



Soft Targets: Assessing Risk & Cost

UNO MBA Capstone Interdisciplinary Team

National Counterterrorism Innovation Technology and Education Center



Meet Your Consultants



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A photograph of the exterior of Baxter Arena. The building has a large, curved, dark grey facade with the words "Baxter ARENA" in red and white letters. There are several blue handicapped parking signs in the foreground. The sky is clear and blue.

Agenda

- Prelude
- Goals
- Methodology
- Findings
- Next Steps

Prelude

This project is a continuation of the ongoing MBA Capstone class analysis and the interdisciplinary teams comprising of

- Business
- Computer Science
- Engineering

This team is tasked with developing a multi-lens perspective on Baxter Arena and how to best predict, prevent, and respond to a terrorist event.

Team One Recommendations

NEXT 3 MONTHS

- Department of Homeland Security Infrastructure Survey Security and Resilience Report
- Updated Emergency Preparedness and Response Plan by Baxter Arena, Omaha Athletics, and UNO/UNMC Public Safety
- Installation of Metal Detection at all Events

NEXT 6-12 MONTHS

- Updated Emergency Preparedness and Response Plan by Baxter Arena, Omaha Athletics, and UNO/UNMC Public Safety
- Risk & Cost Analysis of Report Findings
- Perimeter Study

12+ MONTHS

- Installation of Flower Planters installed around Baxter Arena Main and North Entrance
- Installation of Landscape Boulder Rocks in high traffic areas
- Installation of Bullet Proof Glass added to Box Office Windows
- Installation of an Intercom System with/Camera added to the Box Office during non-event hour
- Designated Holding Area



Team Two Goals

- Develop risk assessment
- Perform cost analysis
- Identify top 5 risks to Baxter Arena
- Create a story telling tool

Methodology

- Two major sources built the foundation
- Resulted in 6-step process

Step 1. **Identification of Assets** – critical pieces of infrastructure for the venue

Step 2. **Identification of Threats** – the types of terrorist attacks that may occur

Step 3. **Assessment of Likelihood** – the chances a threat will occur

Step 4. **Assessment of Vulnerabilities** – factors that could lead to success for the attacker

Step 5. **Assessment of Consequences** – the negative results following an attack

Step 6. **Calculate Risk Score** – derived from the outcomes of each assessment

Assets & Threats

Assets	Threats
Backup Generator	Firearms - Assault
Ammonia Supply & System	Bomb - Assault
Propane Storage	Bomb - IED
Utilities – main electrical, gas, water	Bomb - IED/Drone
	Bomb - IED/Vehicle Ramming
	Vehicle Ramming

*Determined by tour of the grounds
and client input

*Determined by sources, client,
and previous MBA group

Dimensions and Sub-Dimensions of Risk

Likelihood	Vulnerability	Consequences
Frequency	Visibility	Reputation
Comparative Attacks	Criticality	Response
Location	Capacity	Replacement
Ideology	Casualties	Fines
	Adjacent Impact	Productivity
	CBRNE Elements	
	Accessibility	

E.g. *Frequency* = how common is attack type, *Visibility* = is the public aware of the asset, *Reputation* = damage to UNO/Baxter public image

$$Risk = Likelihood(w_L) + Vulnerability(w_V) + Consequences(w_C)$$

Likelihood = .20 Vulnerability = .30 Consequences = .50 **Total = 1**

Example:

Asset	Threat	Asset/Threat Pair	Likelihood	Vulnerability	Consequences	Risk Score
Backup Generator	Vehicle Ramming	Backup Generator + Vehicle Ramming	.35	.56	.60	1.51
Propane Storage	Vehicle Ramming	Propane Storage+Vehicle Ramming	.50	.69	1.00	2.19

Low = 1 – 1.99 Medium = 2 – 2.99 High = 3 – 3.99 Severe = 4

Findings

LOW RISK SEVERITY

RISK SCORE RANGE

LOW – MEDIUM
1.57 – 2.71

FINANCIAL LOSS RANGE

LOW RISK
\$4M – \$18M+

SEVERE RISK
\$55M – \$75M+

MAJOR COST FACTORS

Decrease in enrollment
Repair costs
Medical costs
Insurance costs
Settlement Payouts
Inability to continue operations

Top 5 Risks

1. IED on Ammonia Supply
2. Bomb assault on Ammonia Supply
3. IED on main utilities
4. Bomb assault on main utilities
5. IED assault on propane storage

2.71 / 4

2.66 / 4

2.47 / 4

2.42 / 4

2.39 / 4

Medium Risk

Medium Risk

Medium Risk

Medium Risk

Medium Risk

Next Steps

- Implement proposed mitigation based on combined team findings
- Continuously gather updated inputs as sources become available
- Adjust weights and values based on venue



“The consequence of another terrorist incident would far outweigh the cost of investing in back-up systems, alternative operating locations, and additional protective measures.”

- Michael Chertoff, Former Secretary of Homeland Security

Thank you.

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Soft Targets: Assessing Risk & Cost

Baxter Arena

Our team has determined a risk-scoring method that can be applied to Baxter Arena and other venues on and off UNO's campus. This model aims to give a numerical risk value to terrorist events based on the venue's critical infrastructure ("assets"), mode of attack ("threats"), and the consequences, both direct and indirect.

Assets

To determine the most plausible attacks, identify assets that are critical to operations. Baxter's are:

- Backup Generator
- Ammonia Supply and System
- Propane
- General Utilities

Threats

To protect against a potential event, mode of attacks are important to consider. This model considers:

- Firearms
- Bomb used in assault
- IED
- IED via drone
- IED via vehicle ramming
- Vehicle ramming

Dimensions & Ranking

Pair each asset to each threat to determine potential attacks. Dimensions to consider for each pair and rankings are

- | | |
|------------------------------------|--------------|
| • Likelihood of threat | • Severe (4) |
| • Vulnerability of asset | • High (3) |
| • Consequences (direct & indirect) | • Medium (2) |
| | • Low (1) |

For each dimension, there are multiple sub-dimensions for maximum accuracy of scores.

Calculation

To calculate the Risk Score, take the weighted average of the three dimensions and multiply them.

$$\text{Risk} = \text{Likelihood (wl)} \times \text{Vulnerability (wv)} \times \text{Consequences (wc)}$$

Weight designation

- Likelihood 20%
- Vulnerability 30%
- Consequences 50%

Results

IED/bomb on ammonia supply **2.71**

Bomb/attack on ammonia supply **2.66**

IED/bomb on utilities **2.47**

Firearm attack on utilities **2.42**

IED/bomb on propane storage **2.39**

Findings

In terms of total impact on both operations and cost, bomb attacks rank the highest. A bomb going off inside the venue would cause maximum loss of life and destruction to critical infrastructure. The ammonia system is especially high-ranking because it is a highly flammable chemical and needed for refrigeration of ice. If the ice melts or the ammonia leaks to the exterior, people and infrastructure outside are also at increased risk of harm. The general utilities are crucial for the functionality of Baxter arena including phones, security cameras, and keycard readers that are all run on electricity and the internet. Propane is also a power source for Baxter and is kept outside with little protection.

Next Steps

- NCITE and Baxter arena should implement the proposed mitigation techniques proposed by the combined team findings including updating the emergency preparedness plan, installation of metal detectors, and implementation of exterior barriers.
- The risk scoring model that is demonstrated here will need to continually be managed to account for changes to Baxter's security measures, assets, and evolving threats.
- If the model will be used for other buildings, the weight designations and sub-dimensions will need to be catered to the unique needs of the building.