Reducing Drownings Through Epidemiology & Interventions

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Disclaimer: The findings, conclusions and opinions 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/Discussion

Background

NYS Drowning Risk

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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
- Regulations applied by 46 Local Health Departments
  - Facility Design Approval
  - Operational Inspections
  - Required incident reporting

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Process

Process-Overview

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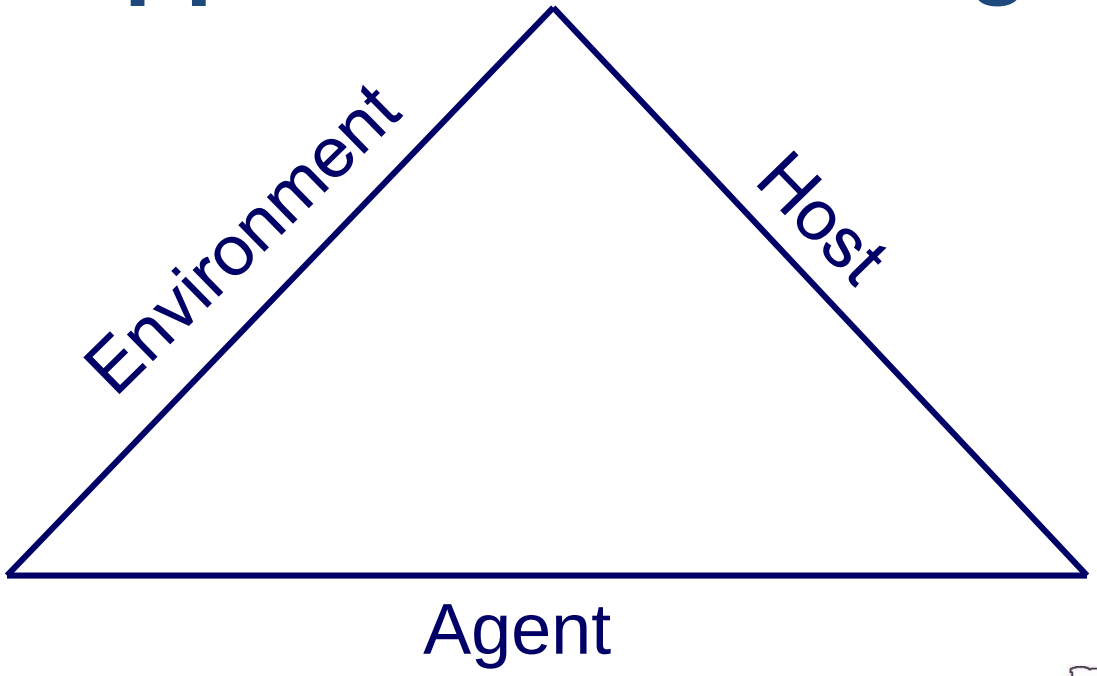
Epidemiological Model Applied to Drowning



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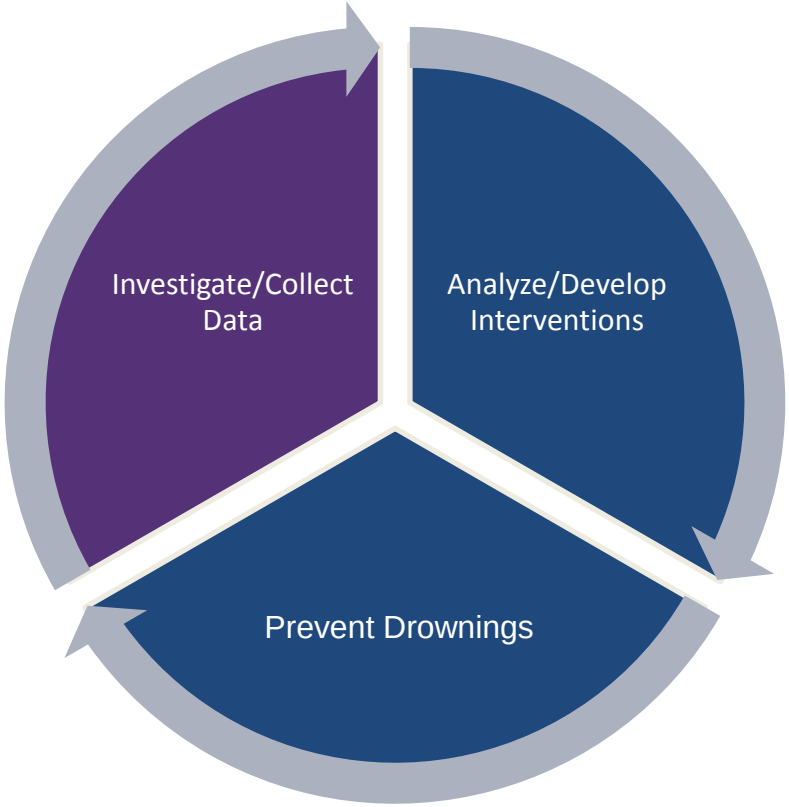
Haddon Matrix

	Pre-Event	Event	Post-Event
Host			
Agent			
Environment			

Investigation



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Drowning Investigation

Investigation Data

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

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Investigation Tools

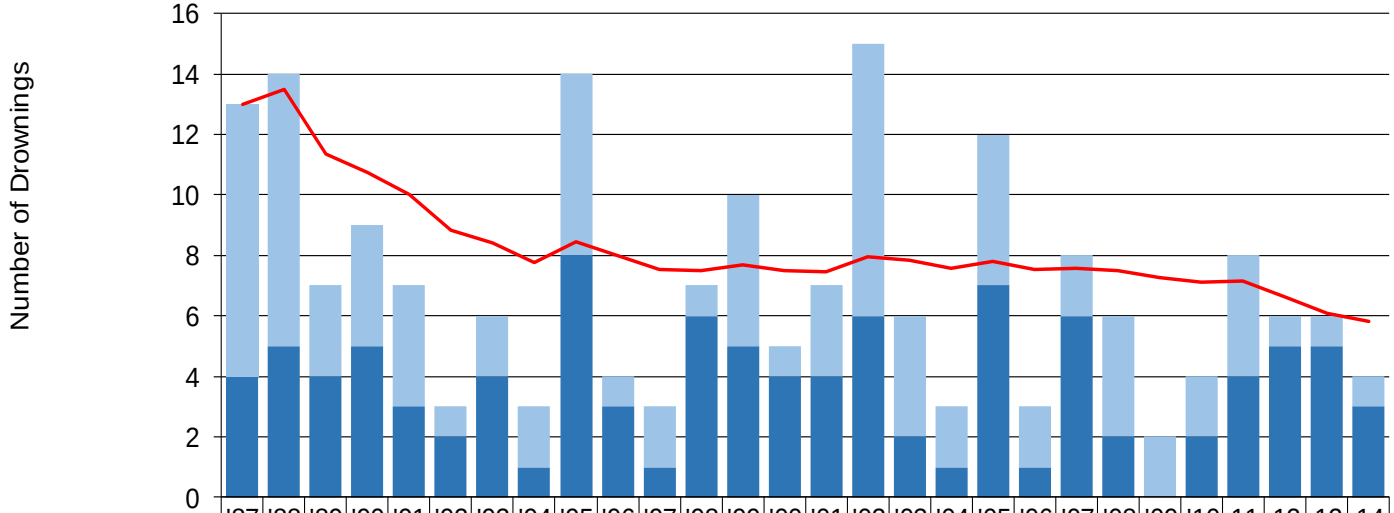
Data collection:

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

Findings

Investigate/Collect Data
Analyze/Develop Interventions
Prevent Drownings

Drownings at NYS Regulated Bathing Facilities 1987 - 2014



	'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

Pool n = 85

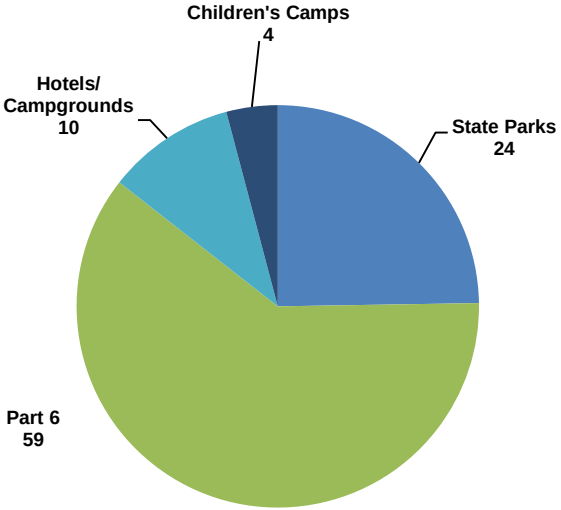
Beach n = 86

N = 185

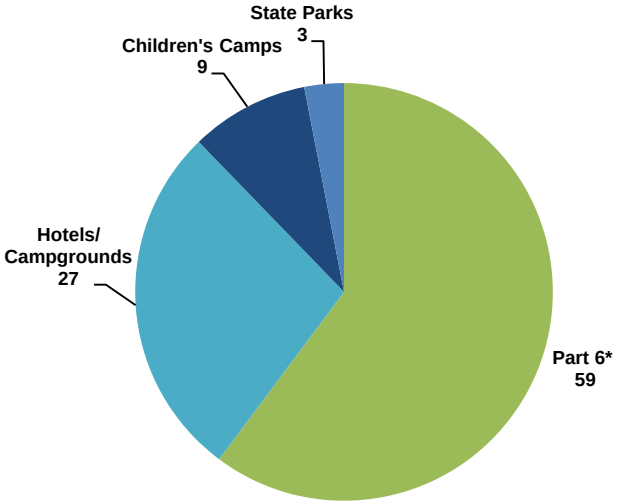
Annual Mean: 7.71

Fatal Drownings at NYS 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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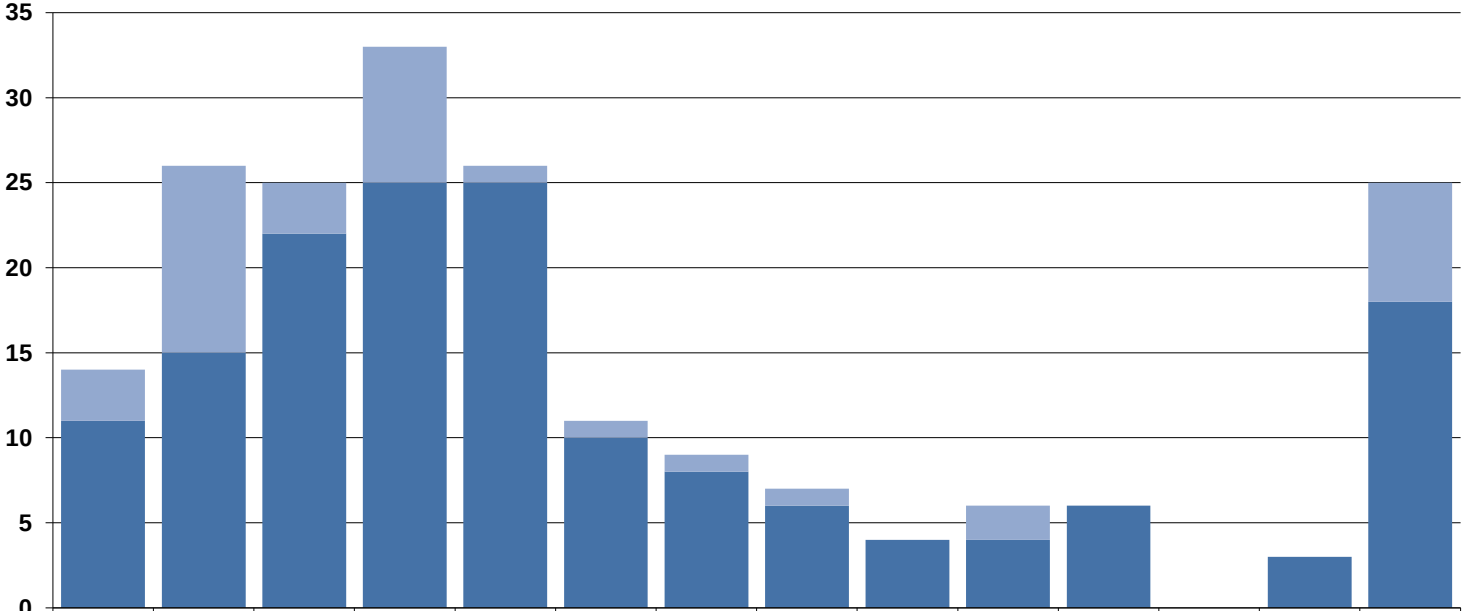
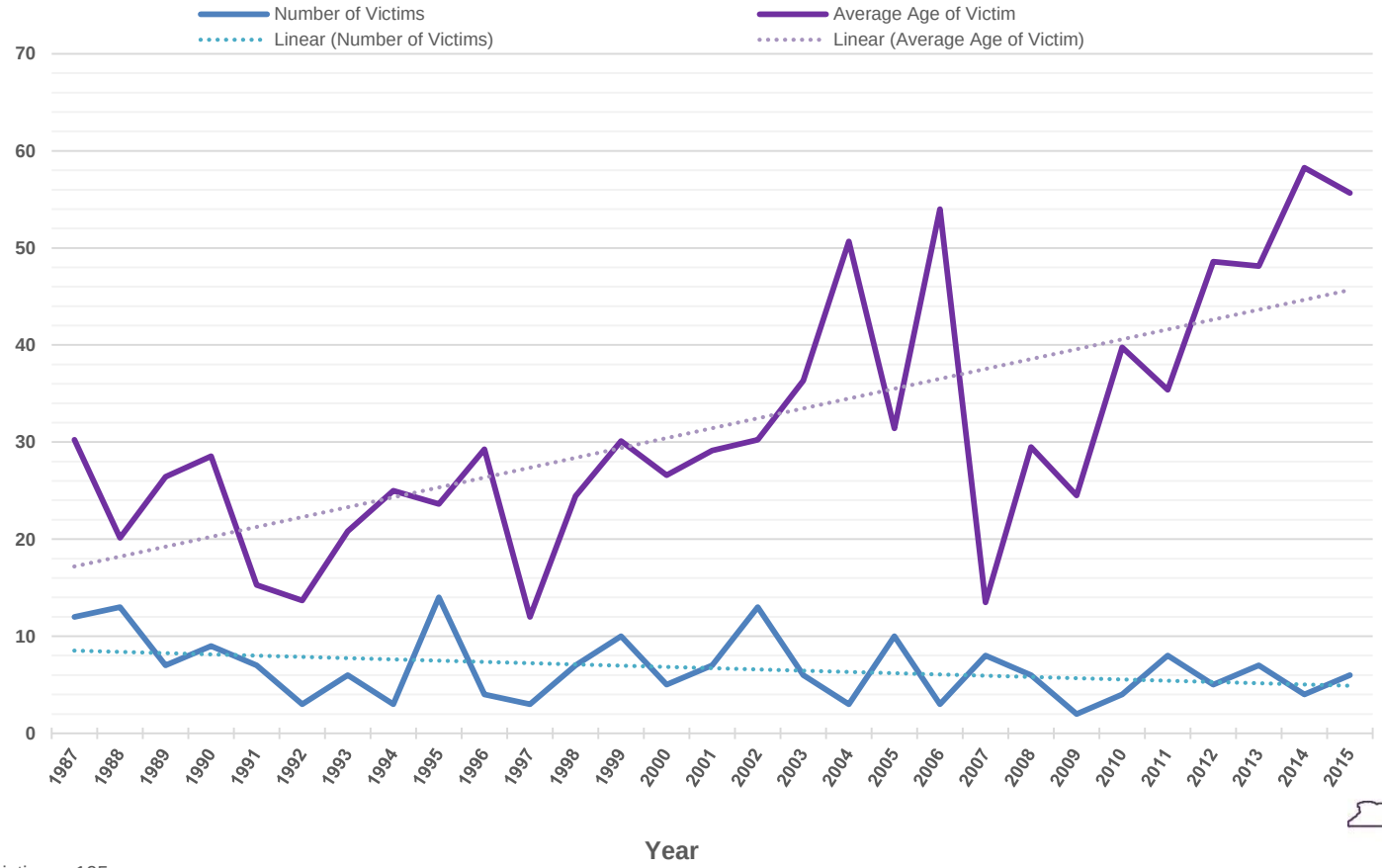
Fatal Drownings NYS Regulated Bathing Facilities: Age and Sex of Victim 1987-2014



	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>66
Female	3	11	3	8	1	1	1	1	0	2	0	0	0	7
Male	11	15	22	25	25	10	8	6	4	4	6	0	3	18

n = 38
n = 157
N = 195

Number of Drowning Victims and Average Age over Time



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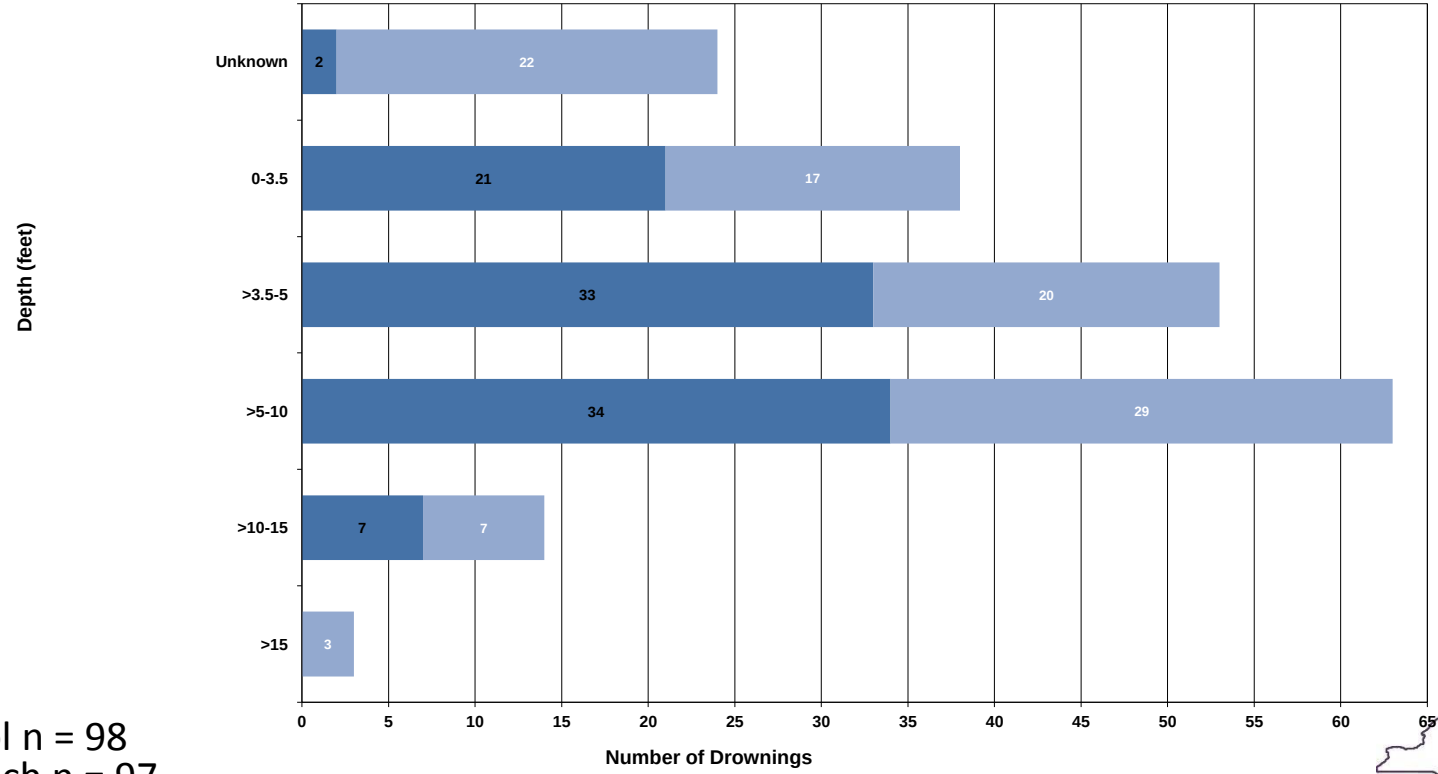
Total victims = 195

Water Depth at Location of Submersion 1987 - 2014



Pool n = 98
Beach n = 97
N=195

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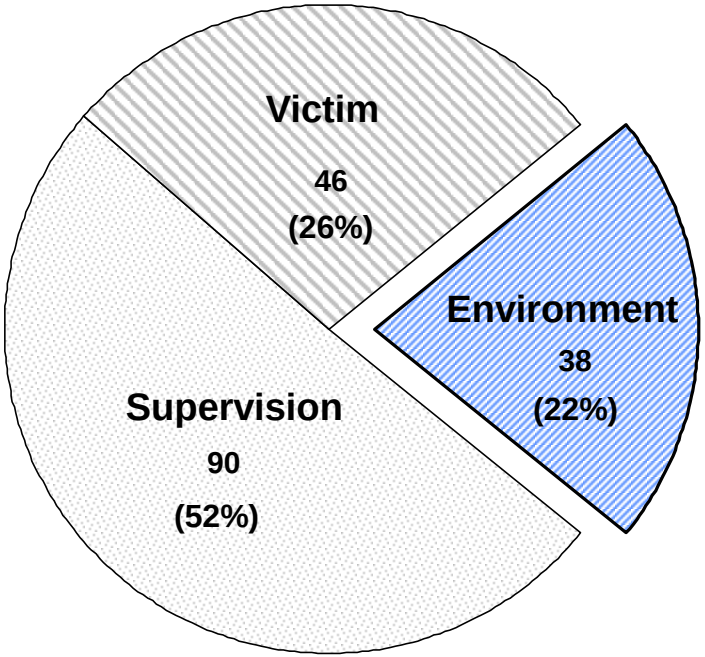
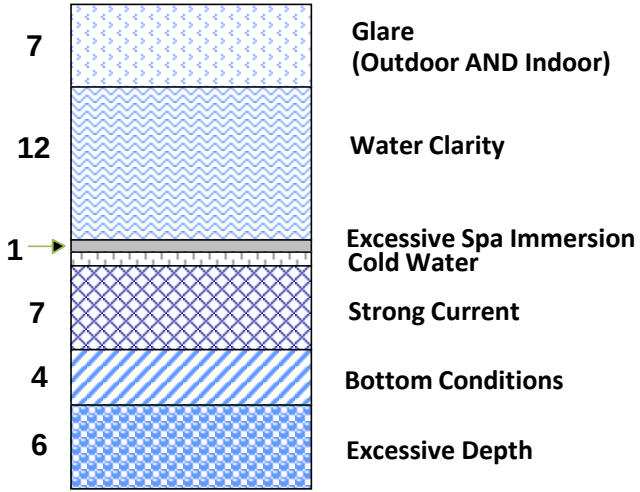
Contributing Factors*: Environment 1987-2001





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

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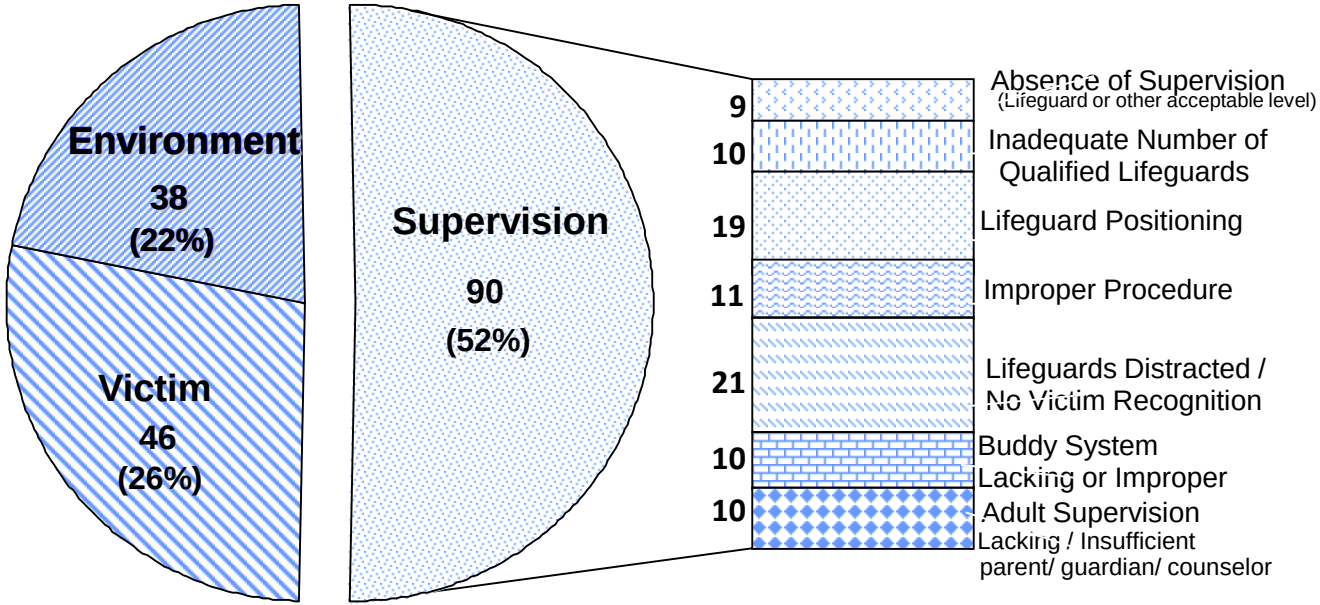
Contributing Factors*: Supervision 1987-2001



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

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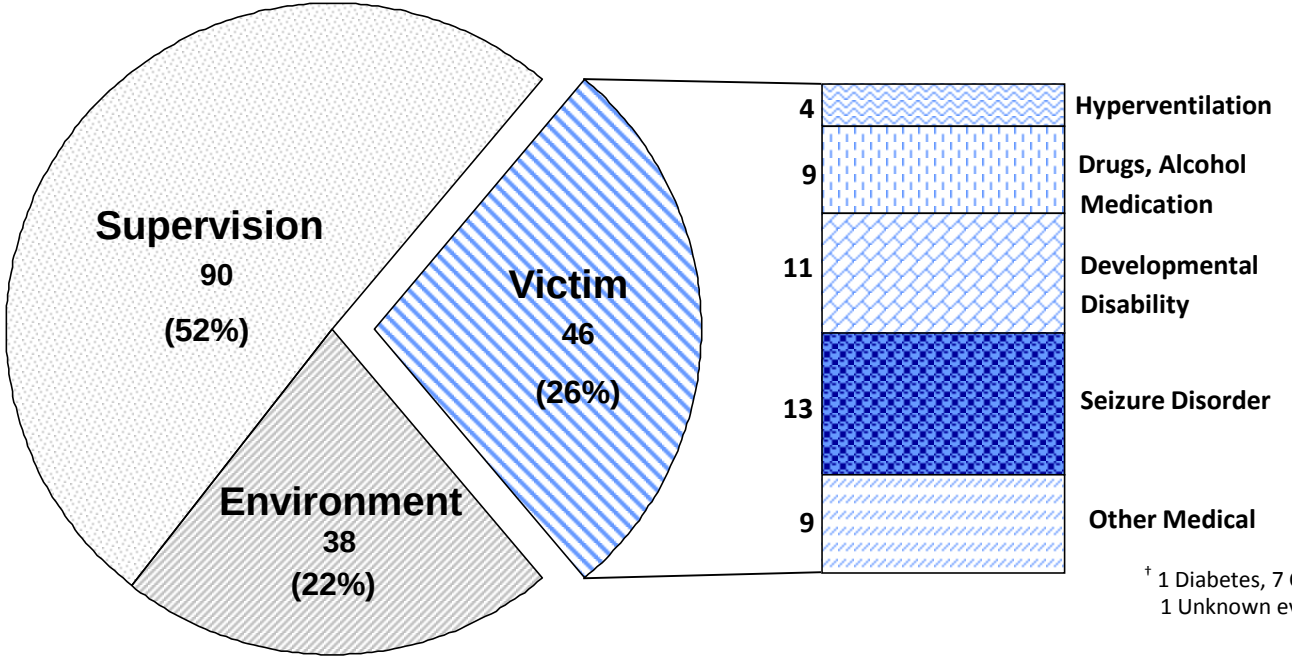
Contributing Factors*: Victim 1987-2001



† 1 Diabetes, 7 Cardiac
1 Unknown event

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

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Don’t Blame the Victim

Prevention

Investigate/Collect Data
Analyze/Develop Interventions
Prevent Drownings

Prevention: Pre-event

Patron Surveillance & Supervision

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

Prevention: Pre-event

Patron Surveillance & Supervision

Risk management plan ("Written Safety Plan")

- Provides site specific details for drowning and injury prevention
- Completed by facility managers
- Reviewed/approved by local health departments
- NYSDOH developed template for operators
  - Content based on known contributing factors

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Prevention: Post-event

Incident Response

- Training
- Communication
- Treatment

The Future

Seeking greater precision and resolution of data:

- Additional multi-variable analysis
- Updated field investigation tools
- Future interventions?

Thank You!

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