

Eyes on Russia

EDUCATION

The effect of the invasion on Ukraine's
education system - One year overview



Photo by lama_sing / Adobe Stock: A geography textbook for grade 9
against the backdrop of a bombed-out school in the city of Kharkiv.

APRIL 2023

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EXECUTIVE SUMMARY

Since the start of the full-scale Russian invasion of Ukraine on 24 February 2022 to 24 February 2023, Centre for Information Resilience (CIR) investigators have collected 18,000 and verified over 9,000 pieces of data relating to damaged or destroyed civilian infrastructure. From this data, CIR verified a total of 381 incidents resulting in damaged or destroyed educational facilities in Ukraine.

- Analysis by CIR has shown that, although damage to education facilities in Ukraine was observed in many different oblasts, there was an undeniable peak in Donetsk and Kharkiv oblasts. In total, CIR investigators verified 183 affected educational institutions in Donetsk oblast and 75 in Kharkiv oblast.
- The remaining damaged or destroyed schools were identified in Kherson (36), Luhansk (26), Zaporizhzhia (17), Kyiv (14), Mykolaiv (14), Chernihiv (7), Dnipropetrovsk (6), Sumy (2) and Zhytomyr (1).
- In Donetsk oblast, the cities and towns that suffered damage to multiple educational institutions were Mariupol, Donetsk, Bakhmut, Toretsk, Slovyansk, Kramatorsk, Avdiivka, Soledar, Vuhledar, and Lyman, as well as several villages that were struck a single time. The damage and destruction of educational facilities in Donetsk oblast was particularly significant between December 2022 and February 2023 in the Bakhmut and Soledar areas.
- Most schools affected in Kharkiv oblast were in the northeastern city of Kharkiv, the second largest city in Ukraine and the main target in Kharkiv oblast during the first months of the invasion. CIR verified that, at least one school, Kharkiv School №78 [49.950742, 36.308188], was targeted twice.
- 36 education facilities were affected in Kherson oblast, with 30 schools damaged between September 2022 and February 2023, when intense shelling of the city renewed after Russian retrieval from the city.
- An examination of the damaged schools in relation to the shifting frontline suggests that these institutions may have been targeted by Russian shelling. This has been corroborated by a previous CIR investigation.¹ CIR's analysis indicates that the intensity of the attacks changed along different areas of the frontline.
- Unpredictable attacks, and sometimes systematic² attacks, were seen in certain areas further from the frontline.
- Verification of individual schools using satellite imagery and user-generated content reveals the extent of the damage. Classrooms, libraries, playgrounds, sports facilities, instruments and other facilities and equipment have been severely damaged in the course of the invasion.

¹ Centre for Information Resilience (1 September 2022) 'The Systematic Targeting of Educational Infrastructure in Kharkiv'. Available at: <https://www.info-res.org/post/the-systematic-targeting-of-civilian-infrastructure-in-kharkiv-schools-and-educational-facilities>

² Ibid.

INTRODUCTION

According to Ukraine's Ministry of Education and Science, as of 21 October 2022, 2,677 educational institutions had been damaged by bombing and shelling since the beginning of the full-scale invasion.³ 331 of these institutions were totally destroyed, and roughly 15% of the higher education infrastructure of the country was significantly damaged. In March 2023, data shared by 'Save Schools in Ukraine', an initiative supported by the Ministry of Education and Science, showed an increase in the numbers from October, with over 3,000 schools damaged and 370 destroyed.⁴

However, not only shelling has damaged the education sector of Ukraine during the full-scale invasion. As of 23 June 2022, 670,133 school students and 22.6 thousand pedagogical staff members had escaped the country.⁵ Data from August 2022 also shows that an additional 3,500 schools were being used as shelters. Before the start of the Ukrainian school year on 1 September 2022, the World Vision Aid organisation estimated that 3.6 million children in Ukraine were likely to miss out on education as a result of the war.⁶ The organisation also highlighted in its 'No Peace of Mind' report that at least 1.5 million children were at risk of suffering mental health issues in Ukraine because of the war.⁷

CIR investigators have continuously monitored the damage and destruction of educational infrastructure since the start of Russia's full-scale invasion. This report looks at the data on affected educational facilities in Ukraine that CIR investigators gathered and verified during the first year of the invasion, between 24 February 2022 and 24 February 2023. For this period, CIR investigators were able to identify a total of 381 damaged or destroyed kindergartens, schools, lyceums, university buildings and other educational institutions. Although this number is nowhere near the total reported, the analysis provides an important view on the suffering of one of the pillars of society: a safe learning environment.

The report is divided in three sections:

- The first section provides a general overview of all collected data as well as an in-depth analysis of affected educational facilities in Kharkiv oblast and Donetsk oblast.
- The second section examines the relationship between the location of the affected educational institutions and the shifting frontline.
- The final section takes an in-depth look at a number of schools and other facilities that were affected by the war.

3 Ministry of Education and Science of Ukraine (November 2022). Available at: <https://mon.gov.ua/eng/ministerstvo/diyalnist/mizhnarodna-dilnist/pidtrimka-osviti-i-nauki-ukrayini-pid-chas-vijni/plan-vidnovlennya-ukrayini-2012>

4 Saveschools.in.ua (Last accessed 20 March 2023). Available at: <https://saveschools.in.ua/en/>

5 Ministry of Education and Science of Ukraine (November 2022). Available at: <https://mon.gov.ua/eng/ministerstvo/diyalnist/mizhnarodna-dilnist/pidtrimka-osviti-i-nauki-ukrayini-pid-chas-vijni/plan-vidnovlennya-ukrayini-2012>

6 World Vision International (22 August 2022). Available at: <https://www.wvi.org/newsroom/ukraine/3.6-million-ukrainian-children-could-miss-school-and-many-risk-mental-health-issues>

7 Ibid.

METHODOLOGY⁸

To investigate the damage to education facilities in Ukraine, CIR investigators collect data commonly referred to as user-generated content (UGC) from open sources. The sources used in this report include, but are not limited to, user-generated content shared on social media; regional-level prosecutors' offices; city and oblast-level police departments; State emergency services; city and regional-level Telegram pages; as well as Ukrainian, Russian and English search strings on Twitter. Each piece of information collected is logged in the Eyes on Russia database and given an entry number.

The footage entered in the database is saved, archived, and hashed for future legal inquiries to hold those responsible to account. All collected data undergoes a verification process using independently replicable techniques such as geolocation, chronolocation and identification of visual features in the media to verify questions such as where it happened, when it happened, and what is being shown in the media. This

stage involves looking at visual clues in the footage and crosschecking it with satellite imagery, Google Street view, or other related media, to determine the precise coordinates of the location seen in the video or photo. CIR investigators sometimes cross-reference the geolocation of specific imagery against other images or videos taken nearby to identify the approximate time when the footage was taken.

Once data has been collected, archived, hashed, verified, and categorised, it undergoes a review process by a team of senior investigators to ensure information is as accurate and reliable as possible. Data is also reviewed for privacy and safety. Once the entry has been reviewed and corrected, the content moves to an external database that only a limited number of people have access to. This information can be used for further investigations.

The time frame covered in this report was 24 February 2022 to 24 February 2023.

⁸ This is an extract of the Eyes on Russia methodology. The full methodology is published on CIR's website; Strick (3 March 2023). Available at: <https://www.info-res.org/post/eyes-on-russia-documenting-conflict-and-disinformation-in-the-kremlin-s-war-on-ukraine>

AFFECTED EDUCATIONAL FACILITIES

Analysis by CIR investigators was able to identify a total of 381 kindergartens, schools, lyceums, university buildings and other educational institutions damaged or destroyed between 24 February 2022 and 24 February 2023 in Ukraine. A general overview

of all collected data will be provided in the following section as well as an in-depth analysis of affected educational facilities in Kharkiv oblast and Donetsk oblast, given that these regions suffered extensive damage.

General Descriptive Statistical Analysis

Figure 1 maps all affected educational facilities per month. Clearly visible is the high concentration of attacks in Kharkiv oblast and Donetsk oblast,

especially in the cities of Kharkiv (Kharkiv oblast) and Mariupol (Donetsk oblast).

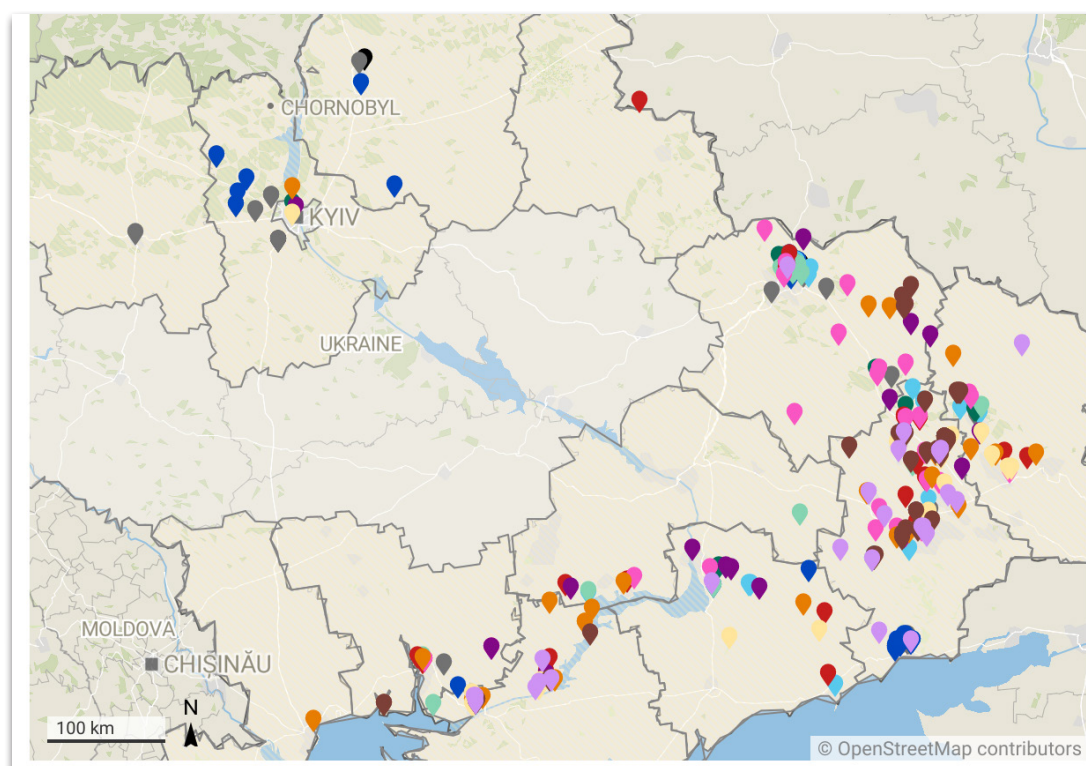


Figure 1: All damaged or destroyed educational facilities in Ukraine in the months of February (Black), March (Grey), April (Dark Blue), May (Light Blue), June (Dark Green), July (Light Green), August (Red), September (Pink), October (Dark Purple), November (Orange), December (Yellow), January 2023 (Brown) and February 2023 (Light Purple).

In total, CIR investigators verified 183 affected educational institutions in Donetsk oblast and 75 in Kharkiv oblast (see figure 2). The remaining damaged or destroyed schools were identified in the following oblasts: Kherson (36), Luhansk (26), Zaporizhzhia (17), Kyiv (14), Mykolaiv (14), Chernihiv (7), Dnipropetrovsk (6), Sumy (2) and Zhytomyr (1).

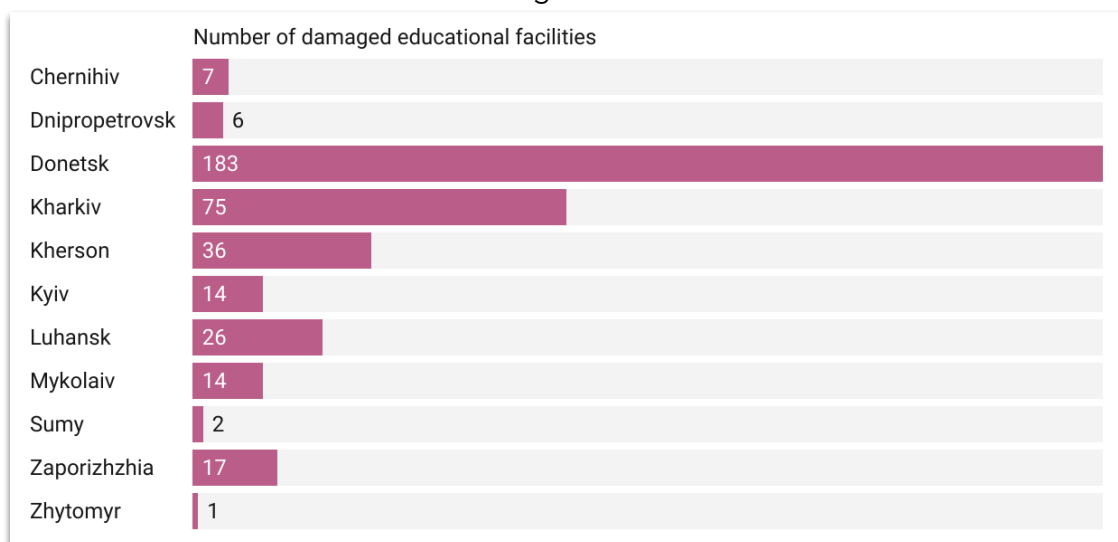


Figure 2: Number of damaged educational facilities per oblast between 24 February 2022 and 24 February 2023.

There is a noticeable peak in the number of affected schools in March and April, then a decrease in May and June, followed by an increase observed again in August and September. In January 2023, CIR observed the highest number (along with March 2022) of verified affected education facilities (see figure 3).



Figure 3: Number of damaged educational facilities per month, since the start of the invasion.

As can be seen in figure 4, the peak in March can be linked to schools that were affected in Donetsk oblast (15 out of 51 total in March) and Kharkiv oblast (24 out of 51 total in March). The majority of schools that were affected in April were in Donetsk oblast (31 out of 43 total in April). Similar patterns appear in August when slightly over half of the affected educational facilities were observed in Donetsk oblast (18 out of 35 total in August), as further explained in the section ‘Damage of educational facilities and the shifting

of the frontline’ (below). In September, the most targeted oblasts were again Donetsk and Kharkiv (15 and 10 out of 36, respectively).

The highest number of affected education facilities in January 2023 coincides with an increase in fighting around Bakhmut, Soledar and Vuhledar, all in Donetsk oblast. This data matches the Russian offensive around these cities.

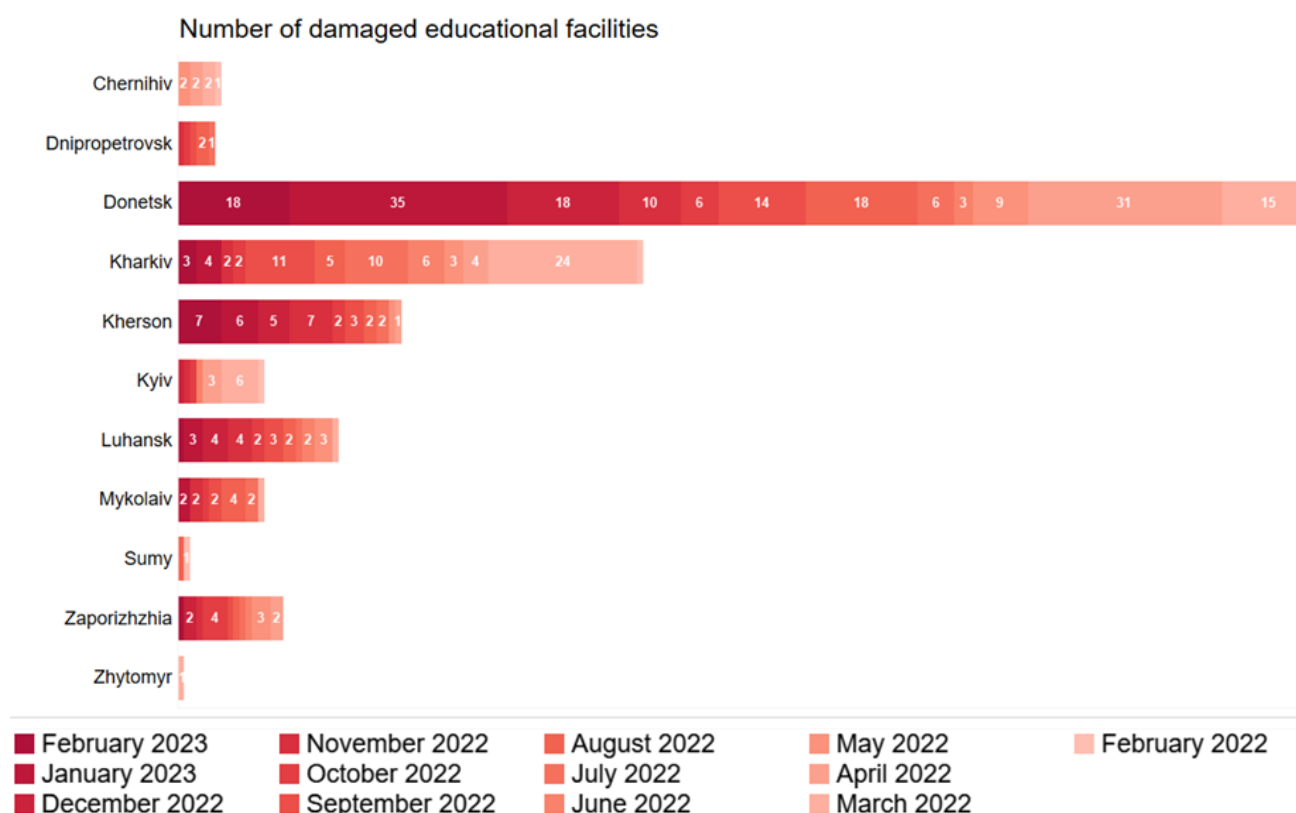


Figure 4: Number of damaged educational facilities per month per oblast, since the start of the invasion.

Although damage to education facilities in Ukraine have been observed in many different oblasts, the data collected by CIR has shown an undeniable peak

in Donetsk and Kharkiv oblasts. The next section looks at Donetsk oblast in more detail.

Analysis of Donetsk oblast

CIR investigators collected data that shows Donetsk oblast suffered extensive damage to its educational facilities with a total of 183 affected educational institutions between 24 February 2022 and 24 February 2023. Among the cities and towns that suffered damage to multiple educational institutions are Mariupol, Donetsk, Bakhmut, Toretsk, Slovyansk, Kramatorsk, Avdiivka, Soledar, Vuhledar, and Lyman as well as several villages that were struck a single time (see figure 5). As stated previously, an increase in attacks was observed in March and April. However,

the period that saw the highest number of education facilities damaged in Donetsk oblast during the time frame of this report was December 2022 - February 2023, coinciding with an increase of fighting in Bakhmut, Soledar, and Vuhledar. The number of verified damaged institutions per month in Donetsk oblast are: 15 in March, 31 in April, 9 in May, 3 in June, 6 in July, 18 in August, 14 in September, 6 in October, 10 in November, 18 in December, 35 in January, and 18 from 1 - 24 February (see figure 6).

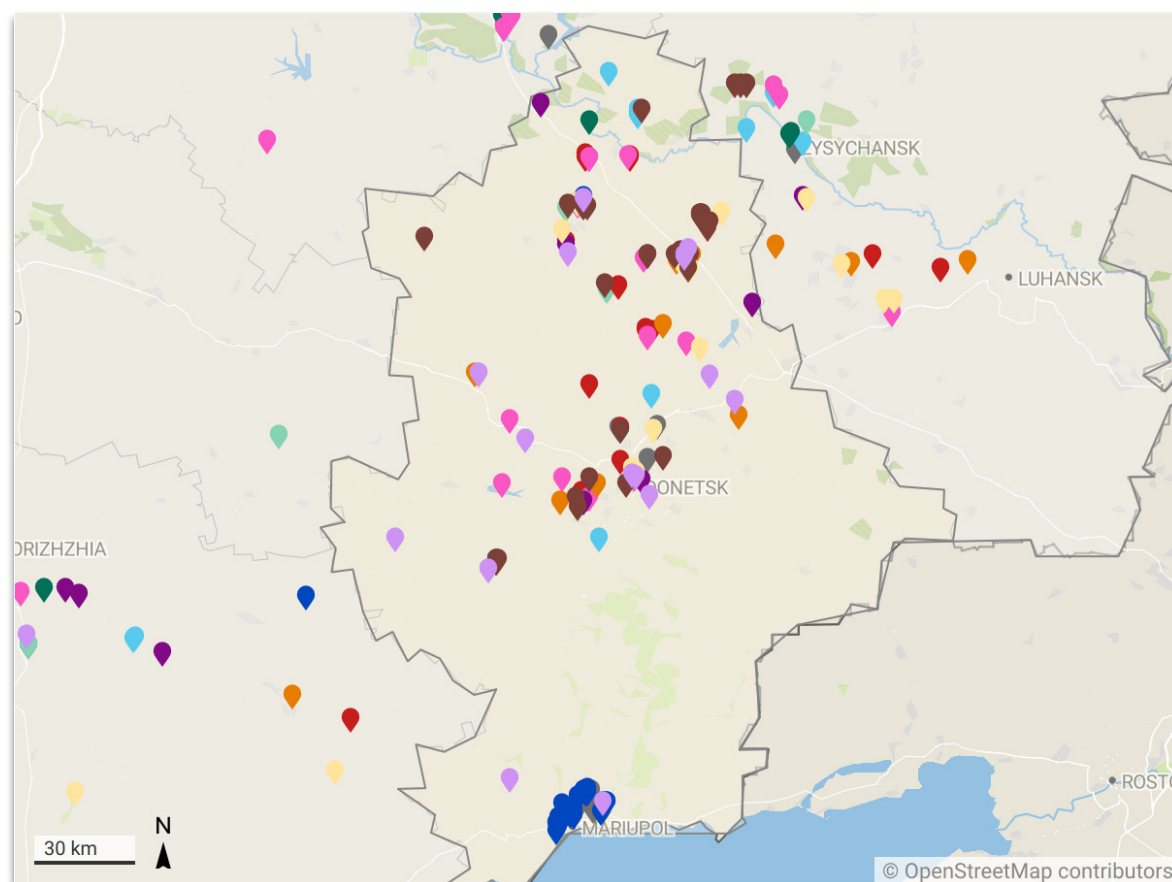


Figure 5: All damaged educational institutions in Donetsk oblast in the months of February (Black), March (Grey), April (Dark Blue), May (Light Blue), June (Dark green), July (Light Green), August (Red), September (Pink), October (Dark Purple), November (Orange), December (Yellow), January 2023 (Brown), February 2023 (Light Purple).

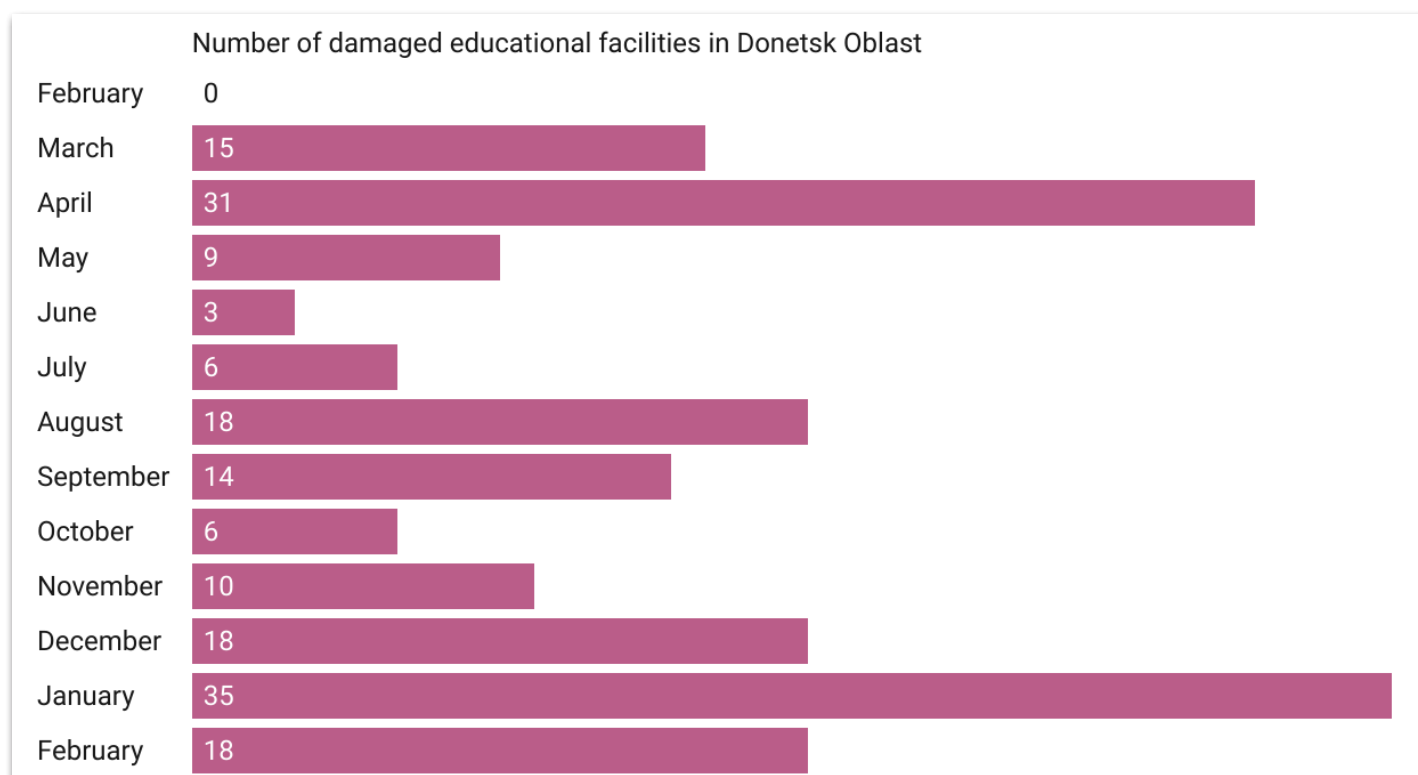


Figure 6: The number of damaged educational institutions in Donetsk oblast per month.

Mariupol is located along the Sea of Azov, approximately 60 kilometres away from the Russia-Ukraine border. The city became a particular target in March and April. Spread out over the course of these two months, a total of 40 educational facilities were shelled in Mariupol (see figure 7). The total number of schools affected in the Donetsk oblast during March and April was 46, meaning that 85% of schools that

were shelled in Donetsk oblast in this timeframe were located in Mariupol. Furthermore, this is nearly half (49%) of all schools observed by CIR that were shelled in Donetsk oblast in the time period observed in this report. This data shows the extensive damage the city suffered in these months. Apart from the months of March and April, CIR investigators identified just one school in Mariupol affected on 13 February 2023.⁹

⁹ Telegram private channel (Last accessed 26 March 2023). Available at: <https://t.me/c/1410361541/40792> [UW19964]

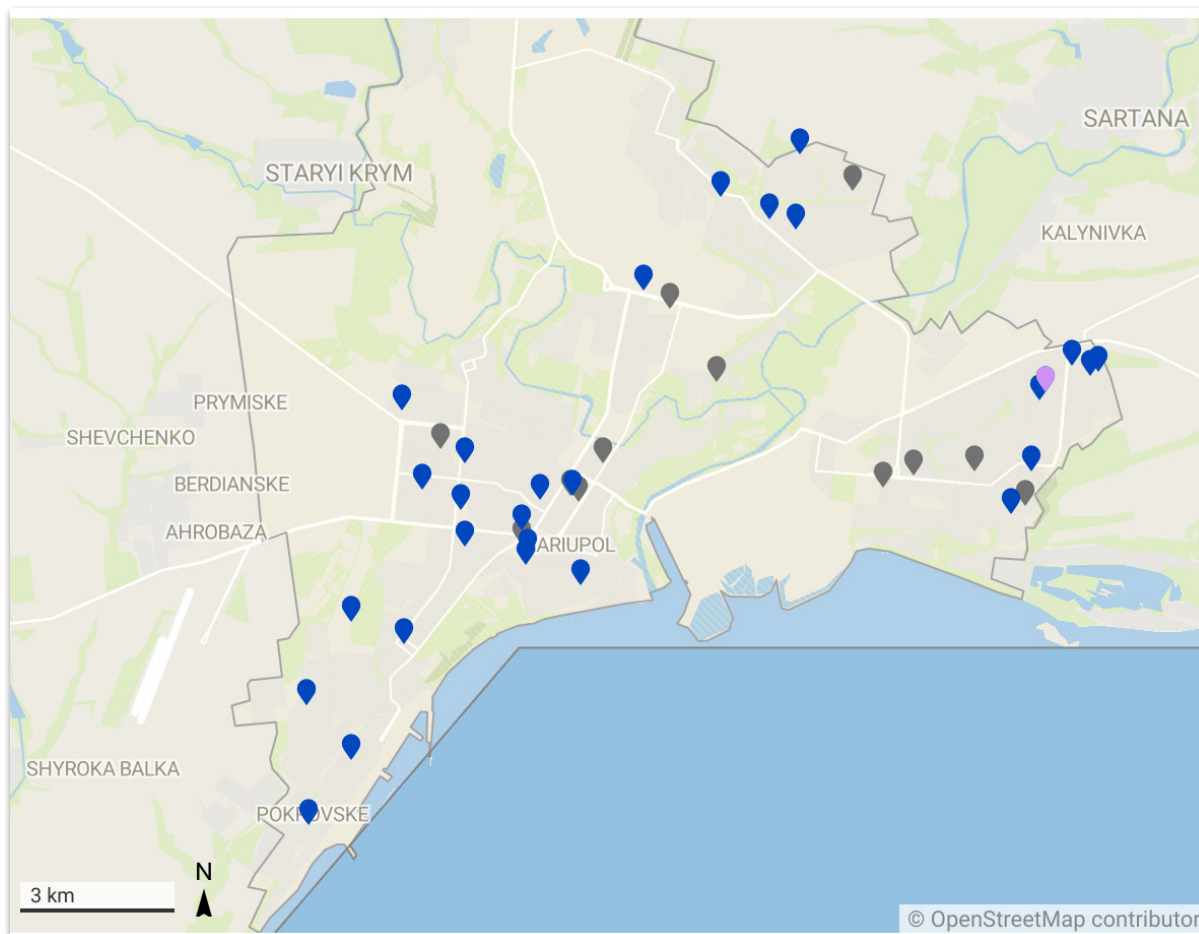


Figure 7: All damaged educational institutions in Mariupol (Donetsk oblast) in the months of March (Grey), April (Dark Blue) and February 2023 (Light Purple).

Other areas outside of Mariupol, in Donetsk oblast, suffered extensive damage to schools between February 2022 and February 2023, correlating with the shifting frontlines in this period. Distinguishable in figure 8 is the increased occurrence of damage in

August as well as December 2022 - February 2023, coinciding with an increase of fighting in three areas of Donetsk oblast: Bakhmut, Soledad, and Vuhledar (figure 8).

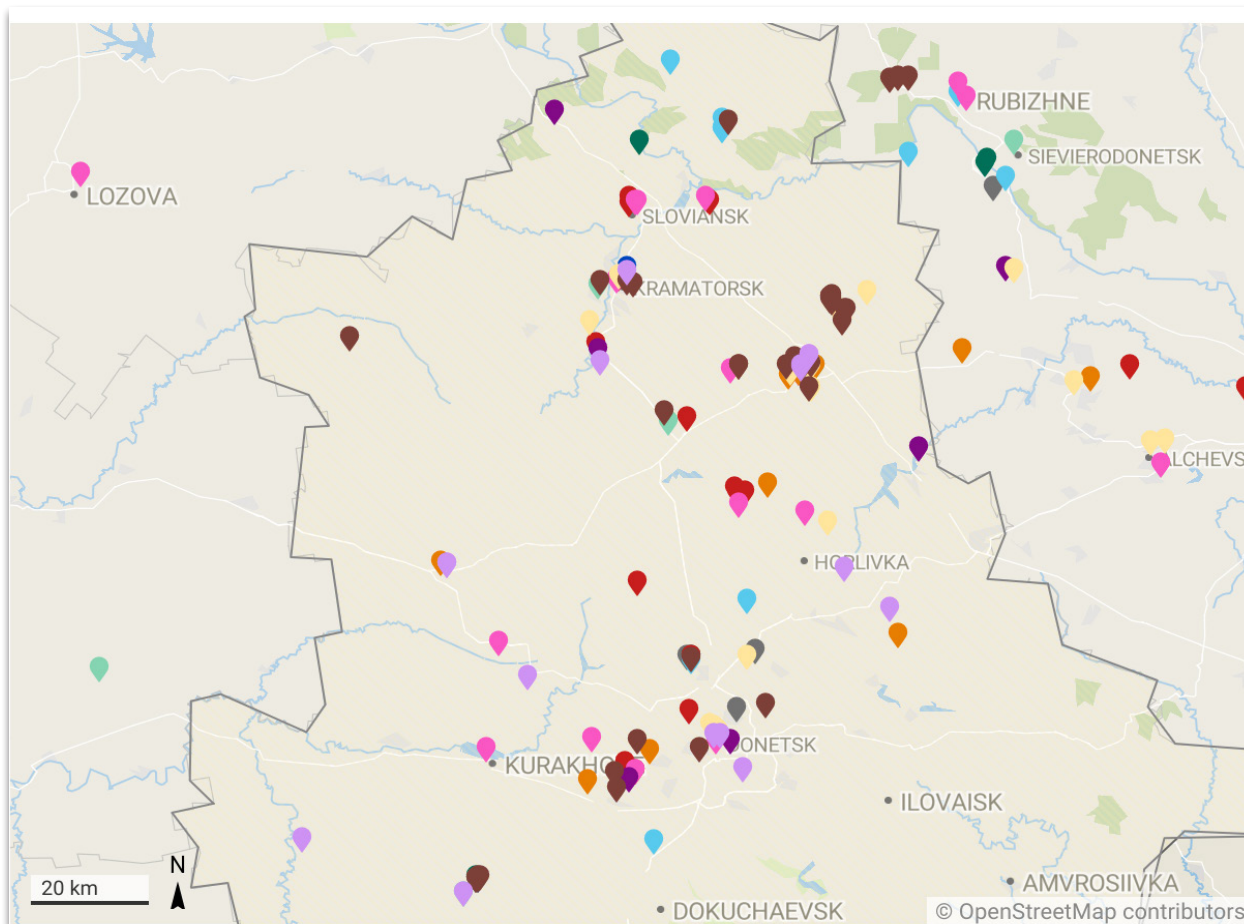


Figure 8: All damaged educational facilities in Donetsk oblast, excluding Mariupol, in the months of February (Black), March (Grey), April (Dark Blue), May (Light Blue), June (Dark green), July (Light Green), August (Red), September (Pink), October (Dark Purple), November (Orange), December (Yellow), January 2023 (Brown), February 2023 (Light Purple).

The data on the damage and destruction of schools in Donetsk oblast has shown that the region has experienced great damage to its infrastructure, particularly between December 2022 and February 2023 in the Bakhmut and Soledar area.

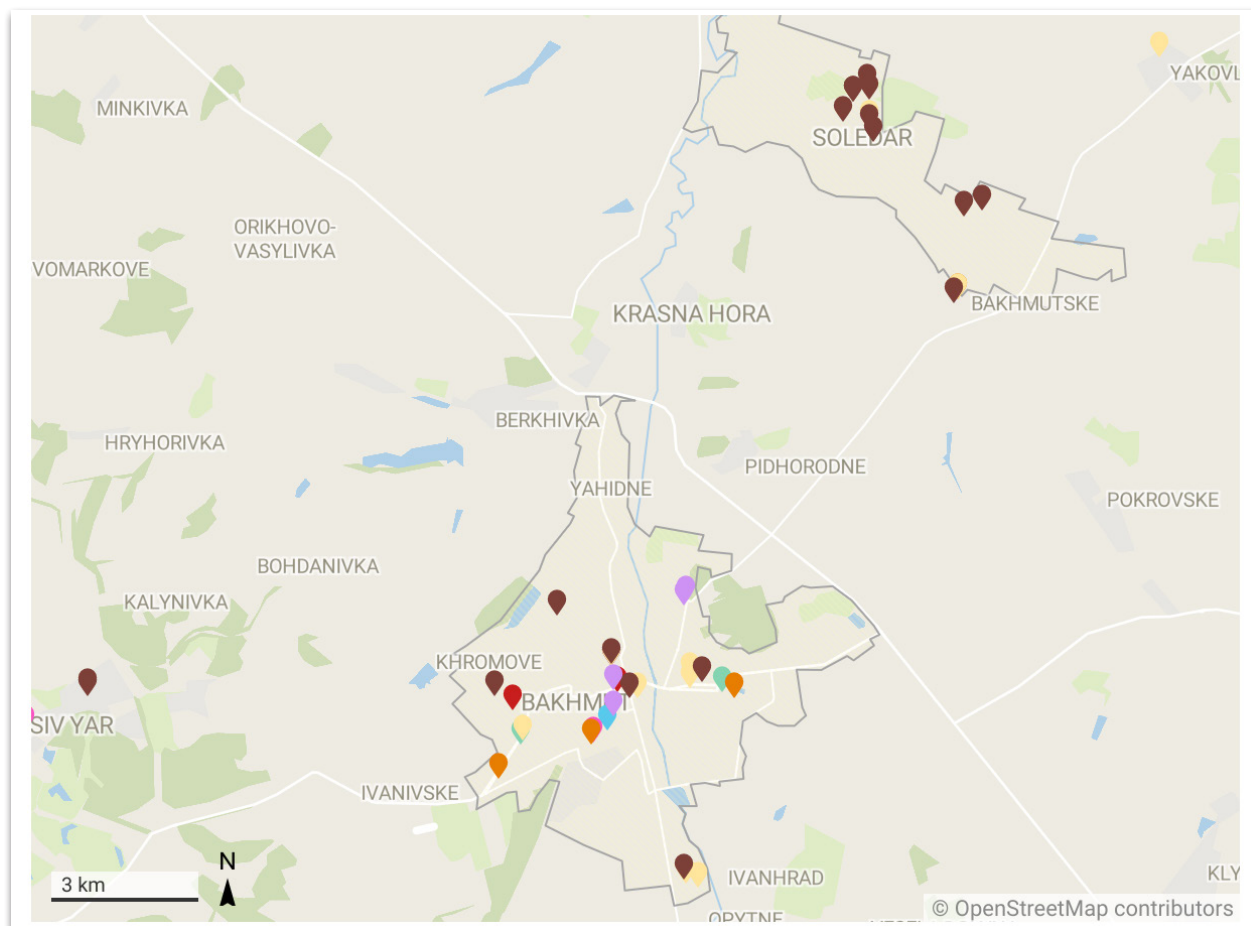


Figure 9: All damaged educational facilities in Bakhmut and Soledar, Donetsk oblast, in the months of May 2021 (Light Blue), July (Light Green), August (Red), November (Orange), December (Yellow), January 2023 (Brown), February 2023 (Light Purple).

Analysis of Kharkiv oblast

In Kharkiv oblast, CIR investigators observed patterns of destruction that were similar to but not nearly as extensive as in Donetsk oblast. Out of the 75 damaged educational facilities in Kharkiv oblast, the majority of incidents CIR investigators were able to verify occurred in Kharkiv city and the surrounding villages of Mala Danylivka, Malaya Rohan and Merefya. Further

southeast, a number of incidents were identified in Izyum¹⁰ or in close proximity to Izyum (see figure 10). As in Donetsk oblast, a peak in affected institutions was observed in March. However, numbers subsided drastically in April and May, before rising again at the end of June/beginning of July. September saw another peak before decreasing again in the final

¹⁰ Also spelled 'Izium'.

months of 2022, remaining low in the first two months of 2023. The number of CIR verified damaged institutions per month in Kharkiv oblast are: one in February, 24 in March, four in April, three in May, six in June, nine in July, five in August, 11 in September, two in October, two in November, none in December, four in January and three in February (see figure 11).

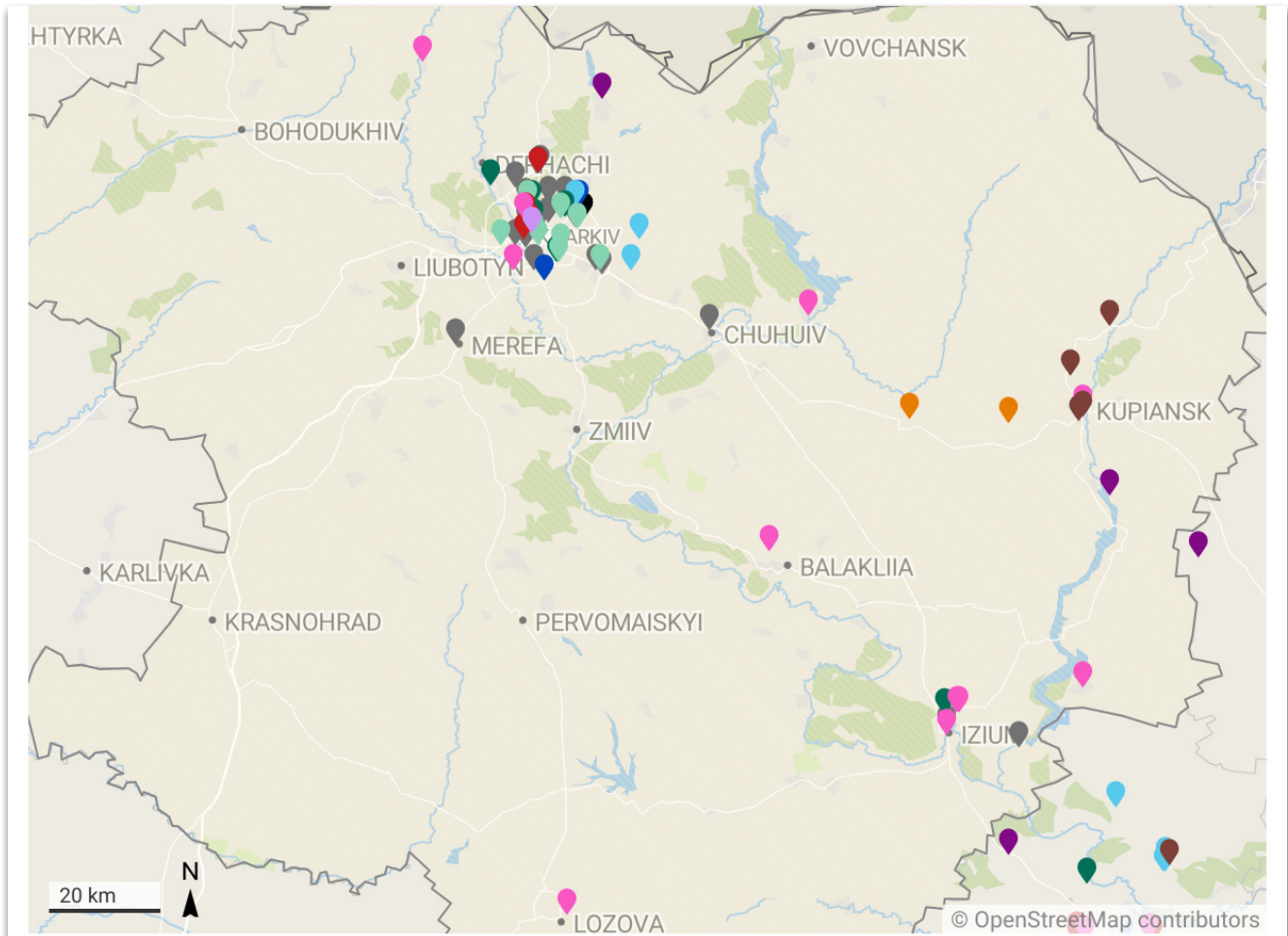


Figure 10: All damaged educational facilities in Kharkiv oblast in the first year of the full-scale invasion. months of February (Black), March (Grey), April (Dark Blue), May (Light Blue), June (Dark Green), July (Light Green), August (Red), September (Pink), October (Dark Purple), November (Orange), December (Yellow), January 2023 (Brown) and February 2023 (Light Purple)

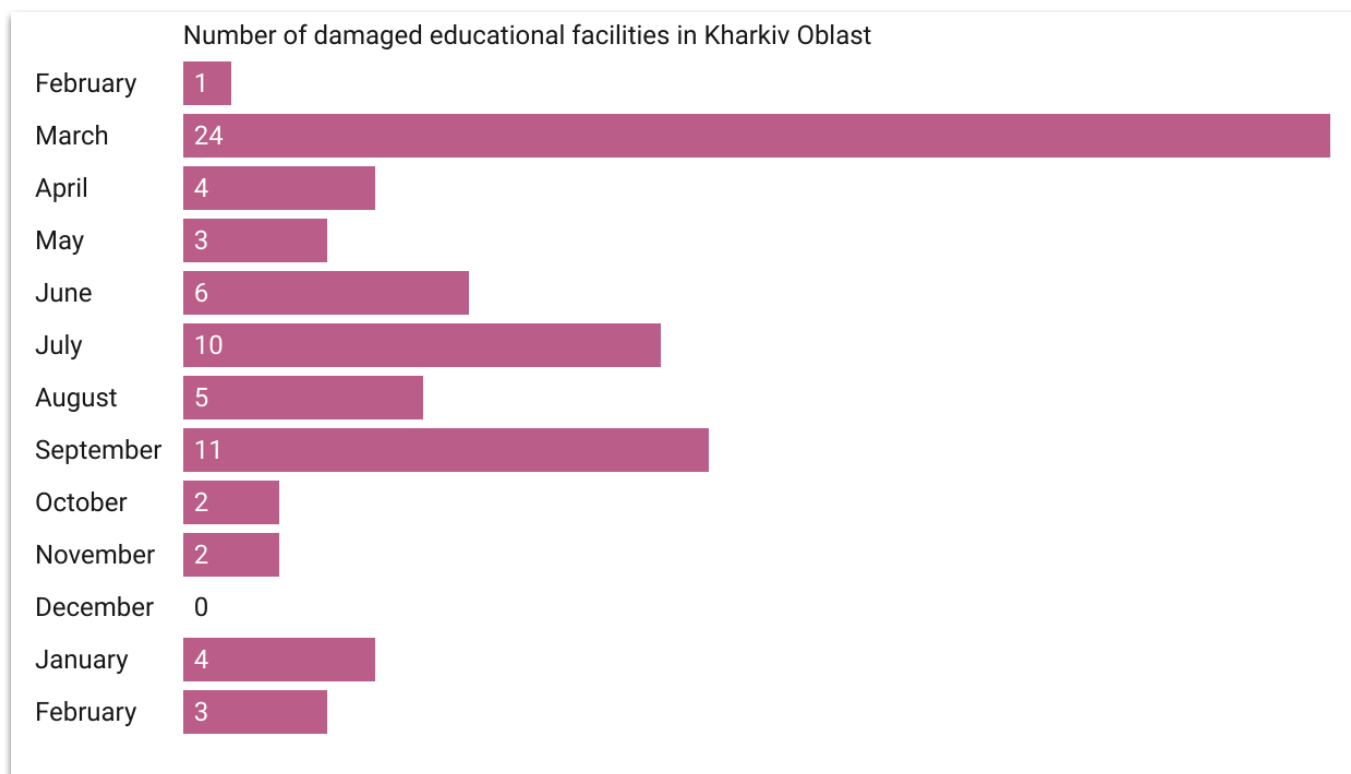


Figure 11: The number of damaged educational institutions in Kharkiv oblast per month.

The majority of schools affected in Kharkiv oblast are located in the northeastern city of Kharkiv, the second largest city in Ukraine. The city has suffered large-scale damage as a result of the conflict. A total of 65% (49 out of the total 75) of the verified damaged schools in Kharkiv oblast were identified in Kharkiv city over the reported time period. Whereas in Mariupol (Donetsk oblast) a specific time frame was observed in which educational facilities were affected, Kharkiv city experienced a continuous trend in the shelling of educational infrastructure, with March 2022 experiencing the highest number of

attacks (see figure 11).

Furthermore, CIR verified that at least one school, Kharkiv School №78 [49.950742, 36.308188], was targeted twice,¹¹ the first time on 28 June 2022¹² and again on 10 July 2022.¹³

Previously reported by CIR, an analysis of the areas surrounding the educational facilities in Kharkiv city suggested that the attacks were targeted, rather than a by-product of indiscriminate attacks on civilian infrastructure.¹⁴

¹¹ In this report, this has been counted in the data as one incident since it is one educational facility.

¹² @h_saltovka (28 June 2022). Available at: https://t.me/h_saltovka/51381

¹³ Main Department of the National Police in the Kharkiv region (11 July 2022). Available at: <https://hk.npu.gov.ua/news/zruynovana-shkola-ta-zhitloviy-budinok-mirnikh-gromadyan-politsiya-fiksue-naslidki-nichnogo-raketnogo-udaru-po-kharkovu>

¹⁴ Centre for Information Resilience (1 September 2022) 'The Systematic Targeting of Educational Infrastructure in Kharkiv'. Available at: <https://www.info-res.org/post/the-systematic-targeting-of-civilian-infrastructure-in-kharkiv-schools-and-educational-facilities>

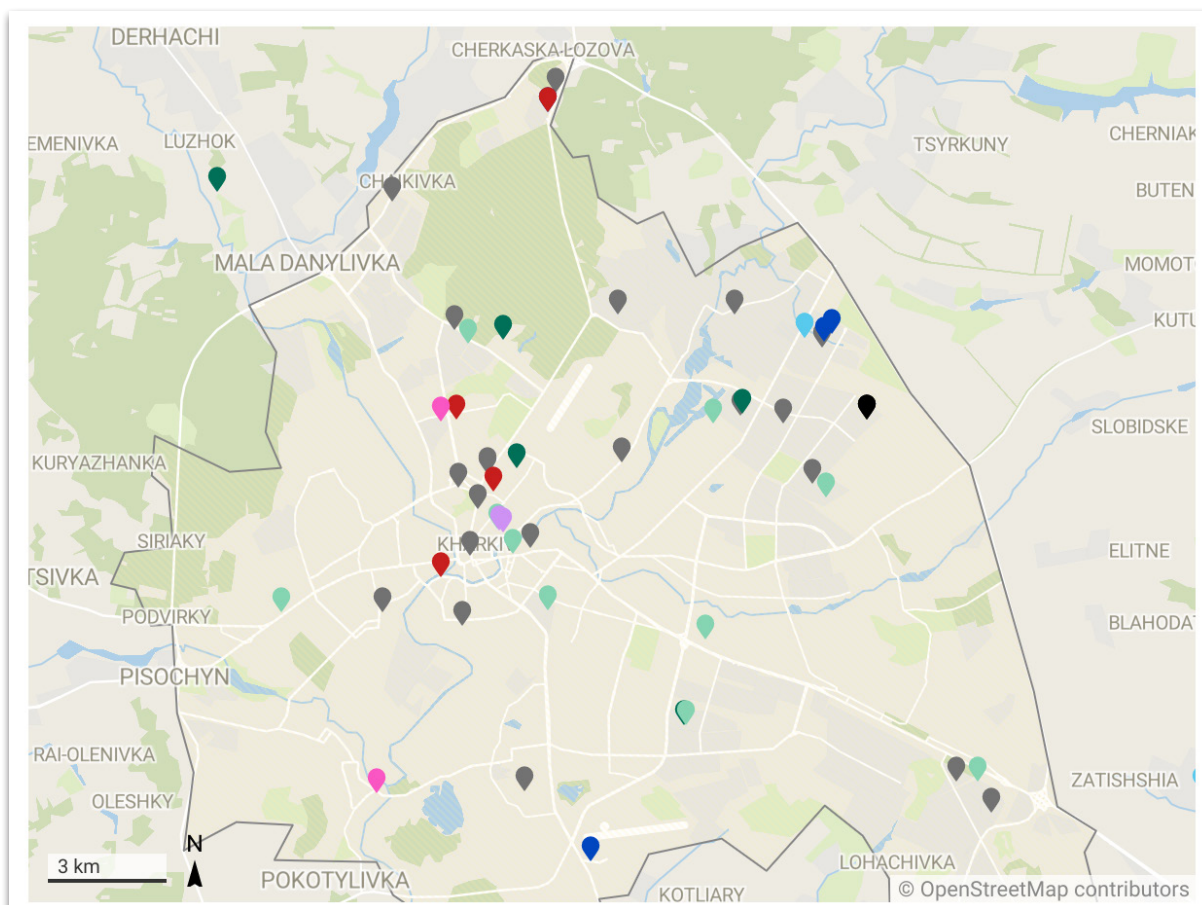


Figure 12: All damaged educational facilities in Kharkiv city in the months of February (Black), March (Grey), April (Dark Blue), May (Light Blue), June (Dark green), July (light green), August (Red), September (Pink), October (Dark Purple), November (Orange), December (Yellow), January 2023 (Brown) and February 2023 (Light Purple).

Of the remaining 26 institutions damaged outside of Kharkiv city, six are located in close proximity to the city of Kharkiv, within a range of 30 kilometres. Another five were identified in the southeast of Kharkiv oblast,

in the city of Izyum or just outside of Izyum.

According to the data analysed in this report, the city of Kharkiv was the main target in Kharkiv oblast during the first months of the Russian invasion.

Analysis of Kherson oblast

Kherson oblast saw a notable increase in damage to education facilities after August 2022. Until August 2022 CIR investigators had verified damage to six education facilities in Kherson oblast. The period between September 2022 and February 2023 saw a significant increase in effect on Kherson oblast. After 30 education facilities were verified as damaged between September 2022 and February 2022, the total number of affected education facilities rose to

36 over the one-year course of the invasion.

Kherson city itself was affected the most since August 2022. The increase in verified damaged education facilities in Kherson oblast, and particularly Kherson city, correlated with a renewed intensification of shelling of the city after Russian forces retreated in September 2022.¹⁵

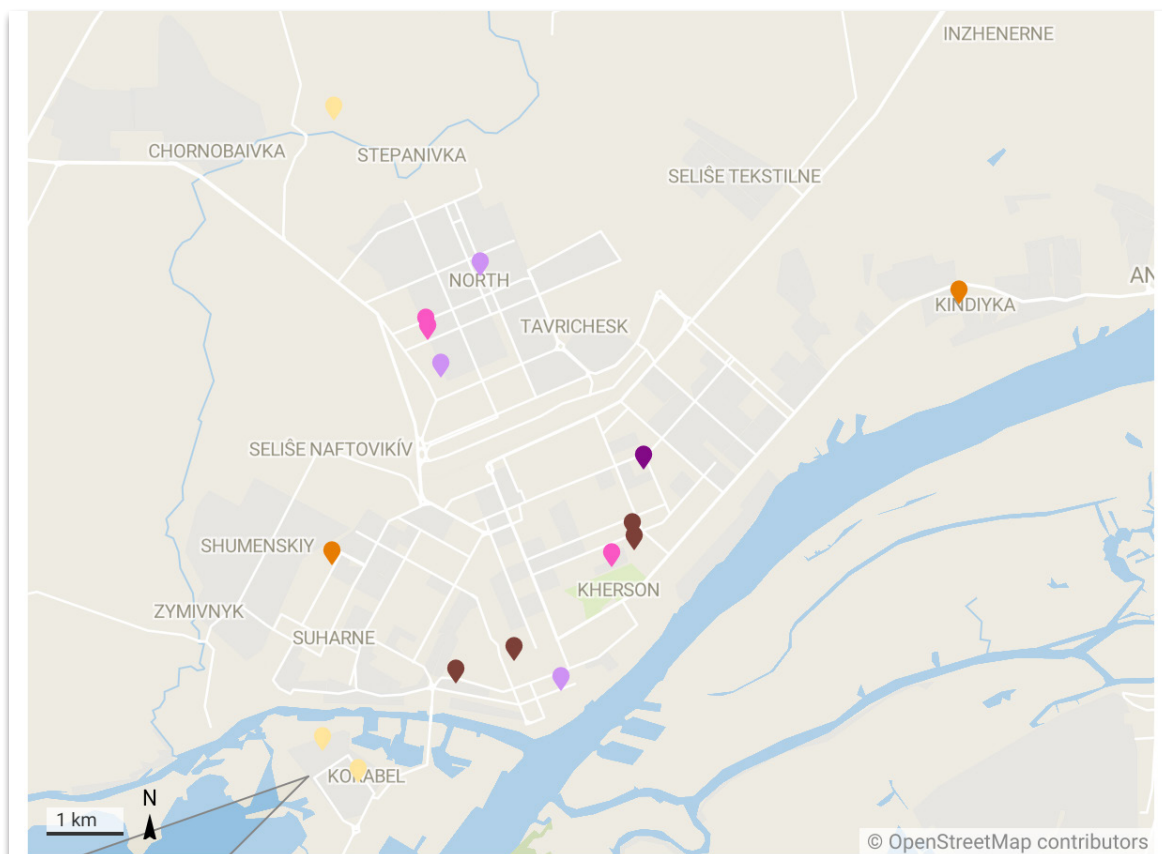


Figure 13: All damaged educational facilities in Kherson, Kherson oblast in the months of September 2022 (Pink), November (Orange), December (Yellow), January 2023 (Brown) and February 2023 (Light Purple).

¹⁵ Fiedler and Kuznetsov (9 November 2022). Available at: <https://www.politico.eu/article/russia-withdraw-troops-kherson-ukraine-war-sergei-surovikin/>

DAMAGE OF EDUCATIONAL FACILITIES AND THE SHIFTING OF THE FRONTLINE

In order to better understand the ongoing invasion of Ukraine, CIR investigators analysed the damage to educational facilities in relation to the shifting frontline throughout the war.¹⁶ These observations are important as they demonstrate the severity of the aggression through its impact on education systems. CIR's data and observations provide a better understanding of the shifting frontline and, thus, the course of the invasion through the lens of

the damage to educational facilities.

The analysis is split up into sections according to month. Each section briefly touches upon each oblast and the cities of importance in that oblast, which suffered damage or destruction of educational facilities in that month. This is then compared to the shifting frontline in that month and the months prior. Any peculiarities are also highlighted.

February/March 2022

On 28 February, just four days after Russia began the full-scale invasion of Ukraine, Russian forces had gained control over a part of Kharkiv oblast, just north of Kharkiv city, as well as part of Donetsk oblast, just east of Mariupol.¹⁷

Around mid-March, the occupied area in Donetsk oblast had rapidly expanded. Mariupol was completely surrounded,¹⁸ with a part of the city falling under Russian control towards the end of the month.¹⁹ The rapidly shifting frontline and the closing in on Mariupol are reflected in the data presented, where an increase in damage to educational institutions in

Mariupol was observed in mid-March.

During March, large areas in the east of Kharkiv oblast were occupied,²⁰ with the frontline remaining north and east of Kharkiv city. The close vicinity to the frontline is likely related to the high number of damaged educational facilities during the month.

Furthermore, in March, several damaged schools were verified in Kyiv oblast. The majority of incidents were observed west of Kyiv city, in line with the occupied territory that mainly spanned from the north of the oblast up to the western outskirts of Kyivcity in March.

16 Liveuamap (Last accessed 26 March 2023). Available at: <https://liveuamap.com/en/time/02.10.2022>

17 Khurshudyan and Berger (28 February 2022). Available at: <https://www.washingtonpost.com/world/2022/02/28/kharkiv-ukraine-russia-war-east/>

18 James (11 March 2022). Available at: <https://www.independent.co.uk/news/world/europe/russia-ukraine-mariupol-aid-latest-b2034100.html>

19 Berger et al (21 March 2022). Available at: <https://www.washingtonpost.com/world/2022/03/21/ukraine-mariupol-seige-russia-faq/>

20 McCann et al (17 March 2022). Available at: <https://www.nytimes.com/interactive/2022/03/17/world/europe/russia-destroying-kharkiv.html>

April 2022

The majority of schools affected in April were identified in Donetsk oblast, specifically in the city of Mariupol. Throughout April, Mariupol came under full control of the advancing Russian forces (apart from Azovstal),²¹ possibly explaining the high number of attacks on educational facilities in the city.

May 2022

Like the previous month, most of the affected educational infrastructure was located in Donetsk oblast. However, in May no schools were observed to be damaged in Mariupol. This can be explained due to the fact that Mariupol came under full Russian control at the end of April (see 'April 2022', above) and the fighting around the immediate vicinity of the city had ceased.

Along the frontline, multiple schools were affected in Lyman and Avdiivka, Donetsk oblast. Furthermore, educational infrastructure was damaged in central Zaporizhzhia oblast and in Western parts of Luhansk oblast.

Noticeable in May is the damage of two educational facilities in the city of Novhorod-Siverskyi in Chernihiv

June 2022

The shift in the frontline around Kharkiv city, observed during May, remained throughout June. Data monitored by CIR investigators showed the frontline was now approximately 30 kilometres north of the city and 50 kilometres east of the city. Regardless of this shift and the observed drop in affected facilities in May and June, the city remained a target of shelling in June, with the city and surrounding villages seeing

Along the frontline and in occupied territories, several schools were affected in Kherson and Zaporizhzhia oblasts. Further away from the frontline, in Kyiv and Chernihiv oblasts, in areas that had been occupied prior to Russian forces retreating in April, a number of schools were hit, most in close vicinity to Kyiv city.

oblast. The area had previously been occupied by Russia in February and March, but as mentioned, Russian forces had quickly withdrawn from the region in April. Similar damage had been observed in April in Chernihiv and Kyiv oblast. These schools were located far from the frontline, possibly suggesting systematic targeting rather than being 'collateral damage' in an area near the frontlines.

Moreover, CIR investigators observed a decline in affected educational facilities in Kharkiv. Despite the frontline around Kharkiv city shifting throughout the invasion, in May the frontline shifted further away from the city after areas had been regained by Ukraine. Damaged schools were located in Kharkiv city or in the vicinity of the city itself.

the most damaged educational facilities verified by CIR investigators in this month.

In Donetsk oblast and Luhansk oblast, several incidents were reported along the frontline. Noticeable is the damage to one school in the city of Kyiv, which had not been in the vicinity of the frontline for months, since the end of March/early April.

²¹ Grove and Luxmoore (21 April 2022). Available at: <https://www.wsj.com/articles/russia-says-it-controls-mariupol-but-ukrainian-troops-hold-out-in-steel-plant-11650541039>

July 2022

In July, the data analysed by CIR showed an increase of affected schools in Kharkiv oblast, all in Kharkiv city. Given that the frontline remained stable and far from these sites since the shift in May and June, the increase is notable and suggests systematic targeting, as previously observed by CIR investigators.²²

Several incidents in and around Donetsk city, as well as in other parts of Donetsk oblast, were also observed. Most of these were located along the frontline, apart from an attack that occurred on a

August 2022

Since the peak in March and April, the number of affected educational facilities in Donetsk oblast had subsided before it peaked again in August. In March and April, the peak had been attributed to the siege of Mariupol. However, in August, the damage appears to be sporadic but mainly along the frontline, apart from an incident verified in Kramatorsk and the nearby city of Druzhkivka in Donetsk oblast.

Once again, schools in Kharkiv city were affected in August, despite the shifted frontline at the end of

September 2022

In September, CIR investigators recorded 35 cases where educational facilities were damaged or destroyed close to the frontline. The intensity of the attacks remained high as some schools were left unable to operate since the start of the new school year on 1 September. Seven educational facilities were deemed unusable following alleged heavy targeting by Russian forces across the month, including a music school in Sinhurivka and a police college in Kherson, as well as four schools in Kharkiv, Izyum, Bakhmut,

school in Kramatorsk, which was not in vicinity of the frontline in July. Other incidents were recorded in Kherson, Mykolaiv, and Luhansk oblasts.

For the first time since the beginning of the war, CIR investigators verified a affected educational facility in Dnipropetrovsk oblast. Located southeast of Dnipro, Prosiana, the location of the school, is not close to the frontline, which could also indicate systematic targeting.

May (see 'May 2022', above).

An increase in damage to educational facilities in Mykolaiv, Kherson, and Dnipropetrovsk oblast was observed, indicating a shift of intensity along the frontline to the Kherson area.

Moreover, damage was observed in occupied territories of Luhansk oblast and previously occupied areas of Sumy oblast.

and Mykolaivka.

Some of the affected schools are critical to civilians and are sometimes the only schools within a town. One case of a school critical to civilians is School №1 in Mykolaivka, Donetsk oblast, which was struck in the early hours of 28 September. The school was used as a shelter for civilians. An emergency response team recovered the body of the 63-year-old female guard of the school.²³

²² Centre for Information Resilience (01 September 2022) 'The Systematic Targeting of Educational Infrastructure in Kharkiv'. Available at: <https://www.info-res.org/post/the-systematic-targeting-of-civilian-infrastructure-in-kharkiv-schools-and-educational-facilities>

²³ AlJazeera (19 September 2022). Available at: <https://www.aljazeera.com/gallery/2022/9/29/photos-russian-attack-hits-school-in-eastern-ukraine>

October 2022

The number of cases verified by CIR investigators in October dropped significantly compared to verified cases in September. Whilst the number decreased, there were still a large number of cases, mostly focused on towns and cities close to the frontline. Donetsk and Zaporizhzhia oblasts were affected the

most.

As opposed to September, October had two verified incidents away from the frontline, in Kyiv and Kharkiv oblasts.

November 2022

November saw a substantial increase in damage to educational facilities compared to October. A large number of incidents occurred in Donetsk oblast, four in Bakhmut and Bakhmut's'ke, as well as continued incidents in Dnipropetrovsk, Kharkiv, Kherson,

Luhansk, Mykolaiv, and Zaporizhzhia oblasts.

A school in Vyshorod, Kyiv oblast was damaged. The incident occurred during a large-scale missile attack aimed at Ukrainian energy infrastructure.

December 2022

Damage to educational facilities, verified by CIR, increased for the month of December, in comparison to October and November. The majority of verified incidents for December occurred in Donetsk oblast where CIR investigators verified 18 of the 30 damaged educational facilities close to the frontline. Seven were in Bakhmut or the suburb of Optyne, to the south of Bakhmut.

CIR investigators verified damage to four secondary schools in and around Kherson city. Other areas with damage include Luhansk and Zaporizhzhia oblasts. The Biology And Medicine Institute Science Educational Center of the Taras Shevchenko National University of Kyiv, Kyiv oblast, was also damaged, marking the third month in a row with affected facilities in the Kyiv area.

January 2023

January 2023 saw a significant increase in verified incidents causing damage to schools and education facilities (50). Videos and photos from January showed damage to at least 47 separate facilities close to the frontline.

CIR investigators verified damage to a large number (37) of facilities in Donetsk oblast, including five kindergartens in Soledar, as well as damage to six facilities in Bakhmut and five in Vuhledar. The

increased effect on education facilities around these three towns correlates with an intensification of fighting in these areas in January 2023.

CIR investigators verified six incidents of damage to schools and other educational facilities in Kherson oblast in January, as well as four incidents in Kharkiv oblast, highlighting an increased effect on education facilities in both these regions.

February 2023

February 2023 saw a decrease in verified incidents (34). However, February still had a high count of verified damage to educational facilities, similar to August and September 2022 (35 each).

Like prior months, Donetsk oblast had the most verified incidents. CIR verified five separate incidents of damage to educational facilities in Bakhmut. There were also six verified incidents of damage to educational facilities in towns and cities surrounding Kramatorsk, showing an increase in this area of Donetsk oblast.

General analysis

The analysis of the shifting frontline in relation to the affected educational facilities has provided an understanding of the course of the invasion. In some areas, such as Kharkiv city and Kyiv, the frontline has been observed shifting back in the early stages of the invasion, whilst damage to educational infrastructure remained frequent. Furthermore, some areas along

Once again, Kherson oblast had a high number of affected education facilities (7), highlighting an increased effect since the Russian forces left Kherson city and large parts of Kherson oblast in November 2022.²⁴

CIR verified damage to the Kharkiv National University of Urban Economy and the Palace of students of the Academy of City Management, both Kharkiv city, highlighting a renewed increase of damaged education facilitated in this area, after numbers had dropped when Russian forces left the area around the city in 2022.

the frontline, such as Donetsk oblast, experienced more attacks than other areas along the frontline, such as parts of Zaporizhzhia oblast. The data analysed in this report suggests changes in intensity along different areas of the frontline; and unpredictable attacks in areas further from the frontline.

²⁴ Fiedler and Kuznetsov (9 November 2022). Available at: <https://www.politico.eu/article/russia-withdraw-troops-kherson-ukraine-war-sergei-surovikin/>

CASE STUDIES: A CLOSER LOOK AT THE AFFECTED EDUCATIONAL FACILITIES

This section takes a closer look at the educational facilities that were affected throughout the year. Behind each number and figure presented in this research, there is a real facility that has been damaged, creating a long-lasting impact on access to education across age groups and disciplines.

CIR investigators observed the damage of multiple types of educational facilities. Mainly, the buildings of secondary schools, in the form of regular secondary

institutions, vocational schools and lyceums, were damaged or destroyed. Kindergartens, primary schools and faculties of colleges and universities have also been frequently affected. Less frequent but also verified by CIR investigators are orphanages, specialised schools for children with disabilities, daycares, art schools, music schools and sports complexes of schools and universities. The first case study is the primary recurring type of educational facility impacted: secondary schools.

Secondary school - Partial destruction of school N°20 in Mariupol

Secondary school N°20 is located in the Kalmiuskyi district of Mariupol right next to a police station [47.136495, 37.578732]. Footage from 31 March 2022, shows part of the school completely destroyed (see figure 14).²⁵

By comparing before and after images of the school, gathered from Google Maps and video footage, it is

possible to see the extent of the damage. Prior to the war, the building surrounded by a red box in figure 14 was attached to the building next door. By 31 March 2022, these buildings had become completely disconnected. The video also shows the rest of the school building damaged and covered in rubble. Surrounding residential buildings are also visibly damaged or destroyed.

²⁵ Mariupol now (31 March 2022). Available at: <https://t.me/mariupolnow/4626>



Figure 14: Partially destroyed school N°20 in Mariupol, Donetsk oblast [47.136495, 37.578732].

Secondary school N°20 in Mariupol illustrates one of many examples of indiscriminate shelling of Ukrainian cities. Mariupol has seen continued shelling, resulting in damage of all types of civilian infrastructure,

including many education facilities. Another example of complete indiscriminate shelling is that of 'Happy Time' kindergarten in Kyiv (see below).

University - Petro Mohyla Black Sea National University in Mykolaiv

Located in the Tsentral'nyi district of Mykolaiv is Petro Mohyla Black Sea National University [46.971667, 32.015109], one of the top medical colleges in Ukraine.²⁶

On 17 August 2022, a missile struck the university, destroying part of the building. In figure 15, damage and partial destruction of the entrance of the building

is visible, as outlined by the purple box. Another section at the side of the entrance identified by the red box was also impacted. The facade of the building can be seen completely destroyed, with rubble covering the front of the building. Images in the figure below show the extent of the damage and the university building before the strike.



Figure 15: The damaged entrance of Petro Mohyla Black Sea National University in Mykolaiv [46.971667, 32.015109].

²⁶ Select your University. Available at: <https://www.selectyouruniversity.com/ukraine/petro-mohyla-black-sea-national-university.php>

The University's library, which housed over 110,000 published sources, was also damaged in the attack.

Part of the ceiling and the windows are visibly damaged.



Figure 16: The library before (left) and after (right) the strike on the Petro Mohyla Black Sea National University in Mykolaiv.

Kindergarten - №323 in Kharkiv

Right before the start of the new school year on 1 September 2022, another kindergarten in Kharkiv, kindergarten №323, was damaged.

'Cinderella' kindergarten №323 [50.020045, 36.227289] is located in the Schevchenkivs'kyi district of Kharkiv. On the premises of the kindergarten, the 'magic house' nursery school can be found in a cottage-style house.

On the morning of 30 August 2022, the kindergarten was struck, along with multiple other sites of civilian infrastructure in Kharkiv city, such as a park and a pharmacy. Damage to one of the entrances of the

kindergarten building is visible and the staircase is partially destroyed. Further damage is apparent to a covered part of the kindergarten's yard, seemingly an area where the children could play outside.

CIR investigators were able to locate the kindergarten using images from Google Maps. The grey and green coloured rim (red box in figure 17) on the side of the building and the colourful staircase that had been damaged by the strike provided distinctive features that helped CIR to verify that this was kindergarten №323. The kindergarten marks the fifth educational institution that CIR investigators were able to verify that was damaged or destroyed in Kharkiv in August.



Figure 17: The damaged entrance and play-area of Kindergarten №323 in Kharkiv [50.020045, 36.227289].

The destruction and damage to secondary school №20 in Mariupol, kindergarten 'Happy Time' in Kyiv, the university building of Mohyla Black Sea National University in Mykolaiv, and kindergarten №323 in Kharkiv have shown a glimpse of the damage

Ukrainian educational facilities have suffered. However, this glimpse is a crucial way to visualise the extent of the war. As a result of the ongoing Russian full-scale invasion, increasing numbers of children and students do not have access to education.

Inaccurate Russian missiles - 'Happy Time' in Kyiv

'Happy Time' kindergarten is located in the Schevchenkivs'kyi district of Kyiv [50.464451, 30.484636]. It is situated in the middle of a residential

neighbourhood, multiple hospitals, and an industrial area.

On 26 June 2022, the kindergarten was struck by a cruise missile.²⁷ A large crater is visible on the premises of the kindergarten, having impacted an area that used to be a playground. On the same day, in close proximity to the kindergarten, an apartment building was struck, causing multiple casualties.



Figure 18: Large crater visible in front of 'Happy Time' kindergarten in Kyiv [50.464451, 30.484636].

The same area had been bombed twice before, on 15 March 2022 (Lukianivska Station) and 29 April 2022 (another apartment building). Investigators were able to link the bombings and identify that the prior strikes were all around the same industrial area of Kyiv. CIR investigators were able to identify the likely target

of the strike: 'Zavod Artem'. The company is a manufacturer of air-to-air missiles, automated air-guided missile training and maintenance systems, anti-tank guided missiles, as well as instruments and aircraft equipment.

²⁷ LemberNews (26 June 2022). Available at: https://twitter.com/lemberg_news/status/1540991022544683008



Figure 19: The impact crater in the play-area of a kindergarten in Kyiv, relative to the intended target and a second struck location [50.464506, 30.484462].

This suggests that the strike on the kindergarten, and multiple other strikes, were not the intended targets but rather a result of inaccurate Russian firing.

Besides the repeated shelling of kindergartens and

secondary schools, multiple university departments and faculties in cities such as Kharkiv, Irpin, Lyman, and Mykolaiv have suffered damage as a result of the invasion.

Case study showing the effect on a town's education system - Vuhledar, Donetsk oblast

The town of Vuhledar in Donetsk oblast, southeast of Donetsk city, has been subjected to intense shelling since late January when Russian forces started a new offensive in an attempt to capture the town. The Russian offensive against Vuhledar has strategic significance as the town is part of the Ukrainian defence line in Donetsk oblast, and the capture of the town would weaken Ukrainian defence. The town could also function as a starting point for a future Ukrainian offensive to recapture southern areas of Ukraine, partially cutting off Russian supply routes to Zaporizhzhia oblast. Damage to Vuhledar has been extensive as a result of heavy artillery battles.

Drone footage, shared on Facebook by the 72nd separate mechanised brigade of the Ukrainian armed forces was used by CIR investigators to verify damage to critical civilian facilities since the start of the offensive in late January 2023, including²⁸ :

- Nursery № 1 [47.77745, 37.245656]
- Kindergarten № 5 [47.776684, 37.245496]
- School № 2 [47.77685, 37.247578]
- Secondary School № 1 [47.781087, 37.25404]
- Kindergarten № 2 [47.78156, 37.248139].

Damage to Nursery № 1 and School № 2 was most extensive, with several sections of Nursery № 1 having structural damage and the roof of School № 2 completely destroyed. Verified damage to the other remaining education facilities was minor to moderate, with Kindergarten № 2 and № 5 having damaged windows and Secondary School № 1 having damage to a small section of the roof.



Figure 20: Overview of damaged education facilities in Vuhledar, Donetsk oblast. Visible in drone footage, shared on Facebook, on 27 January 2023, by the 72nd separate mechanised brigade of the Ukrainian armed forces.

²⁸ 72 ОМБр ім. Чорних Запорозжців (27 January 2023). Available at: <https://www.facebook.com/watch/?v=682047750311592>

Although the shelling of Vuhledar, and fighting in the surrounding areas has increased significantly since the new Russian offensive, damage to the town is not a recent occurrence as CIR investigators have verified damage to several residential buildings as well as schools, industrial areas and transport hubs in prior months.

Between the start of the invasion and January 2023, CIR investigators have verified damage to civilian

facilities including:

- School № 3²⁹ [12 June 2022 - 47.781698, 37.243283];
- School № 2³⁰ [19 July 2022 - 47.777141, 37.247405].

The five education facilities damaged in the second half of January indicate a significant increase in impact since Russian forces intensified shelling in their offensive on Vuhledar.

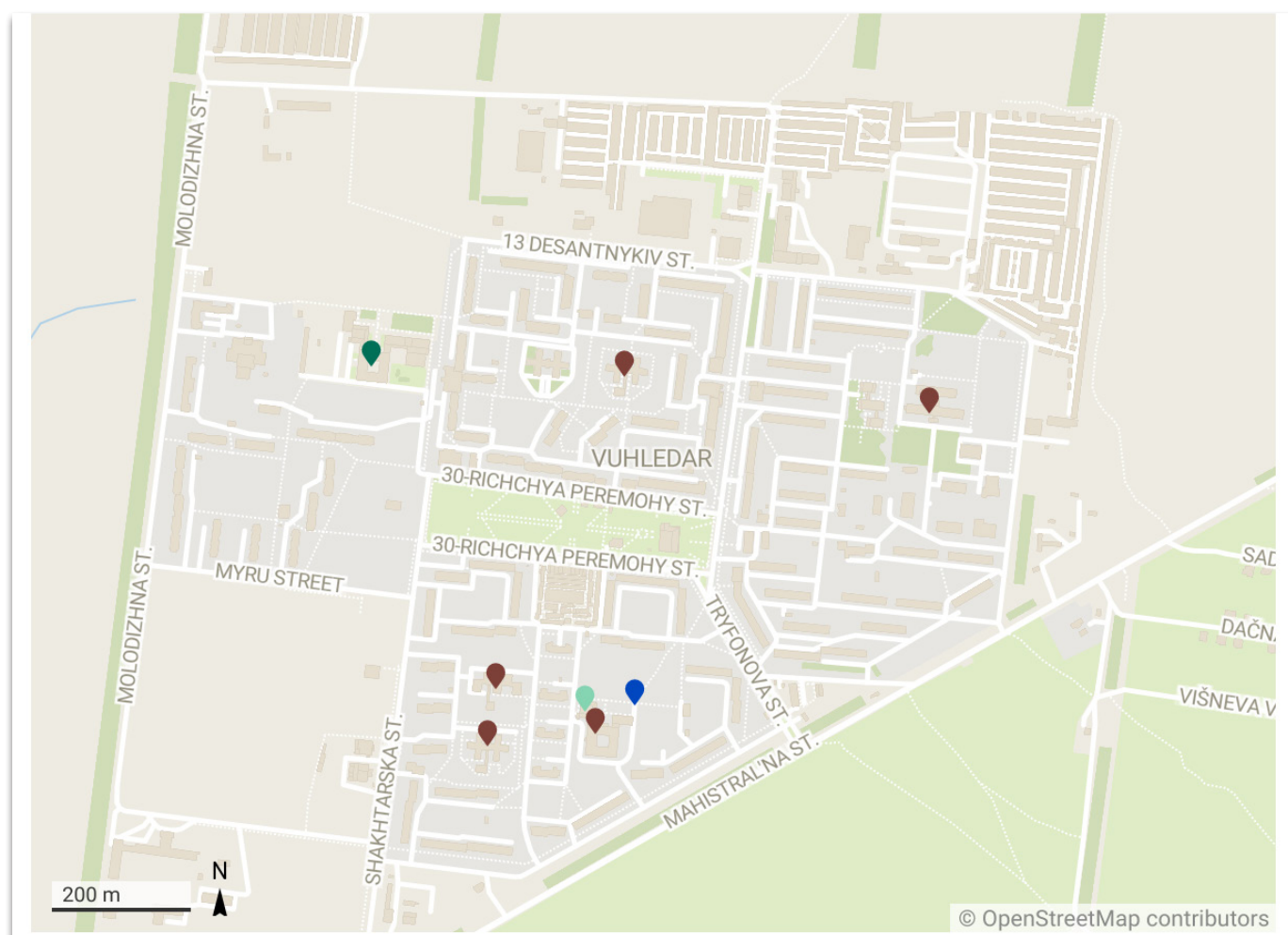


Figure 21: All damaged educational facilities in Vuhledar, Donetsk oblast in the months of April 2021 (Dark Blue), June (Dark Green) and January 2023 (Brown).

29 <https://twitter.com/KremlinTrolls/status/1535886776312684544>

30 https://t.me/ugledar_news/143226

CONCLUDING REMARKS

This report analysed data on the affected educational facilities in Ukraine that CIR investigators collected and verified over the first year of the full-scale invasion. Data collected on 381 incidents resulting in damaged schools and other educational institutions demonstrates the extent of infrastructural damage cities and towns all over Ukraine have suffered as a result of the invasion. Analysis of the data shows that educational institutions in Kharkiv oblast and Donetsk oblast were continuously affected.

The period that saw the highest number of education facilities affected was December-February, coinciding with an increase in fighting in Bakhmut, Soledar, and Vuhledar. This data matches the Russian offensive in these cities.

A previous investigation on the targeting of schools in Kharkiv city and the analysis of the shifting frontline in

relation to the educational facilities have furthermore corroborated reports of indiscriminate shelling by Russian forces. Finally, an in-depth examination of two kindergartens, a secondary school, a university building, and the town of Vuhledar have demonstrated that behind the statistical data and analysis, there are real facilities, livelihoods, and futures affected or at future risk from the bombardment. The case studies provided a closer look into the numerous different types of education facilities damaged and destroyed since the start of the invasion.

CIR investigators continue to monitor the targeting or structural damage to educational facilities in Ukraine for future reporting.

For full access to the data verified by CIR please contact: hello@info-res.org.

Eyes on Russia

EDUCATION

The effect of the invasion on Ukraine's
education system - One year overview



Photo by lama_sing / Adobe Stock: A geography textbook for grade 9
against the backdrop of a bombed-out school in the city of Kharkiv.

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