



Vehicular Terrorism – Attack Trends and Prevention Measures

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Firearms, improvised explosive devices (IEDs) and knives have long been the weapons of choice for terrorists, but in what has become their latest warfare tactic motor vehicles are being weaponized as their instruments of attack against pedestrians. During the 2016 – 2017 period, for example, in Western Europe, the United States, and Canada, based on a rough estimate, 12 of the 27 multiple-casualty terrorist attacks, in which two or more casualties were inflicted, have employed trucks, vans or cars that are intentionally driven into public crowds, sometimes over long stretches before the attacks are terminated, usually through crashes. At times, the attackers' violence continues when they flee their vehicles and inflict further damage on pedestrians, usually through stabbings.

This type of "vehicle ramming terrorism" is defined as utilizing a vehicle as a direct means of killing people for extremist political objectives. This differs from employing car bombs in which vehicles are used as platforms for detonating IEDs in an attack. In the United States, for example, the last instance in which a terrorist attempted to detonate a car bomb in a public place was Faisal Shahzad's unsuccessful attack on May 1, 2010 in Times Square, where the explosives on his SUV had failed to detonate.

The use of vehicular ramming tactics in a terrorist group's warfare, while long used in conflict zones such as the Middle East and elsewhere (with countries such as Afghanistan, Iraq, and Israel subjected to vehicular ramming and car bombing attacks for several decades), is relatively recent in the West, including the United States. In the U.S., the first car ramming attack after 9/11 took place on March 3, 2006 when Mohammed Reza Taheri-azar, an Iranian-American, intentionally rammed his sport utility vehicle (SUV) at the campus of the University of North Carolina (UNC) in Chapel Hill, injuring nine persons. This car ramming attack and other such attacks around the world, led the FBI and DHS to issue a co-authored report in December 2010 "warning of 'ramming attacks' and the ease with which a truck could be rented for such a purpose..."

As demonstrated by the incidents timeline, below, this government warning has come to fruition, especially in Western Europe and the U.S., where, especially since 2016 the use of vehicles as instruments of terrorist warfare has become prevalent.

- January 1, 2016, Valence, France – A man drove a car at four soldiers guarding a mosque in southeastern France, injuring one of the soldiers. When he returned for a second pass, they shot and wounded him.
- July 14, 2016, Nice, France – A 19-ton cargo truck was driven into crowds on Bastille Day, killing 86 people and injuring 458 others.

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- November 28, 2016, Columbus, Ohio – A student drove his car into a crowd at Ohio State University, and then got out of his crashed vehicle and attempted to stab others. In total, 11 people were injured.
- December 19, 2016, Berlin, Germany – A truck was driven into crowds at a Christmas market, killing 12 people and injuring 56 others.
- March 22, 2017, London, England – An SUV was driven into crowds along the pavement of Westminster Bridge, in the vicinity of the British Parliament. Four people were killed and more than 50 others injured. A police officer was fatally stabbed after the driver left his vehicle. The driver was then shot by a responding police officer.
- April 7, 2017, Stockholm, Sweden – A hijacked lorry truck was driven into a department store, killing five people and injuring 14 others.
- June 3, 2017, London, England – Three male assailants drove their van into crowds on London Bridge, after which the attackers left their vehicle and stabbed several people in the area. Seven people were killed and 48 others injured.
- June 19, 2017, London, England – A van plowed into a group of pedestrians attending late-night prayers at Finsbury Park Mosque, killing one person and injuring 11 others.
- August 12, 2017, Charlottesville, Virginia – A car barreled into a crowd of protestors, killing one person and injuring several dozen others.
- August 17, 2017, Barcelona, Spain – A van plowed into pedestrians in the Las Ramblas tourist area, killing 13 and injuring more than 100 others.
- September 30 – October 1, 2017, Edmonton, Canada – An SUV struck a police officer when the driver jumped out of the vehicle, stabbing the officer with a knife. After fleeing, the driver deliberately hit pedestrians along the way, injuring four people.
- October 31, 2017, New York, NY – A rented pickup truck drove down a bicycle path near the World Trade Center, killing eight people and injuring almost a dozen others. After crashing his truck into a school bus, the driver got out of his vehicle and brandished a BB gun.

As demonstrated by these incidents, there are three types of vehicle ramming attacks. In the first type, which is predominant, the vehicles are intentionally driven into public crowds to cause as many casualties as possible.

In the second type, the vehicles are used to ram into crowds, but also as one of additional types of tactics and weapons arsenal in a terrorist attack, such as driving into a crowd and having the driver get out and either stab or shoot at additional victims.

In a third type, the vehicles are used to breach a hardened target's security by driving past its security gate to conduct a further attack within its compound. This occurred on October 26, 2015 in Flawinne, Belgium, when a Muslim driver smashed his stolen car through the gates of an army barracks in southern Belgium and fled in the vehicle after shots were fired. He was shortly thereafter arrested.

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In a related type of vehicular attack, a vehicle would be used to smash through a security gate that would contain IEDs set to explode within a hardened compound or to transport a terrorist combat cell into a facility's secured compound. This was the case in Saudi Arabia on December 6, 2004, when an al Qaida cell stormed through the fortified gate of the U.S. Consulate in Jiddah and launched a three-hour gun battle that led to the killing of five consulate employees, including the four attackers. This also points to other tactics in which vehicles are utilized exclusively as IED-laden car bombs.

In a different type of non-ramming vehicles into crowds' tactic, a vehicle might be used as a means to transport a driver (or passenger) attacker through a city to shoot at pedestrians and then continue the attack in other neighborhoods. This was the case on February 20, 2016, when a taxi driver in Kalamazoo, Michigan embarked on a shooting spree in three locations, killing six people and injuring two others.

These types of vehicular attack tactics are depicted in the following visualization:



Finally, despite the current proliferation of vehicular ramming attacks, the previous type of attacks in which vehicles are used as delivery platforms for IEDs should still be considered as likely to occur in future attacks. It is still possible, in fact, for terrorists to utilize vehicles to ram them into crowds and then detonate their IEDs to cause additional fatalities, including damaging nearby buildings.

Ideological Motivation

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The ideological motivation for conducting vehicular ramming attacks is similar to the ideology that motivates terrorists in general: employing any means of violence available to them to inflict physical and psychological damage on their targeted adversaries in order to publicize their cause, punish them, and coerce them to accede to their demands.

In the case of Islamist extremists, groups such as al Qaida and the Islamic State have called on their supporters to use vehicles as weapons. In September 2014, for example, Abū Bakr al-Baghdadi, ISIS's leader, called on the group's lone wolf adherents to use whatever weapons or devices, including vehicles, to kill "infidels." Al Qaida, the Islamic State's rival, had earlier published an article in its "Inspire" magazine, "recommending wannabe jihadists [to] consider car rammings as a particularly effective terrorist tactic."

Like other terrorist attackers, Saipov had deliberately chosen a soft target for his attack, in this case, an undefended bicycle path full of pedestrians. Also, like other soft targets that also address a strategic objective, the bicycle path was located in an iconic part of Manhattan, near the newly reconstructed World Trade Center, thus ensuring that his attack would generate world-wide publicity for his group's cause (although he had reportedly acted as a lone wolf).

Tactics, Techniques and Procedures (TTPs)

Terrorists' tactics, techniques, and procedures (TTPs) continuously adapt and evolve in response to changing responses by their adversaries, especially when they harden their defenses against certain types of attacks. As demonstrated by these incidents, terrorists, especially lone wolves whose only affiliation with a terrorist group is their adherence to the group's extremist ideology and objectives, are increasingly employing the vehicular ramming tactic in their warfare in order to exploit what they consider to be new vulnerabilities by their adversaries, since crowds in public places are soft targets that are easily breached by moving vehicles. It is also a weapon of choice for them because they are easily acquirable and difficult to identify as a potentially suspicious attacker.

The tactics of employing vehicles as weapons follow the five TTPs of terrorist warfare. These consist of 1) attack preparation steps (such as acquiring the expertise and funding to launch a vehicular attack by deciding on whether to rent, steal or use their own vehicle); 2) the execution timeline (such as identifying the timeline for an attack); 3) targeting (such as carrying out reconnaissance of a potential target, including identifying its potential vulnerabilities); 4) the planning stage (collecting the resources for the attack, in this case, acquiring the vehicle); and 5) the final execution stage (i.e., the actual attack).

One of the reasons for the recent frequency in vehicular attacks in the West is likely to be their operatives' inability to acquire weapons, ammunition or bomb-building materials, due to these countries strict gun laws and possible surveillance of their activities should they attempt to acquire a weapon from a gun dealer. Vehicles, on the other hand, whether cars or

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trucks, are relatively easy to rent, and, in some cases even to steal, to use as mass casualty weapons against their adversaries.

Prevention Measures

Several protective measures are considered effective in preventing or, at least, mitigating the impact of vehicular ramming attacks. First, a crucial physical protection measure is the placement of concrete barriers, such as bollards, since they keep vehicles from driving up onto pedestrian areas. This is especially important at special events that are held outdoors, where barriers need to be erected to prevent potential vehicular attacks. A second related measure is enhanced situational awareness. While there are no specific types of vehicles that could be linked to a potential terrorist attack, especially suspicious driving patterns could indicate that an attack might be underway. Finally, since several attacks have involved rental vehicles, a reporting guidelines and procedures need to be established for employees at rental companies to report suspicious activity by customers with a potential terrorist intent.

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