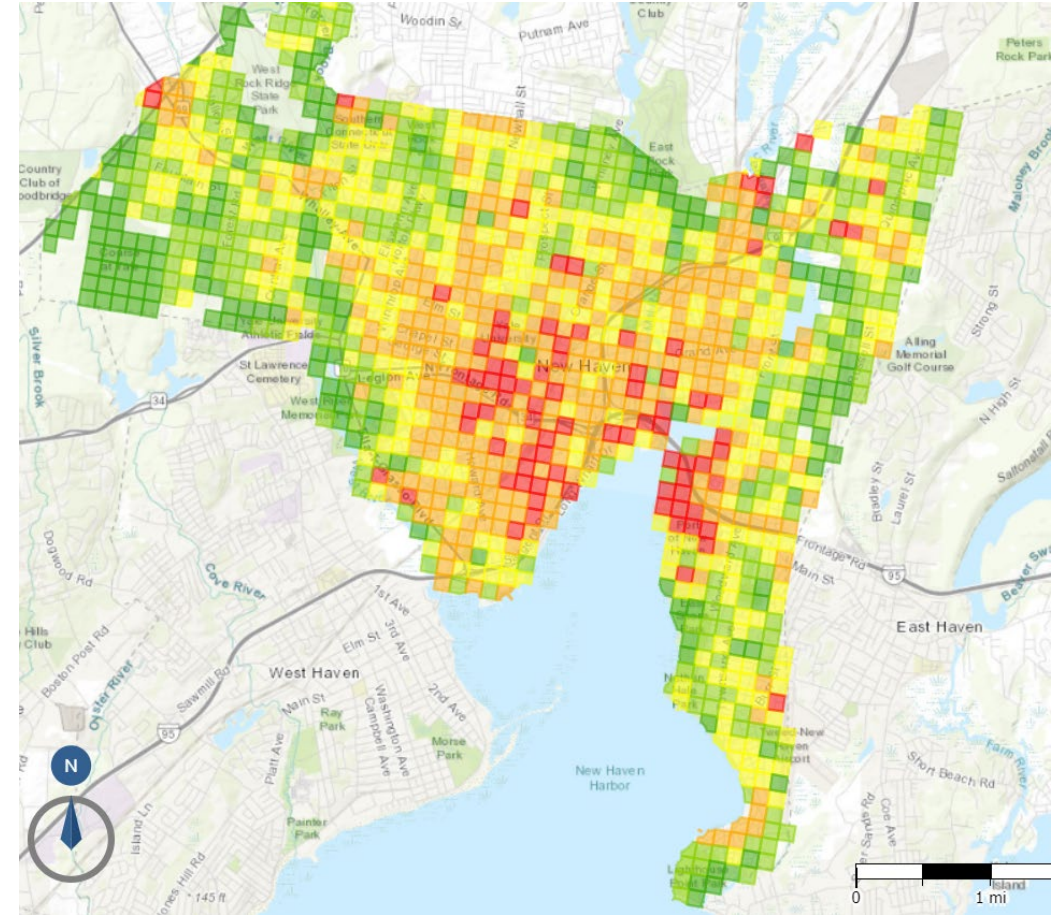
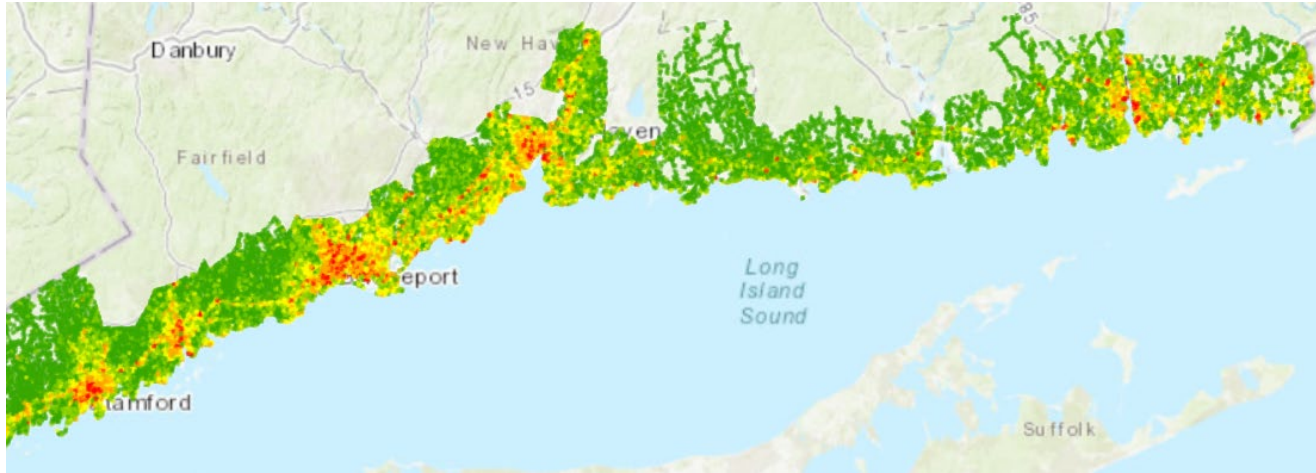
Elevation



Input Variable Contributions



Impervious Area

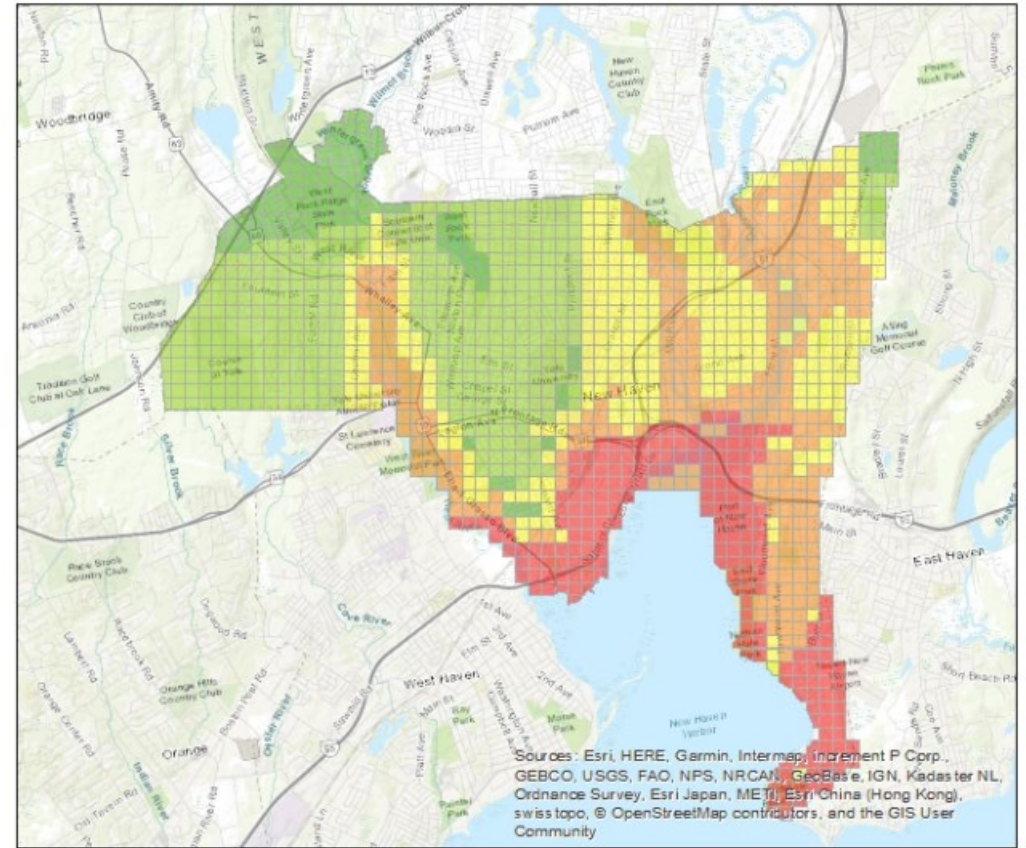
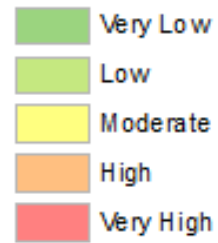


Sector specific examples

- Vulnerability specified for the purpose
 - Categorized results for
 - Climate vulnerability
 - Saltwater intrusion
 - Erosion vulnerability
 - Social vulnerability
 - Habitat vulnerability
 - Coastal Vulnerability (CV)

Sector specific examples

- Vulnerability specified for the purpose
 - Categorized results for
 - **Climate vulnerability**
 - Sea level rise
 - Storm Surge
 - Wave Power
 - Mean high high-water level tide
 - Wind Speed
 - Saltwater intrusion
 - Erosion vulnerability
 - Social vulnerability
 - Habitat vulnerability
 - Coastal Vulnerability (CVI)

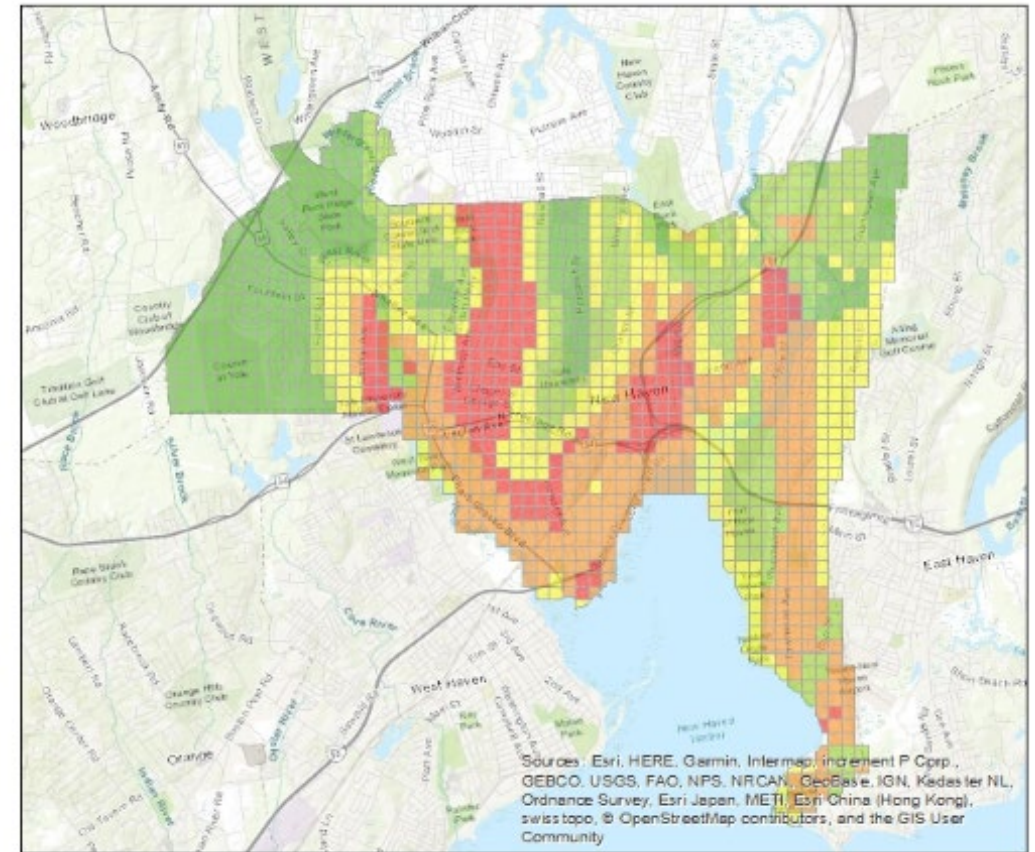
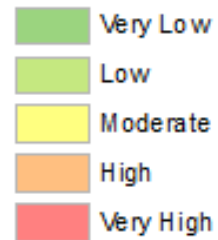


0 0.425 0.85 1.7 2.55 3.4 Miles



Sector specific examples

- Vulnerability specified for the purpose
 - Categorized results for
 - Climate vulnerability
 - **Saltwater intrusion**
 - Aquifer potential
 - Saltwater Limit
 - Surface Aquifer
 - Sea level rise
 - Erosion vulnerability
 - Social vulnerability
 - Habitat vulnerability
 - Coastal Vulnerability (CV)

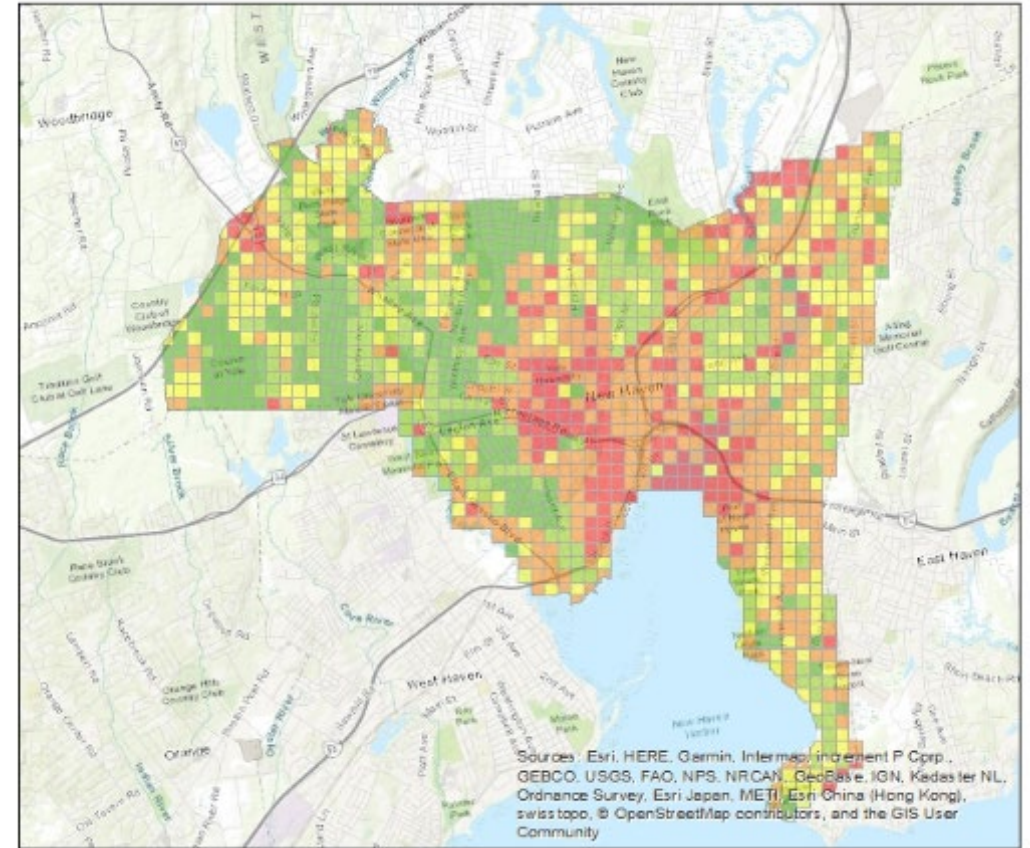
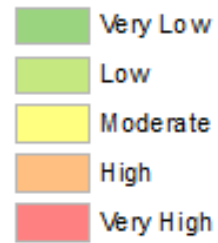


0 0.425 0.85 1.7 2.55 3.4 Miles



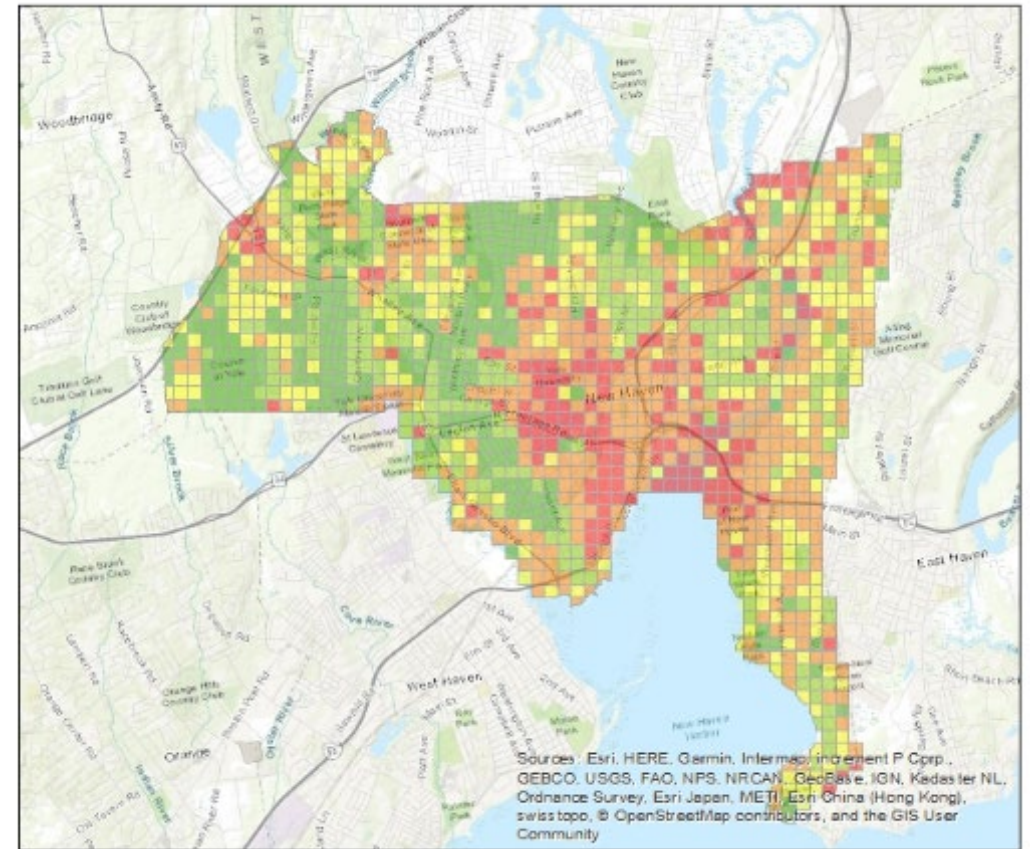
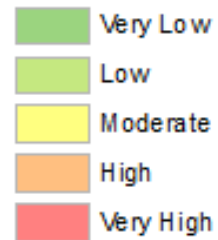
Sector specific examples

- Vulnerability specified for the purpose
 - Categorized results for
 - Climate vulnerability
 - Saltwater intrusion
 - Erosion vulnerability
 - Erosion susceptibility
 - Shoreline erosion rate
 - Soil drainage
 - Impervious area
 - Sea level rise
 - Social vulnerability
 - Habitat vulnerability
 - Coastal Vulnerability (CV)



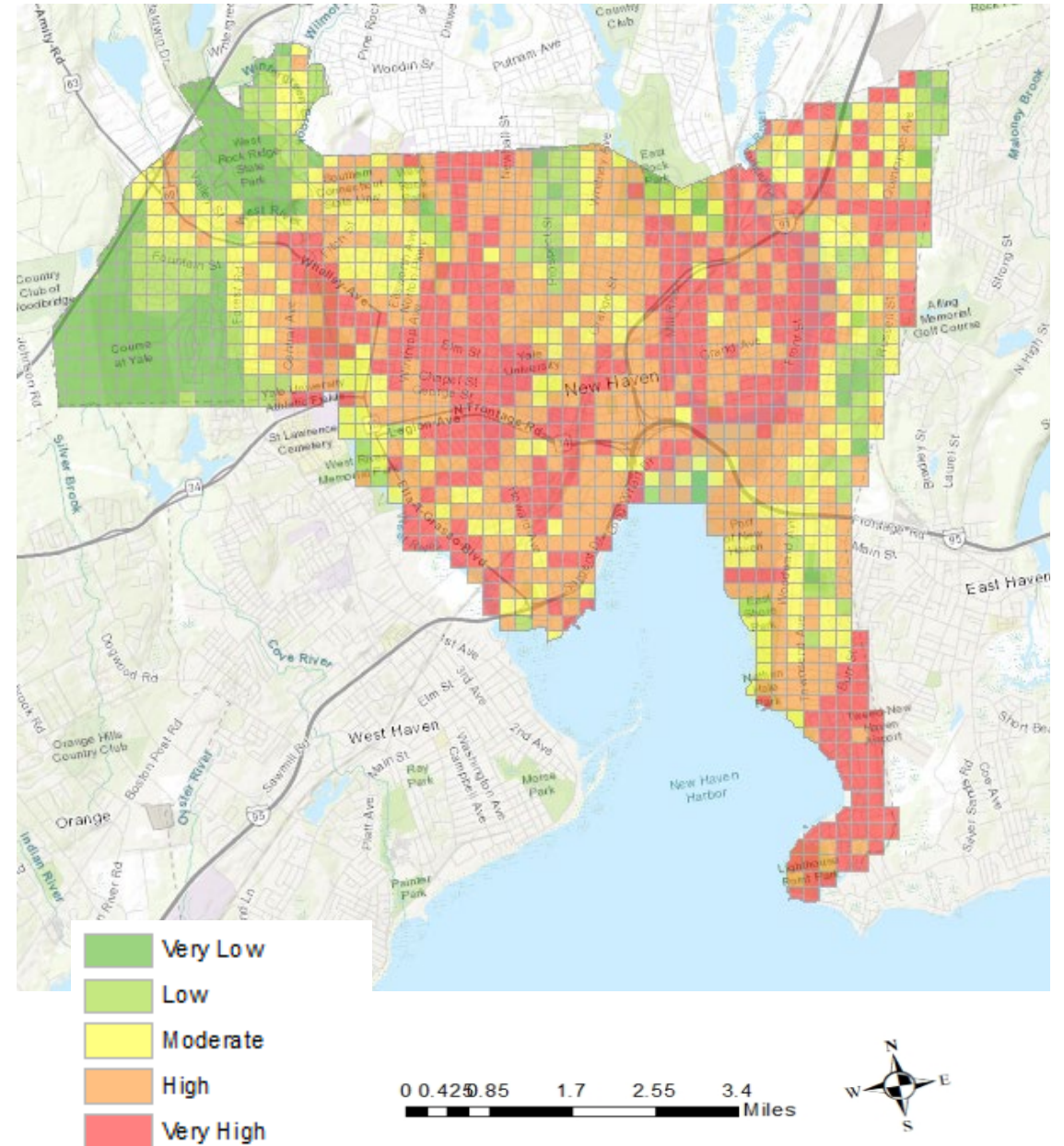
Sector specific examples

- Vulnerability specified for the purpose
 - Categorized results for
 - Climate vulnerability
 - Saltwater intrusion
 - Erosion vulnerability
 - Erosion susceptibility
 - Shoreline erosion rate
 - Soil drainage
 - Impervious area
 - Sea level rise
 - Social vulnerability
 - Habitat vulnerability
 - Coastal Vulnerability (CV)

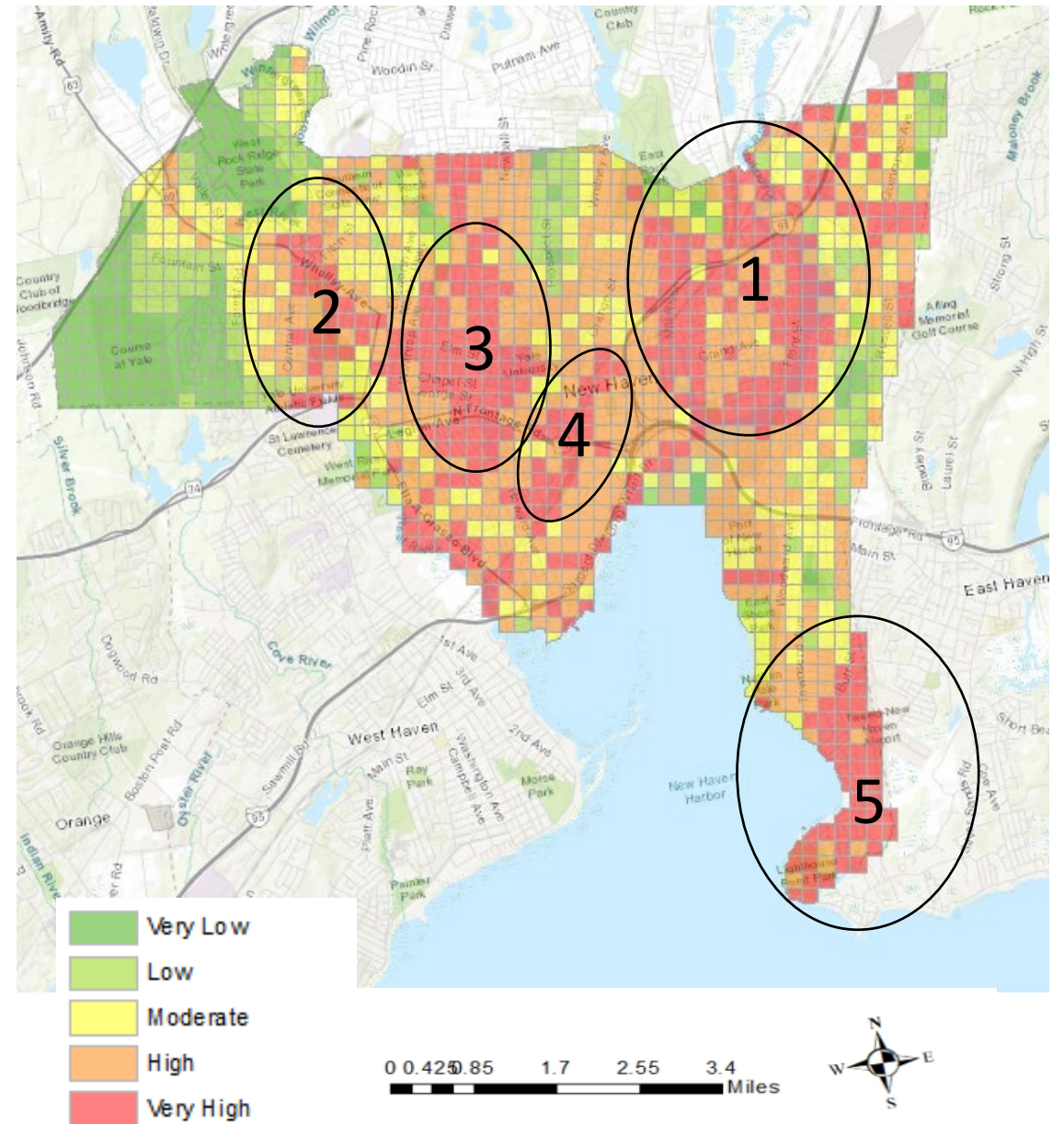


Coastal Vulnerability

- Compared to all coastal towns New Haven has
 - 19 % higher vulnerability over all the coastal towns
 - 23 % higher vulnerability over the SCROG



Coastal Vulnerability



Coastal Vulnerability

1: Fair Haven

Elevation, wave impact and saltwater limit

2: Westville

Erosion of the surficial material, elevation, low elevated streets and buildings

3: Around Yale

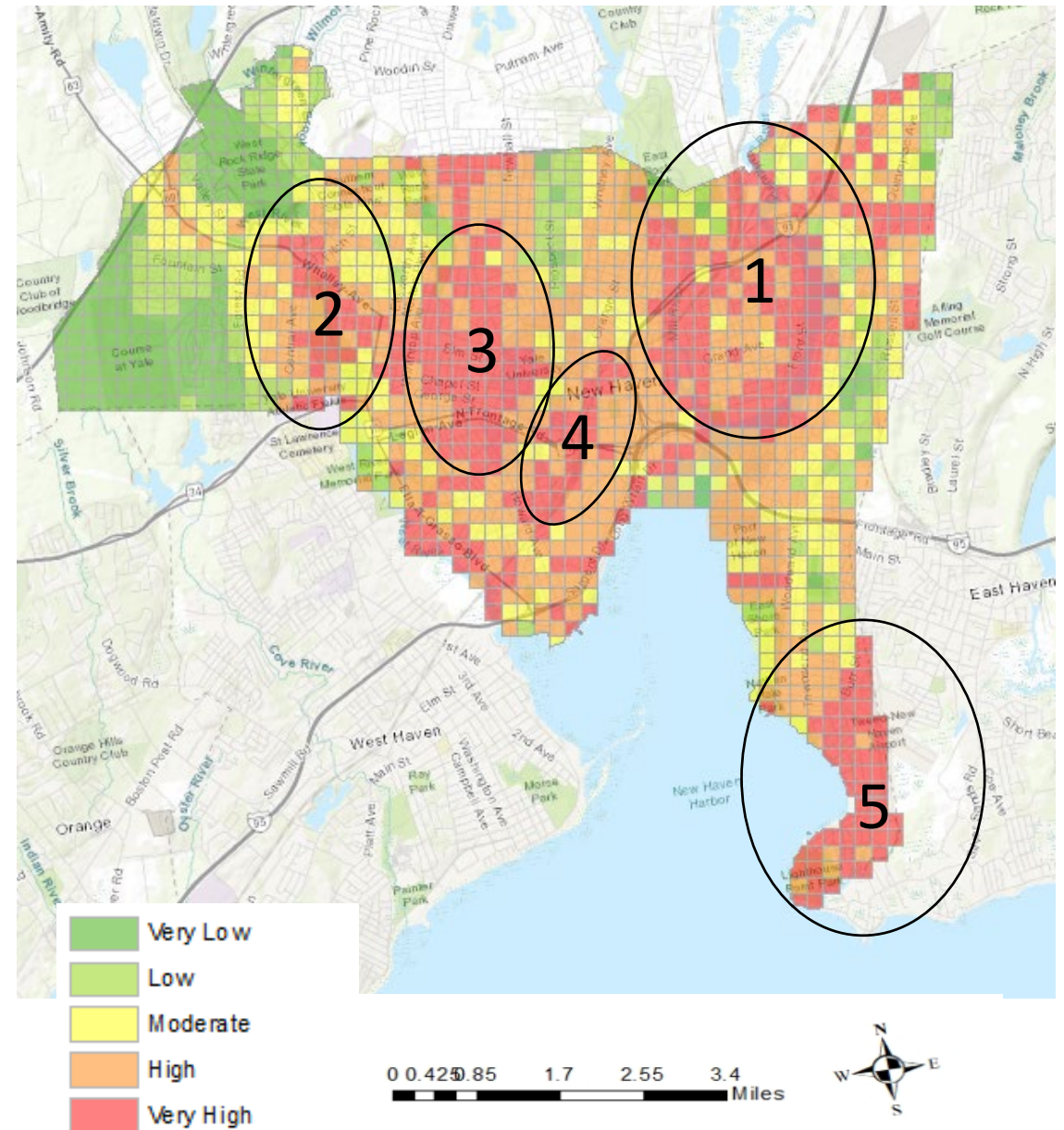
Elevation, impervious area filled with buildings, low elevated streets and susceptible to erosion

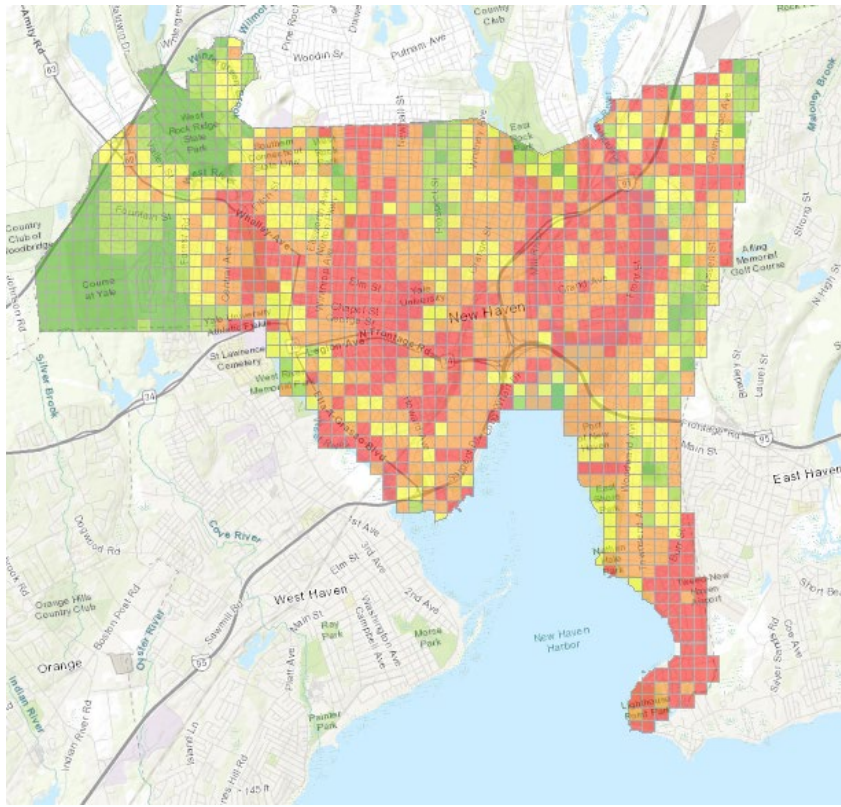
4: Around Long wharf

Amtrack route, impervious layer, elevation

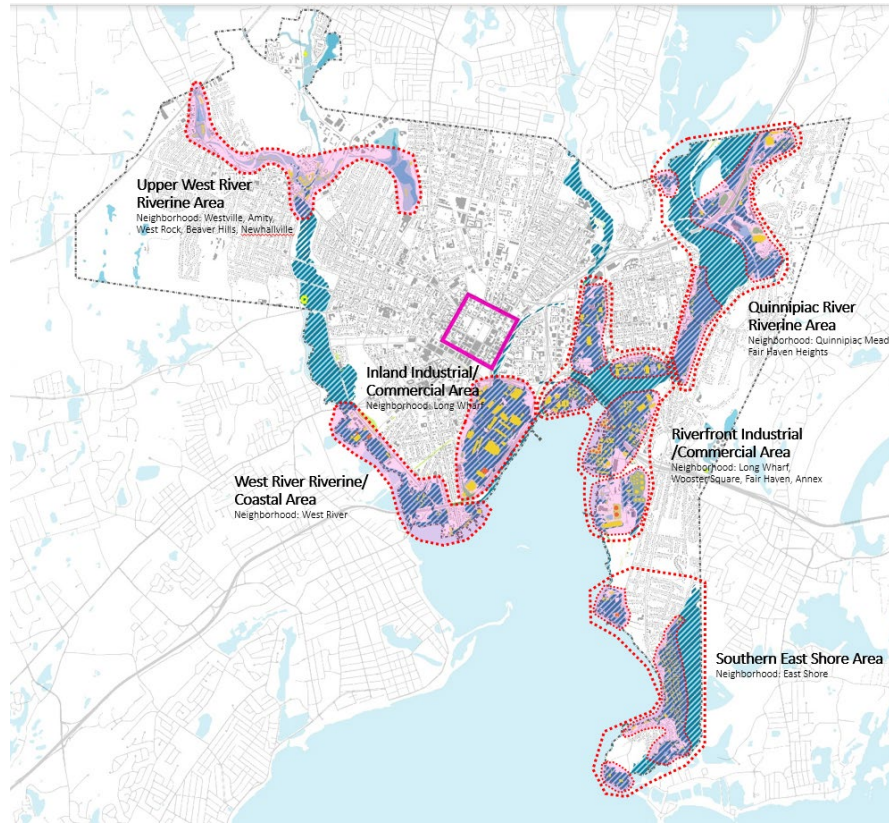
5: Morris Cove

Surface material, high tide, health insurance and disability, critical infrastructure





+



= Priority Zones for Planning

Coastal Vulnerability + Zones of Shared Risk

Coastal Vulnerability Viewer

Coastal Vulnerability Index

▾ Area of Interest

Select the portion of Coastal Connecticut.

Connecticut ▾

▸ Assessment Type

▸ Input Layer Selection

▸ Base Layer

▸ View Options

- Different assessment types
 - All Coastal Towns
 - COGs
 - Towns

General Info

Layer Info

Methodology

Downloads

Coastal Vulnerability Assessment

This viewer examines the direct and indirect future impacts of sea level rise on Connecticut's coastal towns. It aims to help stakeholders understand climate impacts, make decisions, and prioritize projects.

[Start Guided Tour](#)



Coastal Vulnerability Viewer


Coastal Vulnerability Index

- Area of Interest
- Assessment Type
- Input Layer Selection
- Base Layer
- View Options

Add sea level overlay.

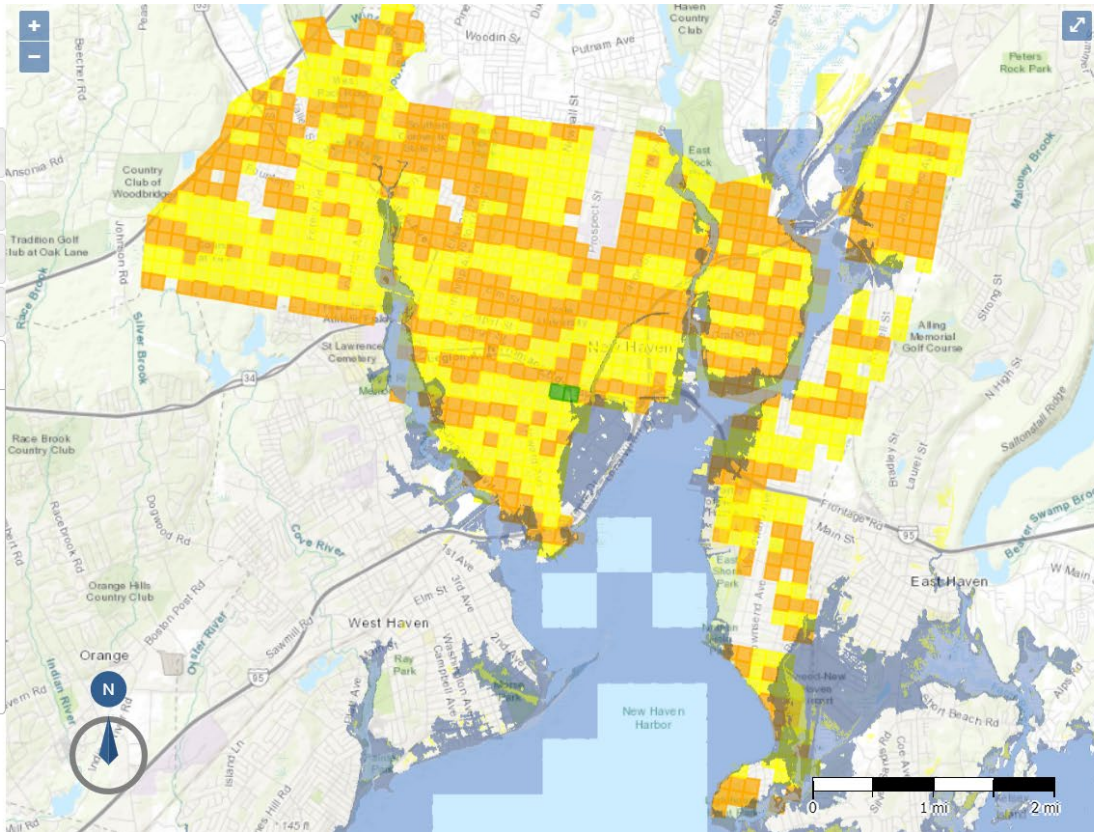
100 Year Flood Even

Change color scheme.



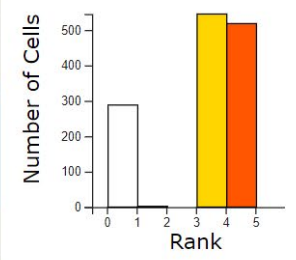
70%

Transparent Solid



4.00	4.00
susceptible to erosion	soils susceptible to erosion

Selected Area Stats



Statistic	Value
Mean Rank	3.48
Standard Deviation	0.51
Min Rank	1.00
Max Rank	4.00
Data Acreage	1065
Total Acreage	1353



- Multiscale analysis
- Map distribution
- Statistical distribution
- Downloading data files
- Changing base map layer and color of scale
- Overlay flood scenarios



Community Lifelines

Definition

A lifeline enables the continuous operation of **critical business and government functions** and is essential to **human health and safety or economic security**.

Purpose

Root Cause Analysis

Interdependencies

Prioritization

Ease of Communication

Assessing

Status → What?

Impact → So What?

Actions → Now What?

Limiting Factors → What's the Gap?

Stabilization

Occurs when basic lifeline services or capabilities are provided to survivors (may be temporary solutions requiring sustainment).

COMPONENTS of Lifelines



Safety and Security



Law Enforcement/Security



Fire Services



Search and Rescue



Government Services



Community Safety



Food, Water, Shelter



Food



Water



Shelter



Agriculture



Health and Medical



Medical Care



Patient Movement



Public Health



Fatality Management



Medical Supply Chain



Energy (Power & Fuel)



Power (Grid)



Fuel



Communications



Infrastructure



Alerts, Warnings, and Messages



911 and Dispatch



Responder Communications



Finance



Transportation



Highway/Roadway



Mass Transit



Railway



Aviation



Maritime



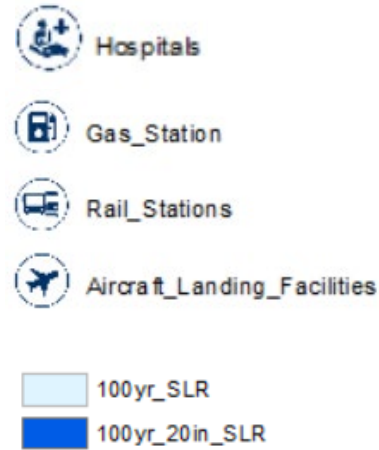
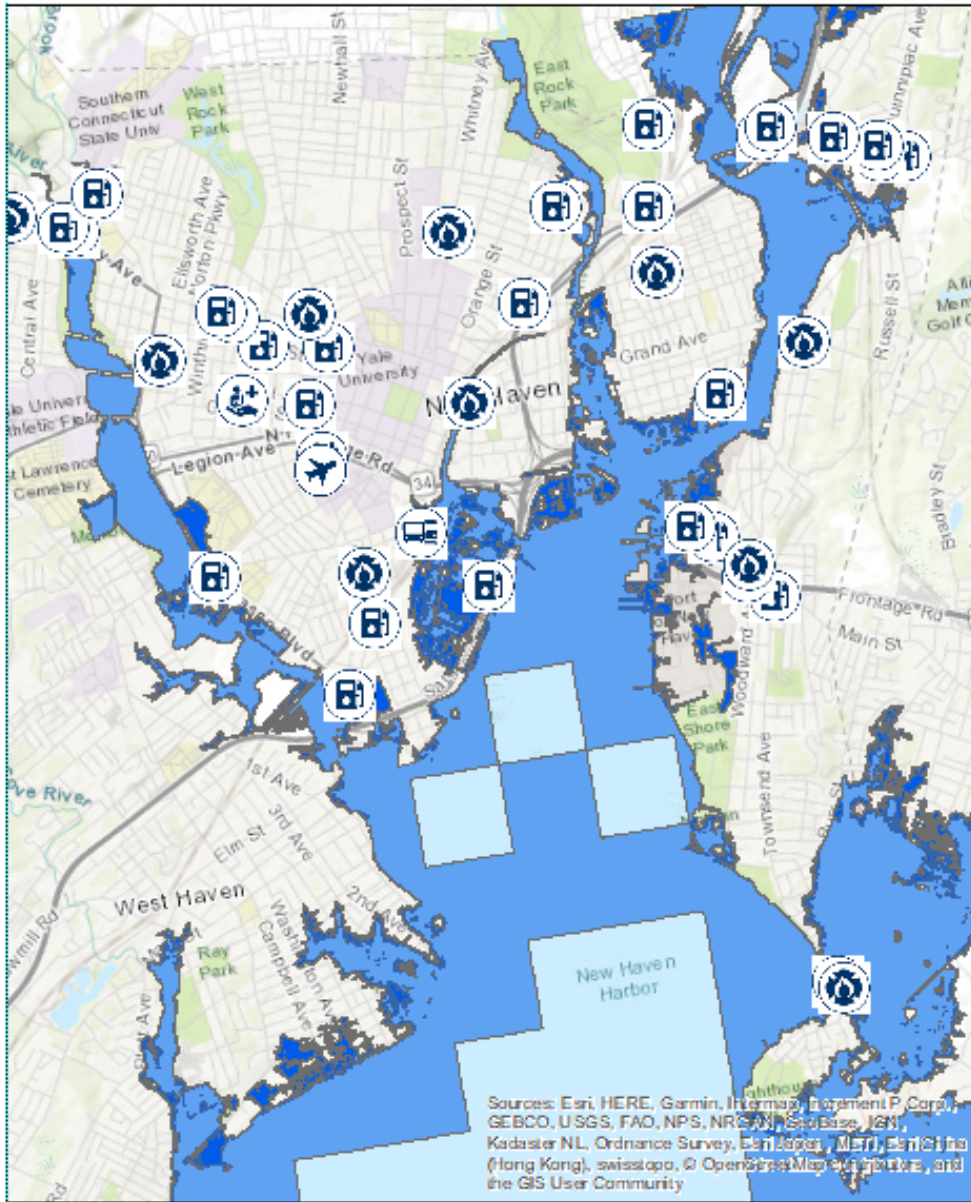
Hazardous Materials



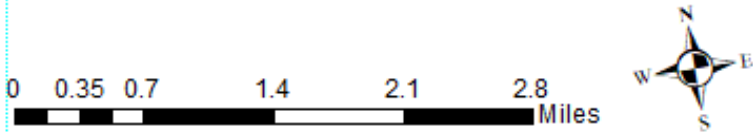
Facilities

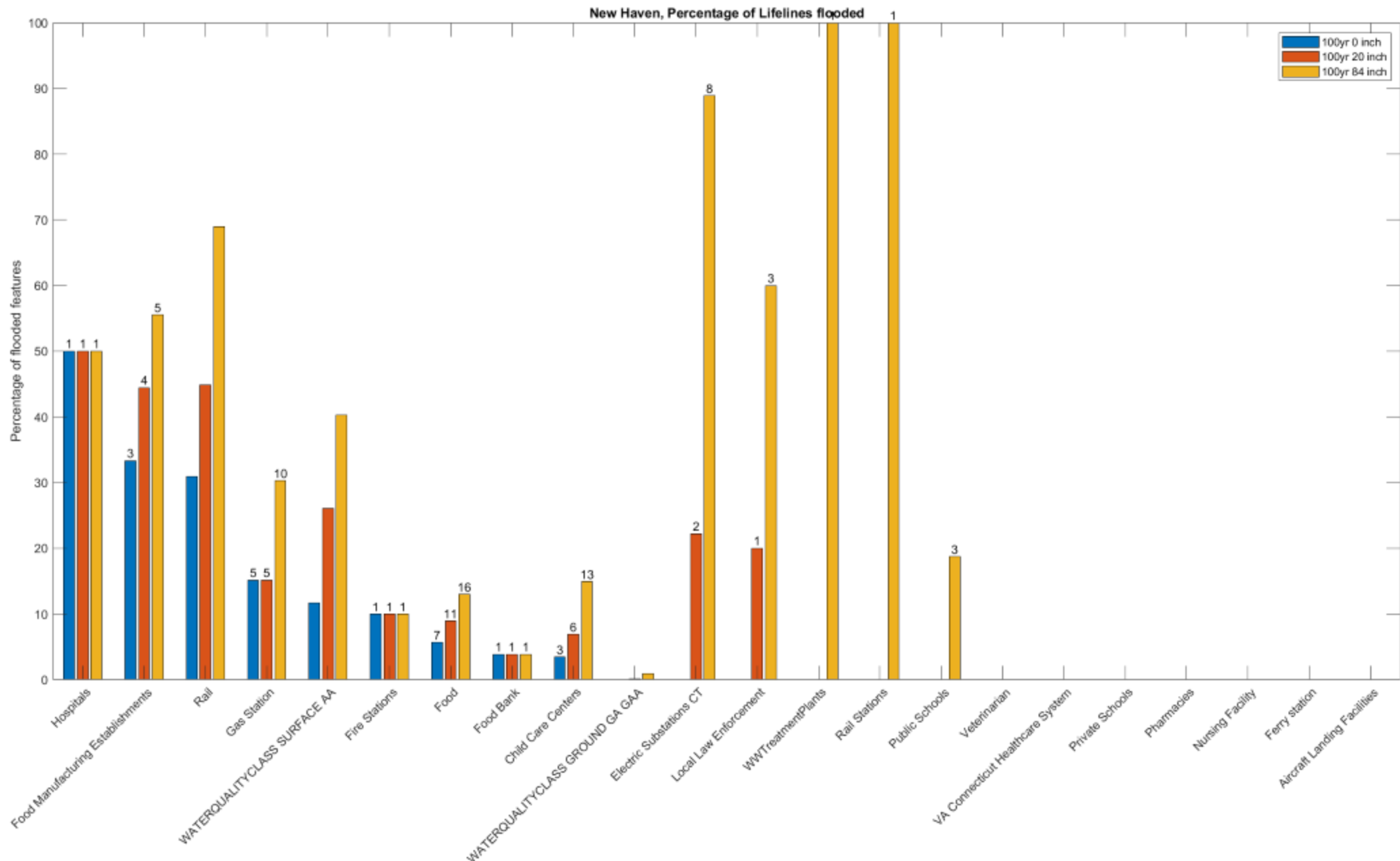


HAZMAT, Pollutants, Contaminants



- Hospital (1)
- Food Manufacturing Establishment (3)
- Rail lines (30%)
- Gas Stations (5)
- Fire Station (1)
- Food market and bank (8)
- Child care centers (3)





Building a Community and Hazards Profile

- What are the characteristics of your community?
- What are the local management problems?
- Which contributing factors you can change?
- Do you need additional assessments to identify priority areas?
- What's exposed to climate threats in your community?
- What have the impacts been to your operations and budget?

Climate Vulnerability Assessment

Climate vulnerability assessment determines which climate impacts are the most pressing issue, what is the exposure, sensitivity and adaptive capacity to the climate indicator.



Heat

Crop field loss and human vulnerability



Biodiversity

Loss of habitat



Coastal

Sea level rise impacts on livelihoods



Health

Pollution and infectious diseases



Infrastructure

Flooding infrastructure impacts



Water

Decreased quality and quantity of water

Expected Timeline for Products

- The coastal vulnerability viewer – April'20
- Zones of Shared Risk – May' 20
- Assessment Report – June' 20
- Effected lifelines viewer
- Climate Vulnerability Assessment - during Phase 2

UConn



Questions?

Enter your questions in the chat box.

