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of Health

# NYSDOH Drowning Epidemiology

## Reducing Drownings Using the Haddon Matrix

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Disclaimer: The findings and conclusions in this presentation are those of the author(s) and do not necessarily represent the views of the New York State Department of Health.

# Overview

- Background
- Process
- Findings
- Prevention
- Questions

# Background

# NYS Drowning Risk



## Drownings at “Regulated” Beaches and Pools

Drownings = Preventable ≠ Accident

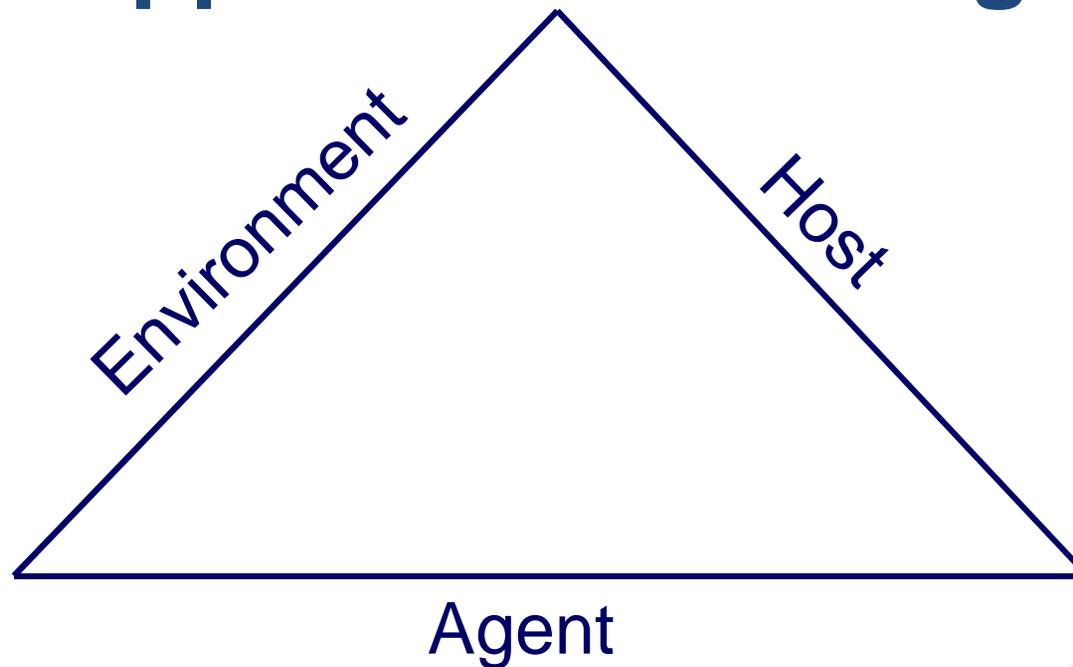
- 1980’s-DOH established policy to investigate & report on drownings
- Applicable to “public” bathing beaches and swimming pools
  - Regulated under State Sanitary Code
    - 1,500 beaches
    - 7,500 swimming pools
- 46 Local Health Departments

# Process

# Process-Overview



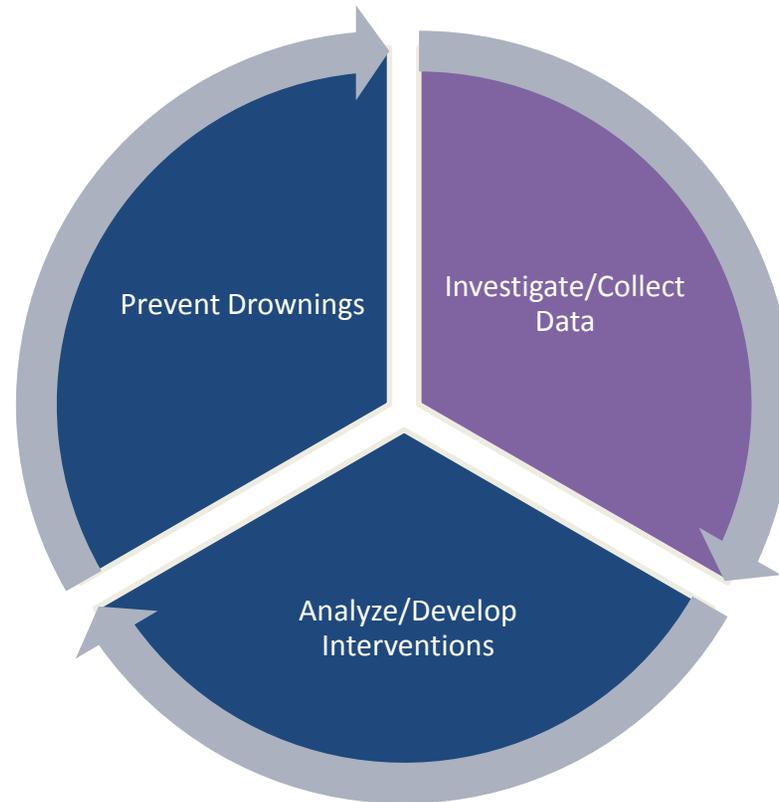
# Epidemiological Model Applied to Drowning



# Haddon Matrix

	Pre-Event	Event	Post-Event
Host			
Agent			
Environment			

# Investigation



# Drowning Investigation

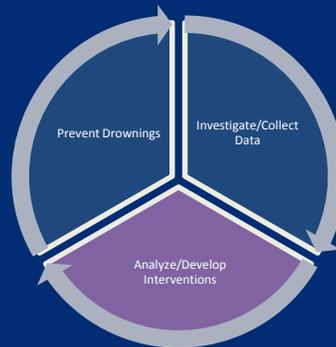
- Facility/Environmental
- Supervision: Quantity/Quality
- Emergency Response
- Interview: Witnesses/Supervisory Staff/Victim Contacts
- Records/Reports

# Investigation Tools

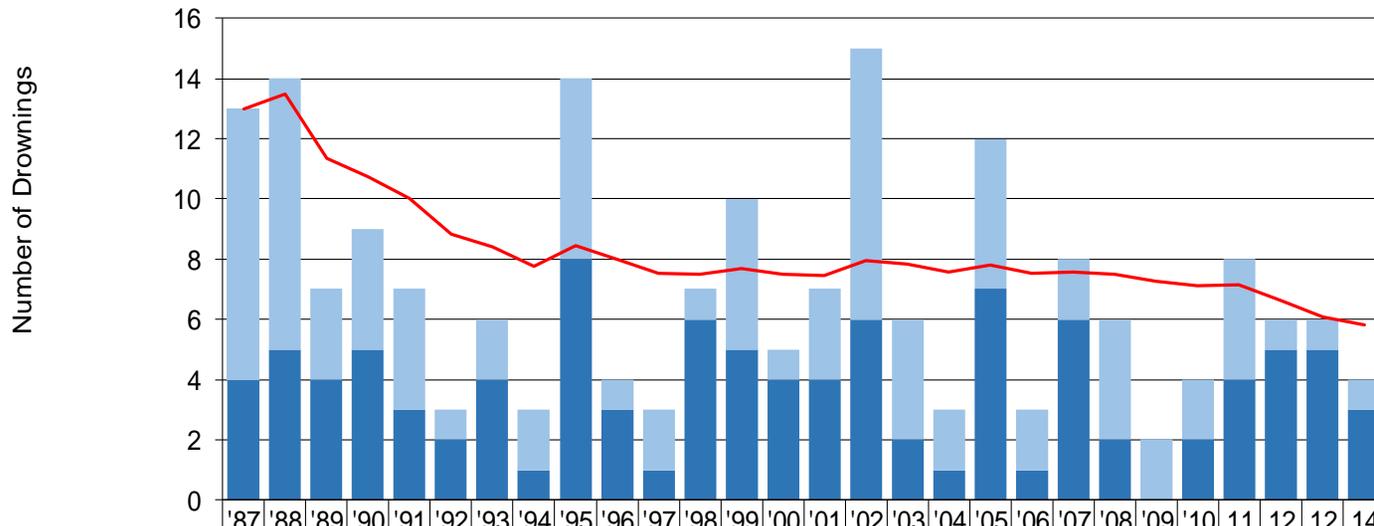
Science/data driven process

- Tools developed/provided to field offices
- Data categorized: environmental, supervision, victim, etc.
- Balance between quantitative and qualitative

# Findings



# NYS DROWNINGS at REGULATED FACILITIES 1987 - 2014



Pool n = 98  
 Beach n = 97  
 N = 195

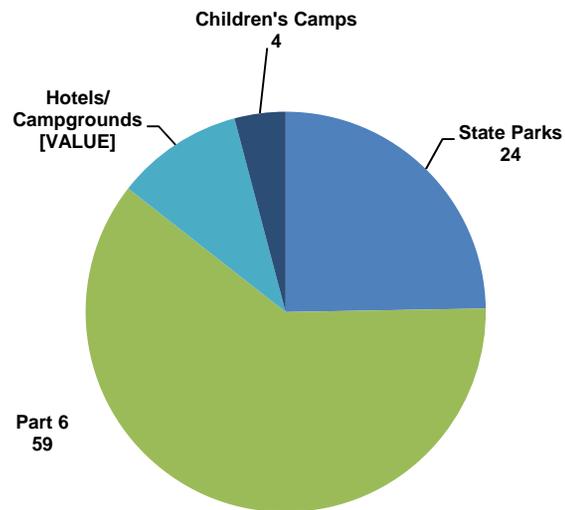
	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'12	'14
Pool	9	9	3	4	4	1	2	2	6	1	2	1	5	1	3	9	4	2	5	2	2	4	2	2	4	1	1	1
Beach	4	5	4	5	3	2	4	1	8	3	1	6	5	4	4	6	2	1	7	1	6	2	0	2	4	5	5	3
Cumulative Mean	13	14	11	11	10	8.8	8.4	7.8	8.4	8	7.5	7.5	7.7	7.5	7.5	7.9	7.8	7.6	7.8	7.6	7.6	7.5	7.3	7.1	7.2	6.6	6.1	5.8

Annual Mean: 7.71

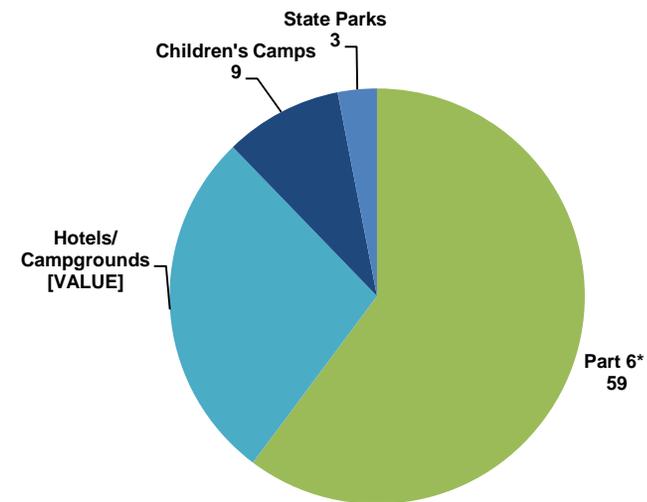
# DROWNINGS at REGULATED BATHING FACILITIES

## 1987 - 2014

Beaches N = 97



Pools N = 98



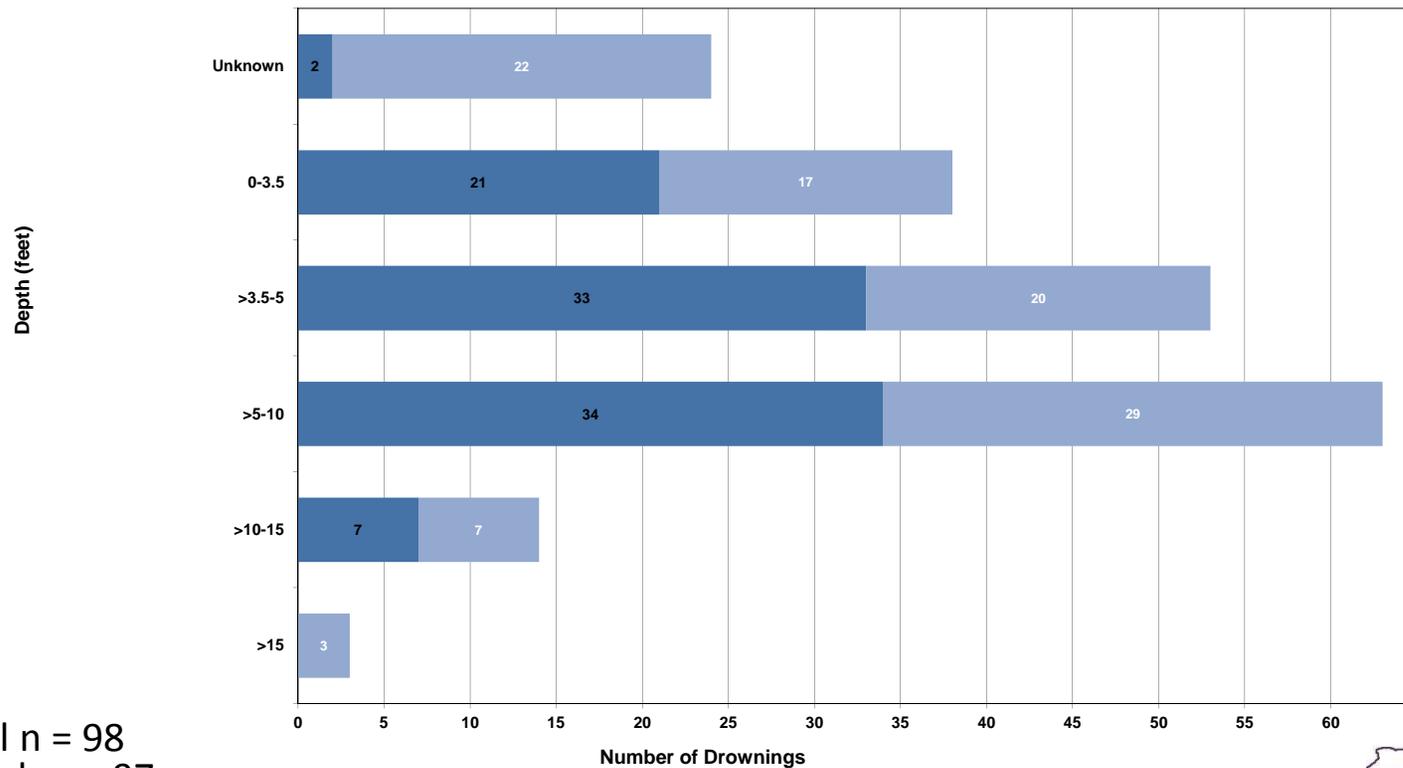
\* Includes: 7 Spas, 5 Phys Ed Classes, 1 Wave Pool, 1 Aquatic Theme Park



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## Water Depth at Location of Submersion 1987 - 2014

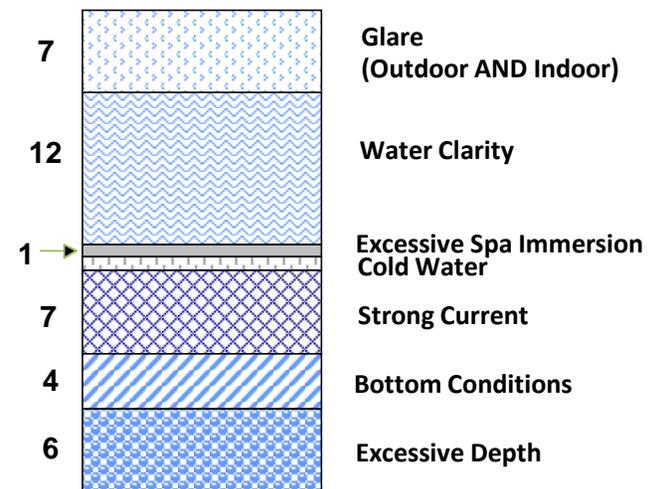
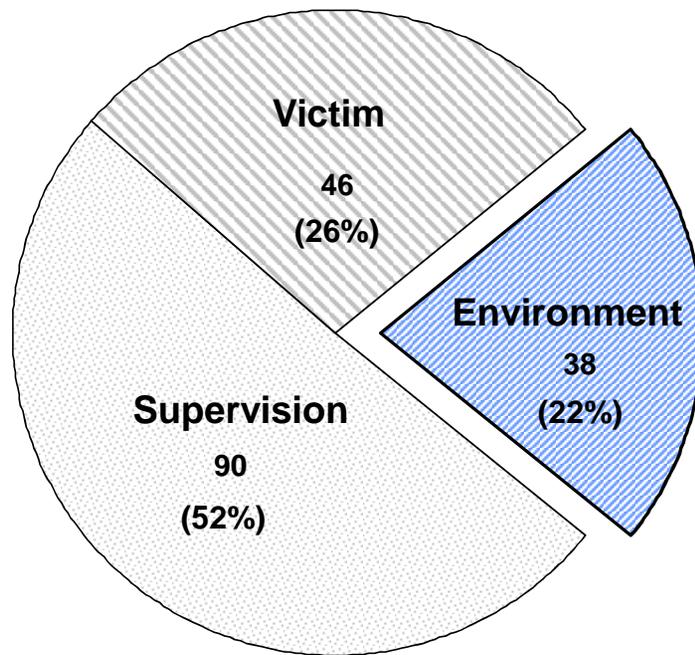


■ Pool n = 98  
■ Beach n = 97  
 N=195



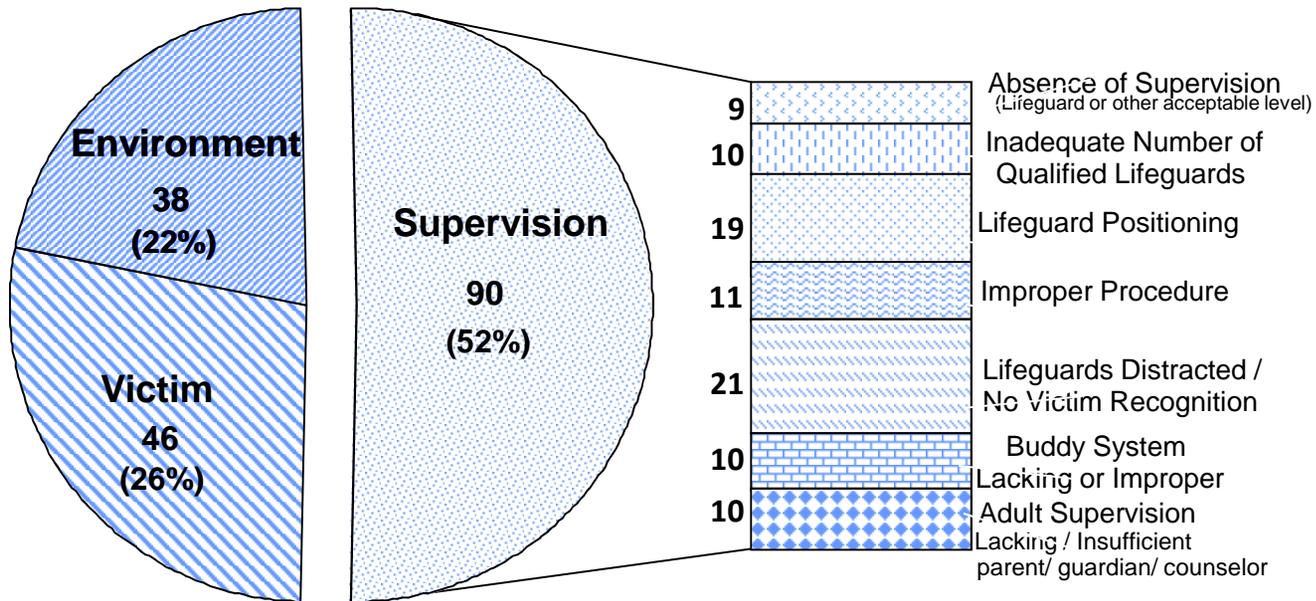
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# Contributing Factors\*: Environment 1987-2001



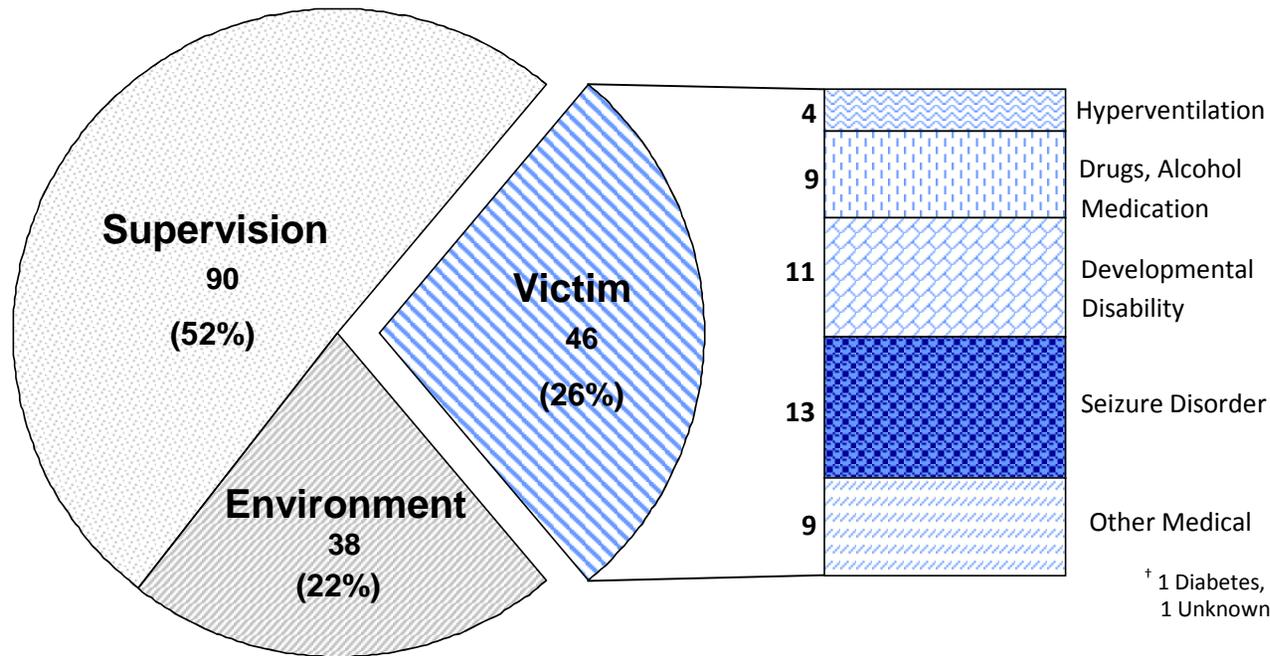
\*174 Contributing Factors Identified in 112 Drownings, 1987-2001

# Contributing Factors\*: Supervision 1987-2001



\*174 Contributing Factors Identified in 112 Drownings, 1987-2001

# Contributing Factors\*: Victim 1987-2001

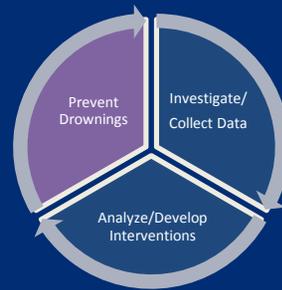


† 1 Diabetes, 7 Cardiac  
1 Unknown event

\*174 Contributing Factors Identified in 112 Drownings, 1987-2001

# Don't Blame the Victim

# Prevention



# Prevention: Pre-event

## Patron Surveillance & Supervision

- Design
- Capacity
- Lifeguard Training
  - Including instinctive drowning response
- Quantity & Positioning of Lifeguards
- Provide Direct Supervision
- Limit Duties

# Prevention: Pre-event

## Patron Surveillance & Supervision

### Risk management plan

- Provides site specific details for drowning and injury prevention
- Including Response to adverse environmental conditions
  - Current
  - Waves

# Prevention: Post-event

## Incident Response

- Training
- Communication
- Treatment

# The Future

Seeking greater precision and resolution of data:

- Enhanced data elements
- Updated field tools
- Future interventions?

# Thank You!

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# Questions?

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