Vehicle as a Weapon (VAW) Attacks

Ammundeep Tagore MD

New Year's Day Ramming in New Orleans

- Ford Truck used as VAW

- 15 Killed

- 35 Injured

History of Attacks

- 1973 Olga Hepnarová case, Czechoslovakian woman using a truck to go on a rampage; 8 dead, 12 injured.

- 1983 Douglas Crabbe drove a 25-tonne Mack truck into the crowded bar of a motel at the base of Uluru on 18 August 1983. Five people were killed, and sixteen were seriously injured.

- 1999 Shimonoseki Station massacre (ramming and stabbing)

- 2001 Azor attack (8 dead, 26 injured)

- 2004 Colorado USA Marvin Heemeyer, aka KillDozer attack (severe property damage, perpetrator dead by suicide)

- 2006 UNC SUV attack, 22 year old Mohammed Reza Taheri-azar intentionally hit people with an SUV (no deaths, 9 injured)

- 2008 Jerusalem front-end loader attack (3 killed, 30 injured)

- 2008 Jerusalem BMW attack (19 injured)

- 2009 attack on the Dutch royal family (ramming people, attempt to attack the Dutch royals including the reigning monarch; 8 killed)

- 2011 Tel Aviv truck attack(1 dead, 17 injured)

- 2013 Tiananmen Square attack (5 dead, 38 injured)

- 2014 Isla Vista killings (vehicle ramming, stabbing, and shooting attack)

- 2014 Dijon attack, France (ramming people)

- 2014 Nantes attack, France (ramming people)

- 2014 Saint-Jean-sur-Richelieu ramming attack, Quebec,Canada. (1 killed, 1 severely injured)

- 2014 October 2014 Jerusalem vehicular attack (one child, one adult killed,7 injured)

- 2014 November 2014 Jerusalem vehicular attack (3 dead, 13 wounded)

- 2014 Jerusalem tractor attack (1 killed, 7 injured)

- May 2014 Ürümqi attack (43 dead, 90+ injured)

- 2015 Saint-Quentin-Fallavier attack, France (ramming people, stabbing and bombings; 1 killed, 2 injured)

- 2015 Weifang attack (ramming people). 5 dead, 21 injured

- 2015 Shuozhou attack (ramming people)

- 2016 Nice truck attack, France (86 killed, ramming people and gunfire).

- January 2017 Melbourne car attack, Australia, (6 killed, 28 injured, 1 stabbed before).

- 2017 Jerusalem truck attack (4 dead, 17 injured)

- 2017 Finsbury Park van attack (1 dead, 11 injured)

- 2017 Westminster attack (6 dead, 48 injured)

- 2017 Stockholm truck attack, Sweden (5 killed, 15 injured seriously).

- 2017 London Bridge attack ramming and stabbing attack. (8 killed, 48 injured)

- June 2017 Champs-Élysées car ramming attack, Paris, France (ramming a police car; 1 attacker killed)

- 2017 Levallois-Perret attack, Levallois-Perret, France (ramming soldiers; none killed)

- 2017 Barcelona attacks, Barcelona, Spain (ramming, stabbing and bombings; 16 killed 152 injured)

- 2017 Charlottesville attack, during the Unite the Right rally in Charlottesville, Virginia, United States (ramming people; 1 killed, 35 injured)

- 2017 Edmonton attack, Canada

- 2017 New York City truck attack, 8 killed and 13 injured.

- 2018 Mishui vehicle attack China (15 dead, 43 injured)

- 2019 Tokyo car attack (no fatalities, 9 injured)

- 2018 Toronto van attack (ramming people; 11 killed and 15 injured)

- 2020 Paris car attack, a 29-year-old French-Moroccan driver who had pledged allegiance to Islamic State rammed his car into two police motorcyclists in a Paris suburb.

- 2021 Waukesha, Wisconsin Christmas parade attack, 39-year-old Darrell Brooks drove into a Christmas parade (6 killed and 62 injured).

- 2023 Ramot Junction attack (3 killed, 4 injured)

- 2024 Zhuhai car attack, a 62-year-old man drove into a crowd outside sports center (35 killed and 43 injured).

- 2024 Changde car attack, a 39-year-old man drove into a crowd outside a primary school when students were going to school in the morning (30 injured including 18 students)[43]

- 2024 Magdeburg car attack, a 50-year-old Saudi Arabian citizen who came to Germany in 2006 drove into a crowd at the Magdeburg Christmas market (at least 5 killed, 200+ injured)

- 2025 New Orleans truck attack, a man drove a vehicle into a crowd on New Year's Day at around 3 am (15 killed, 35 injured)[46]

Terrorists Use Vehicles in 3 Main Ways

Vehicle Borne Improvised Explosive Device (VBIED)

Vehicle As a Weapon (VAW)

Layered Attack Vehicle - transporting attackers and/or weapons

VAW Attacks on the Rise

- Remotely inspiring operatives rather than recruiting them
- Requires little skill and little to no preparation/planning to perpetrate
- Less likely to be detected in planning phase
- Ease to target large crowds and outside gatherings
- Affordable
- Cars and trucks are widely available
  - Owned
  - Borrowed
  - Leased
  - Stolen
  - Hijacked
- Potential to cause significant casualties
- Insight fear, panic, and widespread alarm

Using Global Terrorism Database (Univ of Maryland)

- 78 attacks between 1973 – 2018
  - Focus was on specifically VAW to large crowds with no specific target

- 281 Deaths
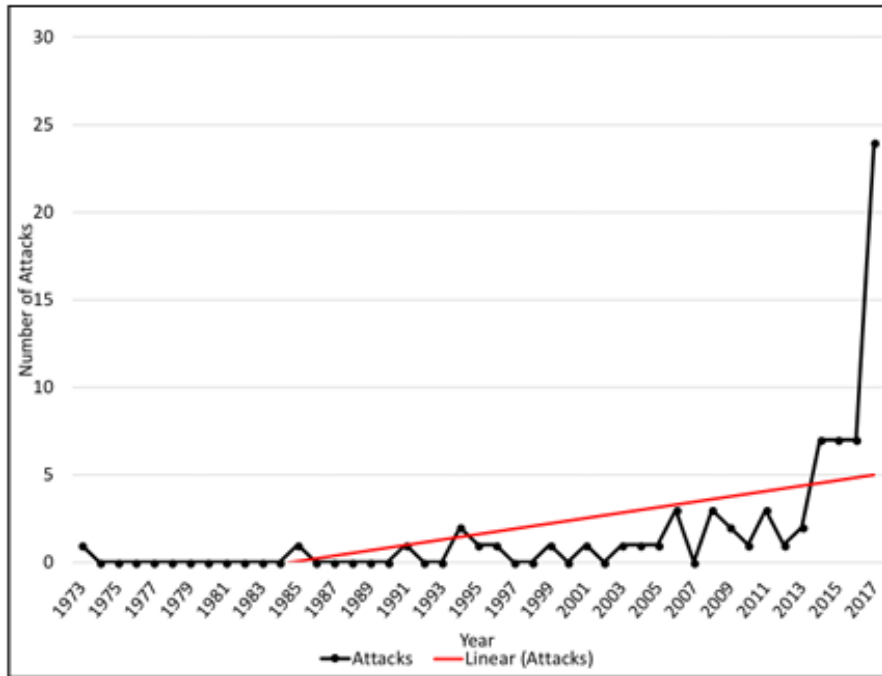
- 1200 Injuries

Trends & Frequency
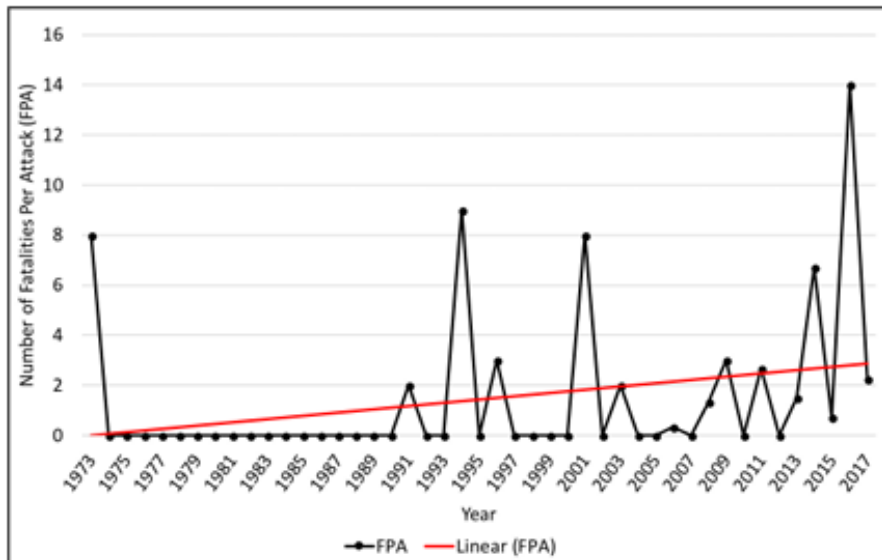

Figure 1: Vehicle Rammings Over Time, 1973-2017

Figure 2: Vehicle Ramming Lethality Over Time, 1973-2017

More frequent

More lethal

16 attacks between 1973 – 2007

62 attacks between 2008 - 2018

Global Prevalence

Table 3: Vehicle Attacks and Fatalities, by Country, in Order by Fatality Per Attack

Country	# Attacks	# Fatalities	FPA[a]
China	3	52	17.3
Haiti	2	18	9.0
France	10	88	8.8
Czechoslovakia	1	8	8.0
Spain	2	15	7.5
Germany	2	14	7.0
Netherlands	1	6	6.0
Canada	2	10	5.0
Australia	1	5	5.0
Sweden	2	7	3.5
United Kingdom	5	12	2.4
Israel	14	26	1.9
Austria	2	3	1.5
United States	13	12	0.9
West Bank and Gaza Strip	14	5	0.4
Belgium	1	0	0.0
Ireland	1	0	0.0
Japan	1	0	0.0
Sri Lanka	1	0	0.0
Summary	*78*	*281*	*3.6*

[a] Fatalities per attack.

Where are Attacks Occurring?
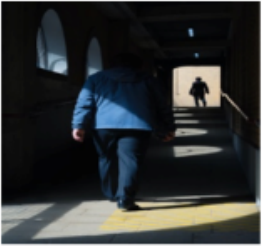
Table 11: Target Groups by Frequency of Attacks

Target Group	# Attacks	# Fatalities	FPA
Bus Stations or Stops	18	22	1.2
Public Streets - Vehicle Access	15	25	1.7
Public Streets - Pedestrianized	10	34	3.4
Public Gathering - Demonstration, Other	5	110	22.0
Medical Facility	4	0	0.0
Religious Institution (or Guards protecting them)	4	0	0.0
Public Gathering - Market (religious or open)	3	55	18.3
Public Streets - Pedestrianized & Vehicle Access	3	17	5.7
Train Stations and Stops	3	10	3.3
Buses	3	5	1.7
Military or Police Forces protecting a public street	3	2	0.7
Area outside Public Building	3	1	0.3
Entertainment	2	0	0.0
Public Road Infrastructure	1	0	0.0
Public Stores	1	0	0.0
Summary	*78*	*281*	*3.6*

ᵃ Fatalities per attack.

Parked

A vehicle may be parked close to an asset or inside the perimeter of a site or event space. The vehicle may be parked legitimately, illegally or without the land-owner or event organiser's consent. It may be deliberately parked repeatedly to create familiarity.

The vehicle may be abandoned or remain occupied for a short or considerable amount of time prior to the time of attack.

Unsecured parked vehicles within or outside a protected area may be utilised by the attackers.

Encroachment

A hostile vehicle may be able to exploit gaps in:

- An urban/rural landscape or perimeter protection
- Drive slowly through or over what is perceived to be a perimeter or series of obstructions
- Closely tailgate a legitimate vehicle through a single layer Vehicle Access Control Point (VACP)

Penetrative

A vehicle may be used at low or high speed to weaken and/or breach through security measures. A penetrative attack could result in an IED detonating in or close to an asset or a hostile vehicle entering a crowded place. Lower speed attacks may involve the vehicle being aggressively and repetitively rammed against security measures or other obstructions to gain access.

Terrorists Exploits to Overcome Security

Deception

- Trojan Vehicle: The vehicle may be modified to replicate a legitimate vehicle. The vehicle may look familiar: make and model, registration number, livery.
- The occupant(s) of a vehicle may use pretence to gain site access. The occupants may lie, or use forge/stolen documentation to gain access, use disguises to appear genuine or try to distract/confuse the security officer(s) to gain access.
- Unknowing mule: a legitimate driver unknowingly delivers a hidden IED, firearms, weapons and/or attackers into a protected area.

Duress/Coercion

A security officer at a Vehicle Access Control Point (VACP), a legitimate driver or other person could be forced to facilitate hostile access into a site. They or others known to them may be threatened with violence. They may be placed under undue influence through mental pressure e.g. bribery or blackmail.

Insider

A person with legitimate access willingly facilitates an attack by operating the security measures locally or remotely, managing or issuing access rights or tampering with the security measures.

Tamper/Sabotage

With the intent of leaving no evidence, this attack facilitates hostile vehicle access at a later time. This may involve altering, weakening, or disabling a barrier and/or associated security systems. This may be a physical or cyber attack that occurs gradually over time or immediately before an attack. An aggressive physical attack on the barriers at or just before may facilitate a fast-moving attack.
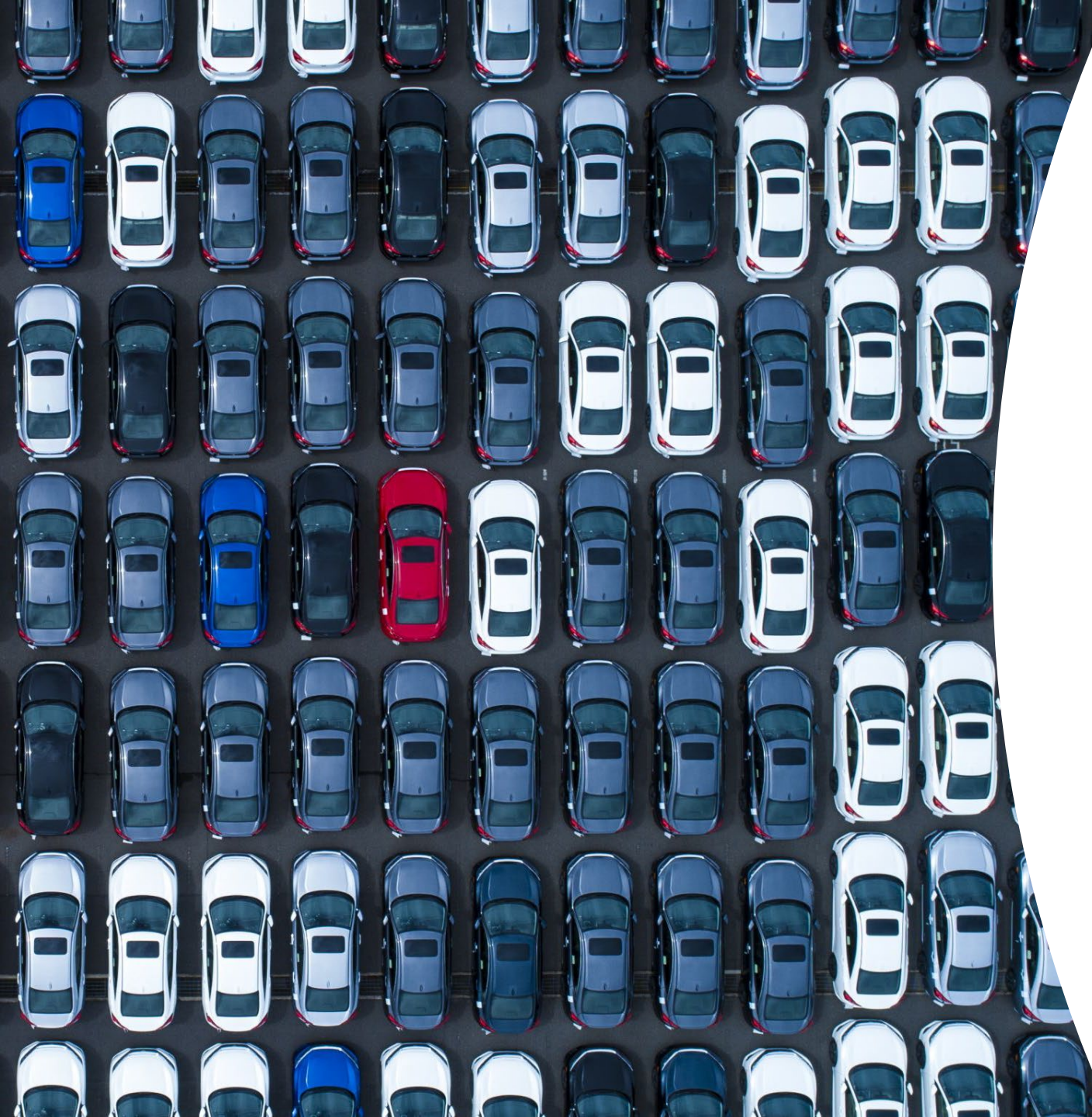
Hostile Vehicle Mitigation

- Protective security discipline focusing on reducing risks associated with vehicle borne threats posed by terrorists and criminal

- Integrated deployment of security processes, procedures and physical obstructions to counter vehicle borne threats

Hostile Vehicle Mitigation Measures

- They include
    - Deterrent communications
    - Security awareness
    - Incident response planning and training
    - Operational security
    - Traffic management and the deployment of physical obstructions
        - Vehicle security barriers
        - Traffic calming measures.

Assess Strengths & Vulnerabilities of Your Site

- Develop detailed security requirements for HVM
- User Requirement Document (URD)
  - Addressing additional business needs e.g. stakeholder liaison, planning and design
- Practical site assessment
  - Vulnerabilities and opportunities in the environment, operational and physical security measures.
- Technical assessment
  - Vehicle Dynamics Assessment (VDA)
- Liaison with technical or security experts

Reducing Vulnerability

- Principles of hostile vehicle mitigation
  - Determine the aims of the HVM strategy and how it will integrate with other site security measures.

- Traffic calming
  - Used to limit vehicle approach speeds to a manageable level.

- Vehicle Security Barriers (VSB)
  - Provide proven vehicle impact protection and maintain blast stand-off.

- Traffic management –
  - When and how legitimate traffic will access the site.

- Vehicle access control
  - Consider deployment of active VSB solutions, access procedures, long term operational management and emergency access.

The Cybersecurity and Infrastructure Security Agency (CISA) provides the critical infrastructure community with access to a Vehicle Ramming Self-Assessment Tool to evaluate potential vulnerabilities to a vehicle ramming attack. Leveraged as part of a comprehensive security strategy, the tool can inform cost-effective decision-making and support security capacity-building efforts. This is particularly important for public gathering locations and in preparation for special events.

The use of a vehicle as a weapon in an attack is not new. International and domestic violent extremists promote the use of vehicles as a weapon because it requires minimal capability and can have a devastating impact in crowded places. In many circumstances, there are few or no observable indicators, which makes detecting a potential vehicle ramming attack plot more difficult. **According to the Homeland Threat Assessment[1] published in October 2020 by the Department of Homeland Security, vehicle ramming remains among the more probable attack methods in the United States.**

Although there are currently no credible or imminent threats to critical infrastructure or special events, CISA recommends that owners / operators leverage the tool to determine potential vulnerabilities and identify corresponding risk mitigation solutions.

What is it?

The Vehicle Ramming Self-Assessment Tool is a web-based resource comprised of a series of simple questions that evaluate various components of a facility to assess potential vulnerabilities to a vehicle ramming attack. Based on responses, the tool provides recommended actions to reduce risk; it also includes access to a multitude of informational resources.

Does the tool collect my information?

The tool is a standalone, downloadable resource that does not collect or store users' information. Once downloaded, the tool is fully operational solely on the user's computer.

Can I save my data?

Users can export data several ways to help document a plan of action to address identified vulnerabilities.

How does the tool work?

The tool contains a series of questions relating to the location of a facility and its accessibility. As users input answers to simple questions, the tool generates risk ratings for each area of interest. A prioritization scale is leveraged to allow the user to address areas of most consequence in sequence. The tool also allows users to develop a risk mitigation strategy based on selected vulnerabilities and corresponding protective measures.

How can I access the tool?

Use the QR code or visit cisa.gov/vehicle-ramming-attack-mitigation to access the tool and other related resources.

[1] dhs.gov/publication/2020-homeland-threat-assessment

Thank you!

Questions?