

Photo: State Emergency
Service of Ukraine,
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APPENDIX. CODEBOOK

Armed Attacks Resulting in Harm to Emergency Responders in Ukraine: Updated Datasets (November 2025 – May 2026)



ALL INCIDENTS INVOLVING UKRAINIAN EMERGENCY RESPONDERS (“ALL INCIDENTS”)

Definitions

Attack on an emergency responder (theoretical definition) is a targeted, primarily armed attack which aims to make it more difficult or impossible for the emergency responder to perform the tasks outlined in Article 61(a) of the Additional Protocol I to the Geneva Conventions.¹

Attack on emergency responders (operational definition) is an armed attack leading to:

- (a) Suspension or termination of a rescue operation;
- (b) Injuries or deaths of emergency responders; and/or
- (c) Damage or destruction of vehicles for emergency operations or emergency buildings.²

The State Emergency Service of Ukraine (SES) is the central executive agency that implements the state policies in the sectors of civil defense, defense of the population and territories from emergencies and their prevention, handling the consequences of emergencies, rescue, firefighting, fire and anthropogenic safety, activities of emergency and rescue services, and hydrometeorological activities. It is directed and coordinated by the Cabinet of Ministers of Ukraine through the Ministry of Internal Affairs.³

Emergency services are government services that carry out emergency measures to prevent emergencies and provide assistance to the population in their aftermath; these include the civil defense rescue service, the emergency medical service, the police, and the emergency gas service.

Volunteer firefighters are members of firefighting teams in localities with no SES units, which are established by local authorities, civil society organizations, or businesses with the approval of the SES. Members of the VFD are not obliged

¹ Additional Protocol I to Geneva Conventions, URL: https://www.un.org/en/genocideprevention/documents/atrocities-crimes/Doc_34_AP-I-EN.pdf

² The distinction between the theoretical and operational definitions has emerged for practical reasons. While the theoretical definition emphasizes the element of intentionality and represents the direct object of the study, the operational one expands focus to incidents of attacks which resulted in suspension, complication, or limitation of rescue capacity. The idea is to simplify the identification of potentially relevant observations. At the same time, analyzing their intentionality requires additional data and verification.

³ The State Emergency Service of Ukraine (2015). *Polozhennia pro Derzhavnu sluzhbu Ukrainy z nadzvychaynykh sytuatsii*. DSNS, URL: <https://dsns.gov.ua/polozhennya> (accessed: 18.02.2026).

to have a certain degree or qualification and do not receive a salary but may be awarded certain remuneration.⁴

Local firefighters are personnel of firefighting teams in localities with no SES units, which are established by the local self-government with the approval of the SES. LFD members receive a salary and are required to have a certain educational and skill level.⁵

Temporarily occupied territory of Ukraine is the part of the internationally recognized territory of Ukraine that, at the time of the study, is not under the actual control of the Ukrainian authorities as a result of its occupation by the Russian Federation during the Russia-Ukraine war.

Government-controlled territories of Ukraine are part of Ukraine's internationally recognized territory which, at the moment of the study, is effectively controlled by the Ukrainian government.

An emergency responder a person who performs civil defense tasks as a member of the SES or the local fire defense or as a volunteer of the volunteer fire defense or a civil society organization, or as a civilian volunteer without a formal status; however, the primary focus of this study was on emergency responders representing the SES, LFDs and VFDs.

Vehicles for emergency operations are special equipment in the civil defense sector, including fire trucks, tanker trucks, evacuation vehicles, demining vehicles etc.

Coding

COLUMN NAME	CODING	DESCRIPTION
Date	Date	Incident date in day-month-year format (01/12/2025).
Oblast	Text	The oblast (region) of Ukraine or the city with a special status where the incident occurred. Possible values: • Vinnytska • Volynska • Dnipropetrovska • Donetsk • Zhytomyrska • Zakarpatska

⁴ Code of Civil Protection of Ukraine, Article 62, "Local Fire Service," URL: <https://zakon.rada.gov.ua/laws/show/5403-17#n917> (accessed: 18.02.2026).

⁵ Ibid.

COLUMN NAME	CODING	DESCRIPTION
		• Zaporizka • Ivano-Frankivska • Kyivska • Luhanska • Lvivska • Mykolaivska • Odeska • Poltavvska • Rivnenska • Sumska • Ternopil'ska • Kharkivska • Khersonska • Khmelnytska • Cherkaska • Chernihivska • Kyiv City • Sevastopol City • Autonomous Republic of Crimea
Raion	Text	The raion in Ukraine where an incident occurred.
Hromada	Text	The hromada in Ukraine where an incident occurred.
Locality	Text	The locality (city, town, village) in Ukraine where the incident occurred. ⁶
Video evidence	Dummy variable (0 – video evidence not available, 1 – video evidence available)	Whether there is video evidence of an attack, its consequences, or interviews with witnesses and victims.
Video link	Link	An archived link to video footage of an attack, its consequences, or interviews with witnesses and victims
Frontline_region	Dummy variable (0 – non-frontline region, 1 – frontline region)	Whether the locality is part of the area which, according to the Ministry for Development of Communities and Territories of Ukraine, was on the list of

⁶ The proper names were translated into English based on this ruleset: Romaniuk, Anna (2024). *Mista Ukrainy anhliskoiu movoiu: yak pravylno transliteruvaty vidomi nazvy*. Cambridge, URL: <https://cambridge.ua/uk/blog/karta-ukrainy-na-angliyskom-yazyke/> (accessed: 18.02.2026).

COLUMN NAME	CODING	DESCRIPTION
		territories with active hostilities or a high likelihood of hostilities in the near future at the time of the incident.
Weapons⁷	Text	Type and subtype of weapon mentioned in the publication about the incident. Possible values: • Artillery a) Barrel artillery; b) Rocket artillery; c) Unknown artillery. • Drones a) Kamikaze (short-range);⁸ b) Kamikaze (long-range); c) Munition-carrying drone; d) Unknown drone. • Missiles a) Ballistic missile; b) Cruise missile; c) Unknown missile. • Other a) Aerial bomb; b) Other: another type of weapon not listed above; c) NA: weapon unknown
Double_tap	Dummy variable (0 – no mentions of double-tap strikes or threat of such attacks; 1 – mentions double-tap strikes or threat of such attacks)	Whether an incident is described as a double-tap strike by the sources.
Killed	Dummy variable (0 – the attack did not lead to deaths of emergency responders; 1 – the attack did lead to deaths of emergency responders)	Whether the publication mentions the death of at least one emergency responder as a result of the attack.

⁷ See commentary on pages 2–3.

⁸ More information about short-range drones is available in the study by Truth Hounds (2025). *Killzone: How Russian Drones Are Devastating the River Dnipro's Right Bank*. URL: <https://truth-hounds.org/en/cases/killzone-how-russian-drones-are-devastating-the-river-dnipros-right-bank/> (accessed: 18.02.2026).

COLUMN NAME	CODING	DESCRIPTION
Killed_N	Number	The number of emergency responders killed in the attack cited in the publication.
Equipment	Dummy variable (0 – the attack did not lead to damage or destruction of emergency responders' equipment for emergency operations; 1 – the attack did lead to damage or destruction of emergency responders' equipment for emergency operations)	Whether the publication mentions that at least one emergency responder was injured as a result of the attack.
Equipment_N	Number	The number of injured emergency responders mentioned in the publication.
Fire_Station	Dummy variable (0 – the attack did not lead to damage or destruction of a rescue building; 1 – the attack did lead to damage or destruction of a rescue building)	Whether the publication mentions the damage or destruction of at least one rescue building as a result of the attack.
Moving_Vehicle	Dummy variable (0 – a vehicle was not reportedly attacked while moving; 1 – a vehicle was reportedly attacked while moving)	Whether an emergency response vehicle was attacked while moving.
Description_EN	Text	A brief description of the incident in English.
Description-UA	Text	A brief description of the incident in Ukrainian.

DOUBLE-TAP STRIKES

Definitions

A double-tap strike is a military tactic which entails execution of two or more strikes within one designated location with a gap from at least ten minutes up to five hours between the two. It has two characteristics:

- **Spatial continuity:** Strikes occur in the same location, which indicates that the choice of a particular target is not random and there is a direct connection between the first and subsequent strikes;
- **Shift in target scope:** the pause between the strikes is sufficient for emergency services to arrive at the site, which indicates a change or expansion in the range of targets from the primary object to those arriving to document or handle the aftermath and assist those affected on site.

Coding

COLUMN NAME	CODING	DESCRIPTION
Date	Date	Incident date in day/month/year format (01/12/2025).
Oblast	Text	The oblast (region) of Ukraine or the city with a special status where the incident occurred. Possible values: • Vinnytska • Volynska • Dnipropetrovska • Donetsk • Zhytomyrska • Zakarpatska • Zaporizka • Ivano-Frankivska • Kyivska • Luhanska • Lvivska • Mykolaivska • Odeska • Poltavska

COLUMN NAME	CODING	DESCRIPTION
		• Rivnenska • Sumska • Ternopilska • Kharkivska • Khersonska • Khmelnytska • Cherkaska • Chernihivska • Kyiv City • Sevastopol City • Autonomous Republic of Crimea
Raion	Text	The raion in Ukraine where an incident occurred.
Hromada	Text	The hromada in Ukraine where an incident occurred.
Locality	Text	The locality (city, town, village) in Ukraine where the incident occurred ⁹ .
Video evidence	Dummy variable (0 – video evidence not available, 1 – video evidence available)	Whether there is video evidence of an attack, its consequences, or interviews with witnesses and victims.
Frontline_region	Dummy variable (0 – non-frontline region, 1 – frontline region)	Whether the locality is part of the area which, according to the Ministry for Development of Communities and Territories of Ukraine, was on the list of territories with active hostilities or a high likelihood of hostilities in the near future at the time of the incident ¹⁰ .
Spatial_continuity	Dummy variable (0 – geolocation of the first attack and the second attacks does not match; 1 – geolocation of the first attack and the second attacks matches; NA –	The double-tap strike took place in the same location or in close proximity (within 300 meters) to the location of the first attack. Locations are considered the same if: • The geolocation of the first attack is known;¹¹

⁹ The proper names were translated into English based on this ruleset: Romaniuk, Anna (2024). *Mista Ukrainy anhliskoiu movoiu: yak pravylno transliteruvaty vidomi nazvy*. Cambridge, URL: <https://cambridge.ua/uk/blog/karta-ukrainy-na-angliyskom-yazyke/> (accessed: 18.02.2026).

¹⁰ Ministerstvo rozvytku hromad ta terytorii Ukrainy (2025). *Perelik terytorii, na yakykh vedut'sia (velysia) bolovi dii abo tymchasovo okupovanykh Rosiiskoiu Federatsiiu*. Verkhovna Rada of Ukraine, URL: <https://zakon.rada.gov.ua/laws/show/20380-25#Text> (accessed: 04.02.2026).

¹¹ The geolocation of each incident is determined with the highest possible accuracy (for example, the street address).

COLUMN NAME	CODING	DESCRIPTION
	continuity cannot be established due to lack of information)	The context of the message indicates that, at the time of the second attack, the emergency responders were at the site or in close proximity (within 300 meters) to the site of the first attack.
Time_interval	Dummy variable (0 – the interval between the attacks is less than 10 minutes or more than 5 hours; 1 – the interval between the attacks is between 10 minutes and 5 hours; NA – the interval cannot be determined due to lack of information)	The interval between the first attack and the second attack is not less than 10 minutes but does not exceed 5 hours.¹² An interval is considered characteristic of a double-tap strike if: - The exact time of the first attack and the second attack is known, or - The exact time of the first attack is known, while the time of the second attack can be roughly determined from the context of the message; - The exact time of the first and the second strikes attacks is unknown but the interval between them can be approximately established from the context of the message (e.g., phrasing like “the second attack took place immediately after the rescue team arrived”).
Weapons_repeat	Text	The type and subtype of weapon used during the second strike. Possible values: Artillery d) Barrel artillery; e) Rocket artillery; f) Unknown artillery. Drones e) Kamikaze (short-range);¹³ f) Kamikaze (long-range);

¹² 10 minutes is sufficient time for emergency responders to arrive at the site of the incident; 5 hours is a time during which it can be assumed with a high degree of confidence that the rescue operation is underway and therefore there are emergency responders at the site of the first strike.

¹³ More information about short-range drones is available in the study by Truth Hounds (2025). *Killzone: How Russian Drones Are Devastating the River Dnipro's Right Bank*. URL: <https://truth-hounds.org/en/cases/killzone-how-russian-drones-are-devastating-the-river-dnipros-right-bank/> (accessed: 18.02.2026).

COLUMN NAME	CODING	DESCRIPTION
		g) Munition-carrying drone; h) Unknown drone. • Missiles d) Ballistic missile; e) Cruise missile; f) Unknown missile. • Other d) Aerial bomb; e) Other: another type of weapon not listed above; f) NA: weapon unknown.
Attack_video	Dummy variable (0 – no footage of the attack; 1 – footage of the attack available)	Availability of a video recording of the attack. ¹⁴
Archived_video	Link (NA if the previous variable is "0")	A link to the archived video recording the double-tap strike.
Killed	Dummy variable (0 – the attack did not lead to deaths of emergency responders; 1 – the attack did lead to deaths of emergency responders)	Whether the publication mentions the death of at least one emergency responder as a result of the attack.
Killed_N	Number	The number of emergency responders killed in the attack cited in the publication.
Injured	Dummy variable (0 – the attack did not lead to injuries among emergency responders; 1 – the attack did lead to injuries among emergency responders)	Whether the publication mentions that at least one emergency responders was injured as a result of the attack.
Injured_N	Number	The number of injured emergency responders mentioned in the publication.
Equipment	Dummy variable (0 – the attack did not lead to damage or	Whether the publication mentions the damage or destruction of at least one unit of emergency responders' vehicles

¹⁴ Assessing the reliability of video evidence was within the competence and responsibility of each specific monitor. Priority is given to video evidence provided by: 1) eyewitnesses of the attacks interviewed by Truth Hounds; 2) official sources (the State Emergency Service, the National Police, etc.); other sources (media, Telegram channels, etc.).

COLUMN NAME	CODING	DESCRIPTION
	destruction of emergency responders' equipment for emergency operations; 1 – the attack did lead to damage or destruction of emergency responders' equipment for emergency operations)	or other equipment as a result of the attack.
Equipment_N	Number	The number of units of damaged or destroyed vehicles for emergency operations mentioned in the publication.
Rescue_building	Dummy variable (0 – the attack did not lead to damage or destruction of a rescue building; 1 – the attack did lead to damage or destruction of a rescue building)	Whether the publication mentions the damage or destruction of at least one rescue building as a result of the attack.
Moving_Vehicle	Dummy variable (0 – a vehicle was not reportedly attacked while moving; 1 – a vehicle was reportedly attacked while moving)	Whether an emergency response vehicle was attacked while moving.
Description_EN	Text	A brief description of the incident in English.
Description-UA	Text	A brief description of the incident in Ukrainian.

ATTACKS ON RESCUE BUILDINGS

Definitions

A **rescue building** is any facility owned or administered by the SES, LFD, or VFD units.

An **attack on a rescue building** is an armed attack that resulted in damage or destruction of a rescue building.

Coding

COLUMN NAME	CODING	DESCRIPTION
Date	Date	Incident date in day/month/year format (01/12/2025).
Oblast	Text	The oblast (region) of Ukraine or the city with a special status where the incident occurred. Possible values: • Vinnytska • Volynska • Dnipropetrovska • Donetsk • Zhytomyrska • Zakarpatska • Zaporizka • Ivano-Frankivska • Kyivska • Luhanska • Lvivska • Mykolaivska • Odeska • Poltavska • Rivnenska • Sumska • Ternopilska • Kharkivska • Khersonska

COLUMN NAME	CODING	DESCRIPTION
		• Khmelnytska • Cherkaska • Chernihivska • Kyiv City • Sevastopol City • Autonomous Republic of Crimea
Raion	Text	The raion in Ukraine where an incident occurred.
Hromada	Text	The hromada in Ukraine where an incident occurred.
Locality	Text	The locality (city, town, village) in Ukraine where the incident occurred ¹⁵ .
Video evidence	Dummy variable (0 – video evidence not available, 1 – video evidence available)	Whether there is video evidence of an attack, its consequences, or interviews with witnesses and victims.
Frontline_region	Dummy variable (0 – non-frontline region, 1 – frontline region)	Whether the locality is part of the area which, according to the Ministry for Development of Communities and Territories of Ukraine, was on the list of territories with active hostilities or a high likelihood of hostilities in the near future at the time of the incident ¹⁶ .
Weapons¹⁷	Text	Type and subtype of weapon mentioned in the publication about the incident. Possible values: • Artillery a) Barrel artillery; b) Rocket artillery; c) Unknown artillery. • Drones a) Kamikaze (short-range);¹⁸ b) Kamikaze (long-range); c) Munition-carrying drone; d) Unknown drone. • Missiles

¹⁵ The proper names were translated into English based on this ruleset: Romaniuk, Anna (2024). *Mista Ukrainy anhliskoiu movoiu: yak pravylno transliteruvaty vidomi nazvy*. Cambridge, URL: <https://cambridge.ua/uk/blog/karta-ukrainy-na-angliyskom-yazyke/> (accessed: 18.02.2026).

¹⁶ Ministerstvo rozvytku hromad ta terytorii Ukrainy (2025). *Perelik terytorii, na yakikh vedut'sia (velysia) boiovi dii abo tymchasovo okupovanykh Rosiiskoiu Federatsiiu*. Verkhovna Rada of Ukraine, URL: <https://zakon.rada.gov.ua/laws/show/z0380-25#Text> (accessed: 04.02.2026).

¹⁷ See commentary on pages 2–3.

¹⁸ More information about this type of drone is available in the study by Truth Hounds (2025). *Killzone: How Russian Drones Are Devastating the River Dnipro's Right Bank*. URL: <https://truth-hounds.org/en/cases/killzone-how-russian-drones-are-devastating-the-river-dnipro-right-bank/> (accessed: 18.02.2026).

COLUMN NAME	CODING	DESCRIPTION
		a) Ballistic missile; b) Cruise missile; c) Unknown missile. • Other a) Aerial bomb; b) Other: another type of weapon not listed above; c) NA: weapon unknown.
Double_tap	Dummy variable (0 – no mentions of double-tap strikes or threat of such attacks; 1 – mentions double-tap strikes or threat of such attacks)	Whether the incident description mentions double-tap strikes or the threat of double-tap strikes during the rescue operation).
Killed	Dummy variable (0 – the attack did not lead to deaths of emergency responders; 1 – the attack did lead to deaths of emergency responders)	Whether the publication mentions the death of at least one emergency responder as a result of the attack.
Killed_N	Number	The number of emergency responders killed in the attack cited in the publication.
Injured	Dummy variable (0 – the attack did not lead to injuries among emergency responders; 1 – the attack did lead to injuries among emergency responders)	Whether the publication mentions that at least one emergency responder was injured as a result of the attack.
Injured_N	Number	The number of injured emergency responders mentioned in the publication.
Equipment	Dummy variable (0 – the attack did not lead to damage or destruction of emergency responders' equipment for emergency operations; 1 – the	Whether the publication mentions the damage or destruction of at least one unit of emergency responders' vehicles or other equipment as a result of the attack.

COLUMN NAME	CODING	DESCRIPTION
	attack did lead to damage or destruction of emergency responders' equipment for emergency operations)	
Equipment_N	Number	The number of units of damaged or destroyed vehicles for emergency operations mentioned in the publication.
Moving_Vehicle	Dummy variable (0 – a vehicle was not reportedly attacked while moving; 1 – a vehicle was reportedly attacked while moving)	Whether an emergency response vehicle was attacked while moving.
Possible_damage	Dummy variable (0 – other level of damage; 1 – possible damage)	It is impossible to assess the level of damage due to the lack of digital evidence, but the destruction of the rescue building is mentioned in the text of the publication.
Moderate_damage	Dummy variable (0 – other level of damage; 1 – possible damage)	The building suffered minimal damage (windows were broken, wall cladding was damaged, etc.) and its functionality is either fully preserved or can be quickly restored.
Severe_damage	Dummy variable (0 – other level of damage; 1 – severe damage)	The building has been significantly damaged (part of the walls, ceiling, roof, etc. have been destroyed) and its functionality is either seriously limited or lost until major repairs are carried out.
Destroyed	Dummy variable (0 – other level of damage; 1 – the building was destroyed)	The building is completely destroyed beyond repair.
Description_EN	Text	A brief description of the incident in English.
Description-UA	Text	A brief description of the incident in Ukrainian.

Commentary on the identification and categorization of the types of weapon used

Information about the weapon used for a certain attack is based on data from open sources. In this regard, what is important to consider is that in journalistic materials, and sometimes even in official communications of the authorities, there is a practice to use more “popular,” or understandable, phrasing to refer to a certain type of weapon rather than its technically correct name. In particular, it is common to use the term “KAB” (guided aerial bomb) in open sources to refer to high-explosion aerial bombs equipped with a universal planning and adjustment module (“UMPK”), as well as to unified interspecies guided munitions (“UMPB”). Similarly, the term “FAB” is often used without clarifications when the weapon in question is actually a high-explosion aerial bomb equipped with UMPK or UMPB – these weapons are the most commonly used to bomb Ukrainian localities and military positions due to their ability to travel tens of kilometers between the drop point and the target. At the same time, the Russian military uses aerial bombs referred to as both “KAB” and “FAB” without planning modules. However, due to the relatively small range of their use and the need for the aircraft to face the risk from various means of Ukrainian air defense, the use of such munitions was extremely limited after the first months of the full-scale war.

Similarly, there is a common simplification to use the word Shahed to refer to all UAVs of a similar type. In fact, these may be different UAVs which can be categorized by manufacturer: the Iranian Shahed-131/136 (including their jet modifications), Russian Geran-2 UAVs and their jet versions produced by an enterprise in Alabuga, as well as the Harpy-A1 UAV produced by the Kupol electromechanical factory in Izhevsk.¹⁹

The above are just some of the technical details connected with weapons classification, which are often disregarded or not duly reflected in open-source information. Relying on such data without additional verification may lead to a distorted idea of the attack and the context of hostilities and to a systematic recreation of incorrect phrasings.

In view of this, the Truth Hounds research team decided to use the following approach to database formation: the column “Weapons” features more general terminology, which means we can provide less specific but correct information. At the same time, columns “Description_EN” and “Description-UA” may contain phrasing used in open sources, since these columns are not used for quantitative analysis and their function is purely to provide a brief explanation of the incident as cited in open sources, without careful additional verification or clarification by the research team.

¹⁹ Shumlianskyi, Dmytro (2025). *Dovhyi shliakh evoliutsii Shakhediv: shcho zminylos za try roky zastosuvannia*. Militatnyi, URL: <https://militarnyi.com/uk/articles/dovgij-shliakh-evolyutsiyi-shahediv-shho-zminylos-za-try-roky-zastosuvannya/> (accessed: 18.02.2026).