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Going Dark: The Inverse Relationship between Online and On-the-Ground Pre-offence Behaviours in Targeted Attackers

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Executive Summary

This pilot study investigates the correlation of online and on-the-ground behaviours of three lone-actor terrorists prior to their intended and planned attacks on soft targets in North America and Europe: the Pittsburgh synagogue shooter, the Buffalo supermarket shooter and the Bratislava bar shooter. The activities were examined with the definition of the proximal warning indicator *energy burst* from the Terrorist Radicalization Assessment Protocol (TRAP-18), originally defined as an acceleration in frequency or variety of preparatory behaviours related to the target. An extensive quantitative and qualitative assessment of primary and secondary sources was conducted. This included raw data from different technology platforms (*Gab*, *Discord* and *Twitter* – now *X*) and open-source materials, such as criminal complaints, superseding indictments and court trial transcripts.

Preliminary findings from this small sample suggest an inverse relationship between online and offline behaviours across all three perpetrators. The average length of time between the decision to attack and the actual attack was five months, with an elevation of digital activities in the three months leading up to the incident, along with some indications of offline planning. In the week prior to the event, social media activity decreased – with two subjects going completely dark on the day before the respective acts of violence – while terrestrial preparations increased. On the actual day of the incident, all assailants accelerated their tactical on-the-ground actions and resurfaced in the online sphere to publish their final messages in the minutes or hours prior to the attack. It appears that the energy burst behaviours, in the digital sphere and in offline actions, can be measured in both frequency and variety. Operational implications of this negative correlation are suggested for intelligence analysts, counterterrorism investigators and threat assessors, and policy recommendations are proposed for technology companies and policymakers.

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1 Introduction

Terrorist Radicalization Assessment Protocol

The Terrorist Radicalization Assessment Protocol (TRAP-18) is a structured professional judgement instrument for the assessment of risk of a targeted attack.¹ It consists of 18 warning indicators, and has been found to be both reliable and valid in a substantial number of studies conducted by both its originator (Dr Reid Meloy) and independent researchers over the past decade.² The instrument facilitates the prioritisation of cases according to severity and imminency of risk, and helps those engaged in counterterrorism efforts to separate the violent signals – the person mobilising for targeted action to advance a belief system – from the surrounding noise, that is other extremists who have no actual intent to be violent despite their loudly proclaimed and protected right to free speech. The instrument is widely used across North America and Europe, as well as in Australia and South Africa.

Energy Burst Warning Behaviour

Within the TRAP-18 are eight proximal warning behaviours – patterns of accelerating risk – which typically precede an attack. They are intended to focus the attention of the threat assessor. One of those proximal warning behaviours, energy burst, has received relatively little independent attention, but warrants our study to explain its parameters and discern its importance. *Energy burst* is defined as “an increase in the frequency or variety of any noted activities related to the target, even if the activities themselves are relatively innocuous, usually in the hours, days, or weeks before the attack. Social media activity may decrease during this period of time”.³ It was originally thought that such acceleration of on-the-ground behaviour might have a psychiatric motivation, such as hypomania or mania, but as case examples accumulated, it became apparent that the lone-actor terrorist was simply running out of time and had too many things to do. S/he had set the date, the clock was ticking, yet s/he had underestimated the time needed to complete the preparations. *Tempus fugit*.

The original conception, however, only focused on terrestrial activity, and overlooked any patterns that might have been occurring online. And once again, as cases were studied in an academic setting and evaluated during actual threat assessments, it became apparent that there was likely to be an inverse correlation between online and offline (on-the-ground) behaviour in the hours, days or weeks before the terrorist attack. This small-sample exploratory study is an attempt to test this hypothesis and establish the basis for subsequent larger studies which will explore this theory in greater detail.

1 J. Reid Meloy, “TRAP-18: Terrorist Radicalization Assessment Protocol,” Multi-Health Systems, 2017, <https://storefront.mhs.com/collections/trap-18>. Dr. Meloy derives income from the licensing of the TRAP-18 by Multi-Health Systems.

2 J. Reid Meloy, “TRAP-18”; Emily Corner and Natalie Pyszora, “The Terrorist Radicalization Assessment Protocol-18 (TRAP-18) in Australia: Face Validity, Content Validity, and Utility in the Australian Context,” *Journal of Policing, Intelligence and Counter Terrorism* 17, no. 3 (2022): 246–268, <https://doi.org/10.1080/18335330.2022.2117993>.

3 J. Reid Meloy, *TRAP-18: Terrorist Radicalization Assessment Protocol – User Manual* (Global Institute of Forensic Research, 2017), 19, <https://gifrinc.com/trap-18-manual/>.

The frequency of energy burst across twelve targeted attack studies (N=479) is listed in *Table 1*. The average prevalence was 43%; however, the range was 0–100%, most likely a product of variation in data collection and the heretofore novelty of this particular proximal warning behaviour, first introduced for measurement in 2011.⁴ It is notable that the lowest frequency of energy burst is found in studies that were not conducted by researchers involved in the development of the proximal warning behaviour typology. This could reflect bias on the part of such researchers who were involved in its development. In both cases, energy burst is difficult to code accurately, since the assessor needs to have calibrated the normal level of activity of the person of concern in order to determine whether behaviour is accelerating or not. Such calibration is almost impossible if the assessor is seeing the case for the first time *during* the energy burst. This is a coding problem that warrants further attention.

Perpetrators	Authors	Publication Year	Subjects	Percentage of Energy Burst
German non-terrorist public figure attackers	Hoffmann, Meloy, Guldemann & Ermer	2011	N=9	78%
German intimate partner homicide offenders	Glaz-Ocik & Hoffmann	2011	N=70	62%
German school shooters	Meloy, Hoffmann, Roshdi & Guldemann	2014	N=9	22%
European individual terrorists	Meloy, Roshdi, Glaz-Ocik & Hoffmann	2015	N=22	100%
Lone-actor terrorists in the US and Europe	Meloy & Gill	2016	N=111	8%
German mass murderers	Allwinn, Hoffmann & Meloy	2019	N=33	94%
Lone-actor terrorists in North America	Meloy, Goodwill, Meloy, Amat, Martinez & Morgan	2019	N=33	74%
German jihadist terrorists	Böckler, Allwinn, Metwaly, Wypych, Hoffmann & Zick	2021	N=18	50%
Targeted violence manifestos	Kupper & Meloy	2021	N=30	17%
US Capitol violent attackers on January 6	Challacombe & Patrick	2022	N=49	0%
Mass shooters' words (manifestos)	Slemaker	2022	N=27	0%
Sovereign citizens	Vargen & Challacombe	2022	N= 68	12%

Table 1. Frequency of energy burst proximal warning behaviour among targeted attackers in TRAP-18 studies

⁴ Jens Hoffmann, J. Reid Meloy, Angela Guldemann, and Anneliese Ermer, "Attacks on German Public Figures, 1968-2004: Warning Behaviors, Potentially Lethal and Non-Lethal Acts, Psychiatric Status, and Motivations," *Behavioral Sciences and the Law* 29, no. 2 (2011): 155–179, <https://doi.org/10.1002/bsl.979>.

Perpetrators

To examine the correlation of online and offline behaviours for this research initiative, we selected three terrorism attacks that were predominantly motivated by extreme right sentiments, contemporarily the greatest lone-actor threat in North America and Europe. The chosen assailants attacked a diverse range of targets – the Jewish, black and LGBTQIA+ communities – and we were able to obtain sufficient data to conduct the analyses for the digital and terrestrial energy burst-related activities:

Case 1: Pittsburgh Synagogue Shooter

On 27 October 2018, Robert Bowers killed eleven and injured six during a mass shooting at the Tree of Life Synagogue in Pittsburgh, Pennsylvania, a structure that houses three Jewish congregations. Immediately prior to entering his target location with multiple firearms, the assailant posted his final message on *Gab*, a popular alternative platform among the far-right, which emulates the mainstream social media platform formerly known as *Twitter* (now X), albeit with little to no content moderation. Bowers was found guilty on all 63 charges for his crimes on 16 June 2023 by a jury during a federal trial, and was sentenced to death on 2 August 2023.

Case 2: Buffalo Supermarket Shooter

On 14 May 2022, Payton Gendron killed ten and injured three during a mass shooting at a Tops Friendly supermarket in Buffalo, New York, which was frequented by mostly black Americans, his target group. In the months leading up to the attack, the perpetrator compiled a variety of written corroborations that detailed his path of radicalisation and mobilisation to violence, including a targeted violence manifesto and a private online diary on a *Discord* server, an end-to-end encrypted messaging platform popular among gamers. The digital log and manifesto were disseminated to a small number of individuals who had been invited to log into the server approximately 30 minutes prior to this act of violence.⁵ Gendron was sentenced to life in prison without parole on 15 February 2023, becoming the first person in New York State to be convicted of domestic terrorism. He still faces 27 federal charges, which could incur the death penalty.

Case 3: Bratislava Bar Shooter

On 12 October 2022, Juraj Krajčík killed two people and injured one during an attempted mass shooting at an LGBTQIA+ bar in Bratislava, Slovakia. In preparation for the act of violence, the perpetrator created a private *Twitter* (now X) account, which he made public in the days leading up to the event. On the day of the attack, Krajčík distributed his targeted violence manifesto on his profile, which he had uploaded to six file-hosting websites. After being on the run for several hours, the assailant committed suicide; his body was found twelve hours after the terrorism incident.

⁵ Amarnath Amarasingam, Marc-André Argentino, and Graham Macklin, "The Buffalo Attack – The Cumulative Momentum of Far-Right Terror," *CTC Sentinel* 15, no. 7 (2022): 1–10, <https://ctc.westpoint.edu/wp-content/uploads/2022/07/CTC-SENTINEL-072022.pdf>.

2 Methodology

This descriptive pilot study explores the online and offline behaviours of three lone-actor terrorists prior to their attacks to assess an increase or decrease (an “energy burst”) – and any variation thereof – in activities related to their digital and on-the-ground actions associated with preparing for the act of violence. We conducted an extensive quantitative analysis of primary sources which consisted of the perpetrators’ digital activities on their platforms of choice (*Gab*, *Discord* and *Twitter* – now *X*). This was completed to present a general overview of their behaviours in the months leading up to the event, and to provide a detailed assessment of their online activities in the seven days prior to their incidents and the day of their terrorism attacks. As we were only able to obtain access to Robert Bowers’ online posts on *Gab* up until three months prior to his attack, we were restricted in assessing data beyond this timeline and decided to equalise the interval for Payton Gendron and Juraj Krajčík.

For the digital analysis, we focused exclusively on the offenders’ social media activity prior to their respective attacks and utilised the numeric output to evaluate any potential trends or variations in their online behaviours. To keep this quantitative assessment as accurate as possible, we disregarded qualitative measurements that might have indicated other forms of online preparations, such as the reporting of tactical planning behaviour involving digitally scouting potential targets, which was evident in both Robert Bowers and Payton Gendron’s pre-attack activities.⁶

Concurrently, we examined any acceleration or deceleration in on the ground behaviours related to the final preparations before the attack by examining the assailants’ tactical planning and preparation in the months, weeks and days leading up to the act of violence. For the offline assessment, a comprehensive qualitative analysis of primary and secondary sources was conducted to investigate any possible changes in the frequency or variety of terrestrial activities. Raw materials included self-narrated data from the subjects, such as targeted violence manifestos, online postings and digital logs. Secondary open-source materials were comprised of legal documents (that is, a criminal complaint, a superseding indictment and court trial transcripts) and scholarly reports from *The Center on Terrorism, Extremism, and Counterterrorism*, the *Combating Terrorism Center* at the United States Military Academy, and the *Accelerationism Research Consortium*.

A review of ethical and legal considerations found that all data utilised in this study are based on archival analysis of publicly accessible materials. This obviated the need for an IRB review of this effort, as well as consideration of any informed consents.

⁶ Robert Bowers researched his primary target’s floor plan and interior, as well as the calendar for the most active time in the building, in the digital sphere (United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 66). In a similar fashion, Payton Gendron used Google’s ‘popular times’ statistics to evaluate his target’s busiest hours and thus, the best time to attack (Payton Gendron, “April 29 and Before Discord Transcript,” 29 March 2022).

Case 1: Pittsburgh Synagogue Shooter

Online Behaviours

The online data for Robert Bowers' case were accessed via *Wayback Machine*, a digital archive of the internet which allows users to trace previous versions of certain websites. Although the perpetrator created his *Gab* profile @onedingo⁷ in January 2018, the tool only allowed us to access his data up to three months prior to the attack; we took screenshots of each post to document our findings and to assist in determining the frequency and intensity of, and any potential changes to, the attacker's posting behaviours. *Gab* confirmed that they removed Bowers' profile in a message on 29 October 2018, stating that they had "spent the last 48 hours proudly working with the DOJ [United States Department of Justice] and FBI [Federal Bureau of Investigation] to bring justice to an alleged terrorist".⁸ The superseding indictment issued by the United States District Court for the Western District of Pennsylvania in January 2019 also confirmed his use of the social networking site.⁹

Bowers' behaviour on *Gab* consisted of posts made by himself and reposts of posts circulated by other individuals, mimicking the ability to tweet and retweet from the mainstream media platform *Twitter* (now *X*). The archived version of the perpetrator's online profile did not include timestamps or dates specifying when a certain post or repost was made; only posts composed by Bowers himself were marked with language such as "3 months ago" (July 2018), "2 months ago" (August 2018) and "1 month ago" (September 2018). Due to this obstacle, we were restricted to aggregating the data for these dates as the total number of posts and reposts per month, and we equalised this timeframe and methodology for the other two perpetrators. However, during the month of the attack (October 2018), posts created by Bowers were labelled as, for instance, "25 days ago" (3 October 2018), "6 days ago" (21 October 2018) and "2 hours ago" (day of attack). Hence, we were able to create a detailed breakdown of his daily posts with exact dates in the seven days prior to and the day of the incident. Bowers' *Gab* posts were counted manually and confirmed twice.

Offline Behaviours

To analyse the Pittsburgh synagogue shooter's terrestrial behaviours, we conducted open-access research on his attack and noted a dearth of academic and expert publications. In order to obtain relevant and accurate data on his preparatory activities, we contacted the United States District Court for the Western District of Pennsylvania where Robert Bowers' jury trial was being held at the time. We were able to acquire the official court transcripts from the expert witness testimony and cross-examination of Dr Park Dietz, a forensic psychiatrist who interviewed the offender in prison for approximately 15 hours over the

7 According to the Counter Extremism Project, Bowers' *Gab* username "onedingo" likely stems from the conservative radio programme "The War Room" hosted by Jim Quinn and Rose Somma Tennent, which has been broadcasting from Pittsburgh, Pennsylvania. It is reported that around the year 2000, Bowers volunteered as the show's archivist and stockpiled episodes on the website www.onedingo.com (Counter Extremism Project, "Robert Bowers," n.d., <https://www.counterextremism.com/extremists/robert-bowers>).

8 Andrew Torba, *Gab*, 29 October 2018, <https://web.archive.org/web/20181029212621/https://gab.com/onedingo>.

9 United States of America vs. Robert Bowers, 18-292, "Superseding Indictment," W.D. Pa., 2 January 2019, <https://www.justice.gov/opa/press-release/file/1125336/download>.

course of three days in May 2023. Dietz gave evidence on the findings of his mental status exam of Robert Bowers for the prosecution in July 2023, which resulted in 559 pages of testimony that were subsequently reviewed and analysed by us.¹⁰ Furthermore, we examined publicly available notes taken during one of the evaluations by Dietz on 21 May 2023 to complement details surrounding Bowers' on-the-ground behaviours that arose during the trial.¹¹

Moreover, media articles on the testimony of Dr Richard Rogers – a forensic psychologist who was part of the defence's effort during Robert Bowers' trial – were assessed for additional information. Rogers interviewed Bowers over the course of several days in the autumn of 2022 to analyse the offender's mental state at the time of the attack. Lastly, the perpetrator's social media profile on *Gab* was examined for any self-narrated, offline activities that related to the tactical preparation and planning of the targeted act of violence. The findings of this analysis were cross-referenced with Dietz's testimony to evaluate their accuracy.

Case 2: Buffalo Supermarket Shooter

Online Behaviours

The online data for Payton Gendron's case were obtained from a researcher who had received an invite link to the offender's private *Discord* channel 'Jimboboiiii' shortly after it was originally disseminated, and who subsequently archived the journal-style logs.¹² Gendron's online diary is composed of 673 pages in total, and consists of several near-daily posts between 18 November 2021 and 12 May 2022, two days prior to the attack. The digital footprint was verified in two ways during a previous study authored by Meloy, Kupper and Kriner, which assessed the question of sanity at the time of Gendron's crime. *Discord* provided information on its website that confirmed the veracity of the data, and the online diary included visual confirmation of the perpetrator in the form of numerous selfies which were included in the document.¹³

To equalise the timeframe of Bowers' accessible online data, we utilised Gendron's *Discord* logs to determine his overall activity in the three months leading up to his act of violence (February – April 2022) and the month of the attack (May 2022). Furthermore, his digital behaviour in the seven days prior to (7–13 May 2022) and on the day of the incident (14 May) was examined. In order to do so, each dated entry was counted manually and confirmed twice; if a post consisted of both written and visual elements, we only counted it as one entry.

10 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6–11 July 2023.

11 United States of America vs. Robert Bowers, 18–292, Defence Notes, Exhibition 182, GOVT_18292_033849, 7 July 2023.

12 J. Reid Meloy, Julia Kupper, and Matthew Kriner, "An Accelerating State of Mind: Digital Evidence and the Question of Sanity at the Time of the Crime," *Behavioral Sciences & the Law*, under peer review.

13 J. Reid Meloy, Kupper and Kriner, "An Accelerating State of Mind"; *Discord*, "Our Response to the Tragedy in Buffalo," *Discord Safety Center*, May 2022, <https://discord.com/safety/our-response-to-the-tragedy-in-buffalo>.

Offline Behaviours

For Gendron's preparatory on-the-ground behaviours, the criminal complaint of the United States Department of Justice and two reports on the Buffalo attack authored by *The Center on Terrorism, Extremism, and Counterterrorism* and the *Combating Terrorism Center* at the United States Military Academy in West Point were used as a baseline to assess his tactical planning in the months leading up to the incident.¹⁴

Furthermore, previously aggregated data from our study on the question of Gendron's sanity – including an analysis of the assailant's *Discord* logs 14 days prior to the attack, which had been divided into online and offline activities – allowed us to access a detailed overview of his tactical preparations in the week before his act of violence.¹⁵ However, the online diary comprises self-reported data from the perpetrator on how he planned and prepared for the attack on the ground; without correlated evidence, we cannot be certain whether or not those activities occurred on those dates. For the purpose of this energy burst-related study, though, we believe that the information provided in Gendron's own account is sufficient to evaluate an increase or decrease of frequency in activities related to the planning of his targeted attack.

Case 3: Bratislava Bar Shooter

Online Behaviours

The online data for Juraj Krajčík's case were taken from a previous report published by Kupper, Rękawek and Kriner, which provided a forensic analysis of the perpetrator's life and attack, as well as a forensic linguistic assessment of the perpetrator's language evidence, including more than 250 tweets, a targeted violence manifesto, a suicide note and 4chan comments.¹⁶ To examine the offender's online behaviour for this study, we focused exclusively on the posting activity on his *Twitter* account @ntma0315,¹⁷ which was accessed via *Wayback Machine* in a similar approach to Robert Bowers' data. The tool permitted us to retrieve more than 250 tweets, which were posted between 22 April 2021 and 12 October 2022, the day of the attack when Krajčík also published his targeted violence manifesto on the platform. A report issued by the Slovakian Council for Media Services stated that investigations have since confirmed that the *Twitter* account belonged to the perpetrator, which had also been verified in our report, as the profile included numerous selfies of the assailant.¹⁸ In a similar fashion to analysing Bowers and Gendron's

14 United States of America vs. Payton Gendron, 22-mj-124, "Criminal Complaint," W.D.N.Y., 15 June 2022, https://www.justice.gov/d9/press-releases/attachments/2022/06/15/gendron_payton_complaint_agent_signed_0.pdf; Matthew Kriner, Erica Barbarossa, and Isabela Bernardo, "The Buffalo Terrorist Attack: Situating Lone Actor Violence into the Militant Accelerationism Landscape," *The Center on Terrorism, Extremism, and Counterterrorism*, July 2022, <https://www.middlebury.edu/institute/sites/www.middlebury.edu.institute/files/2022-07/The%20Buffalo%20Terrorist%20Attack.pdf?fv=BvaUrKZ>; Amarnath Amarasingam, Argentino, and Macklin, "The Buffalo Attack," 1–10.

15 J. Reid Meloy, Kupper, and Kriner, "An Accelerating State of Mind".

16 Julia Kupper, Kacper Rękawek, and Matthew Kriner, "Terrorgram's First Saint: Analyzing Accelerationist Terrorism in Bratislava," *Accelerationism Research Consortium* (March 2023), <https://www.accelresearch.org/reports-1/terrorgrams-first-saint>.

17 We argue in the Accelerationism Research Consortium report that the username @ntma0315 might be a reference to Brenton Tarrant, a lone-actor terrorist who conducted consecutive attacks on two mosques in Christchurch, New Zealand, on 15 March 2019.

18 The Council for Media Services in Slovakia, "The Bratislava Shooting" – Report on the Role of Online Platforms," March 2023, https://rmps.sk/sites/default/files/2023-03/CMS_RESET_Report.pdf; Julia Kupper, Rękawek, and Kriner, "Terrorgram's First Saint".

online activity, we concentrated on the digital data in the three months prior to his incident (July – September 2022) and the month of the attack (October 2022). Moreover, we examined Krajčák's posting behaviour in the seven days leading up to his attack and the day of the event (5–12 October 2022). All the tweets were counted manually and confirmed twice.

Offline Behaviours

For the assessment of Krajčák's on-the-ground behaviours, we focused on the offender's targeted violence manifesto and *Twitter* feed, as well as the *Accelerationism Research Consortium* report published by Kupper, Rękawek and Kriner.¹⁹ It is argued in this article that a second, unknown writer may have assisted Krajčák in writing some parts of the targeted violence manifesto and certain tweets. However, this does not affect our assessment of the perpetrator's tactical planning and preparation in the months and weeks leading up to the incident, as a CCTV recording of the attack indicates that he carried out the act by himself. Furthermore, without other forms of evidence, we cannot know with certainty if the events occurred within the self-reported timeframes. Nevertheless, we think that this does not negatively impact an evaluation of an acceleration or deceleration of on-the-ground activities related to the act of violence.

¹⁹ Julia Kupper, Rękawek, and Kriner, "Terrorgram's First Saint".

3 Findings

Case 1: Pittsburgh Synagogue Shooter

Online Behaviours

An archived version of Robert Bowers' *Gab* account stated that the perpetrator shared a total of 627 posts on his profile between January and October 2018. Three months before his act of violence (July 2018), the offender made one post and circulated seven re-posts on his *Gab* profile ($n=8$). In the following month (August 2018), a decline was noted, as Bowers only disseminated one post without making any reposts ($n=1$). However, in the month before the incident (September 2018), his posting behaviour increased to ten posts and 15 re-posts ($n=25$), with an additional sharp surge in the month of his attack (October 2018), which resulted in 29 posts and 69 re-posts ($n=98$), fluctuating between zero and seven posts per day.

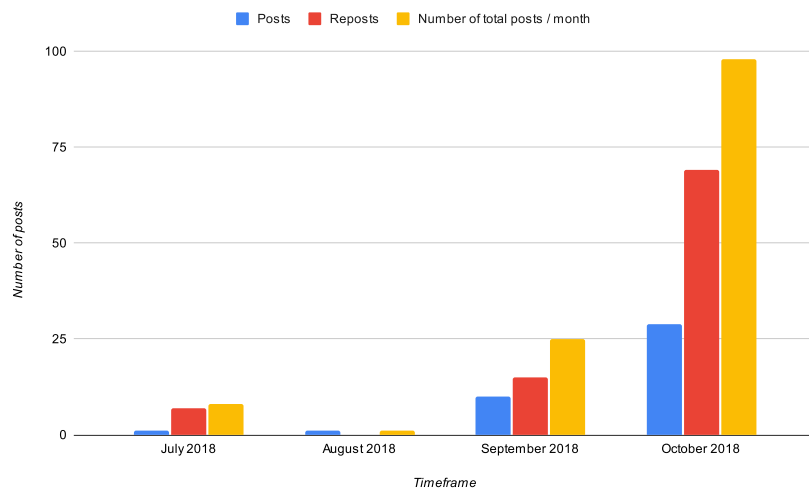


Figure 1. Frequency of Robert Bowers' posts and re-posts on Gab in the months leading up to his attack (July – October 2018)

When taking a closer look at the seven days prior to the incident (20–27 October 2018), there was an increase of six posts made by Bowers on 21 October 2018, followed by a decrease of zero to two posts per day until two days before to the incident (22–25 October 2018). The perpetrator went dark and did not disseminate any posts on the day prior to his act of violence (26 October 2018), and only disseminated one statement on the day of his attack (27 October 2018), which he posted on *Gab* minutes before entering the target site.²⁰

²⁰ United States of America vs. Robert Bowers, 18-292, "Superseding Indictment".

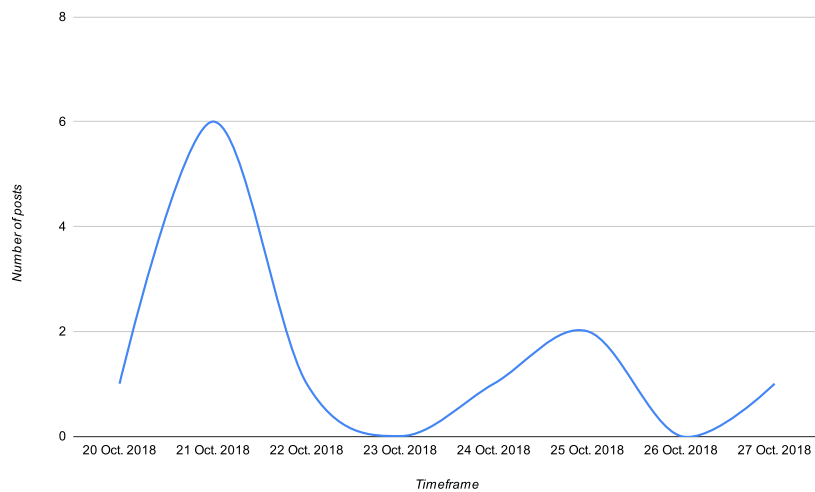
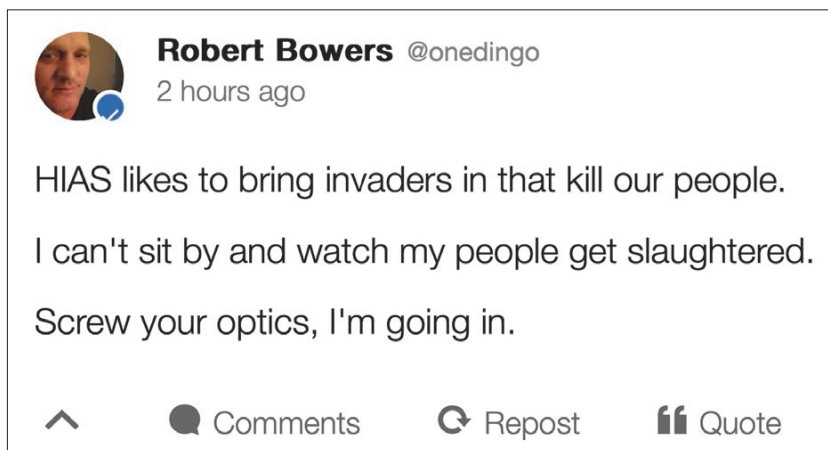


Figure 2. Frequency of Robert Bowers' posts on Gab in the seven days leading up to his act of violence and on the day of the attack (20–27 October 2018)

Kupper and Meloy have argued in a previous study that these final words served as Bowers' targeted violence manifesto because they justify committing a terrorist attack against a specific target by articulating homicidal intentions and extreme ideologies before the incident occurred.²¹ The forensic psychiatrist Dietz testified during Bowers' trial that operational secrecy was crucial to the perpetrator and that he refrained from discussing his planning and preparation with others to keep a low profile, which is also why the assailant did not announce his intentions on social media until immediately prior to committing the attack.²²



Visual 1. Robert Bowers' final Gab post on the day of the attack (27 October 2018)

21 Julia Kupper and J. Reid Meloy, "TRAP-18 Indicators Validated through the Forensic Linguistic Analysis of Targeted Violence Manifestos," *Journal of Threat Assessment and Management* 8, no. 4 (2021): 174–199, <https://doi.org/10.1037/tam0000165>.

22 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 62–64.

Offline Behaviours

According to interviews with Robert Bowers conducted by Dietz in May 2023, the perpetrator stated that he began plotting his act of violence against a Jewish target in April 2018, approximately half a year before the attack was executed.²³ Central to Bowers' extreme overvalued belief system²⁴ was his assumption that Jews were enabling illegal immigration – an *invasion* as he labelled it – a notion which solidified and subsequently justified violent action in his mind. During the tactical planning interval of six months, the offender spent a considerable amount of time contemplating a range of individual and group assassinations.²⁵ These included the founding director of the European Institute for Jewish studies in Sweden, Barbara Lerner Spectre, and US-based Anti-Defamation League leaders. In September and October 2018 (the latter being the month of the attack), his focus shifted to the headquarters of the Hebrew Immigrant Aid Society (HIAS), a Jewish non-profit organisation which provides humanitarian aid and assistance to refugees.²⁶ The Congregation Dor Hadash, located at the Tree of Life synagogue in Pittsburgh, Pennsylvania, eventually became his primary target, due to its support of HIAS, lack of security and proximity to his home.²⁷ Furthermore, Bowers considered attacking a secondary location, the Jewish Community Center of Greater Pittsburgh, less than one mile away from the main target. In accordance with the operational secrecy mentioned in the online behaviour section, Dietz disclosed that the offender did not surveil any of his selected locations in person prior to the day of attack since he was concerned that authorities might track vehicles who drive past high-value targets.²⁸

Bowers' tactical preparation included training and testing his handguns and semi-automatic rifles at a shooting range in the months before the incident, including practising “tactical reloads” in order to achieve a higher kill count than less successful lone-actor terrorists, such as the Poway synagogue shooter.²⁹ Although the exact timeframe for these rehearsals is unknown, the offender uploaded two photos on *Gab* approximately one month prior to the attack; these depicted a distant target shot and a close-up of his rounds.³⁰ With 30 years of firearms experience, Bowers carefully selected ammunition to be utilised during the act of violence, including bullets that could penetrate body armour worn by law enforcement officers, and planned for “messy kills” of his victims to refrain others from assisting illegal immigrants.³¹

23 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 50.

24 Tahir Rahman and J. Reid Meloy, “Extreme Overvalued Beliefs,” *Journal of the American Academy of Psychiatry and the Law* 48, no. 3 (2020): 319–326, <https://pubmed.ncbi.nlm.nih.gov/32409302/>.

25 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 55; United States of America vs. Robert Bowers, 18–292, Defence Notes, Exhibition 182.

26 United States of America vs. Robert Bowers, 18–292, Defence Notes, Exhibition 182.

27 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 57.

28 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 62–64.

29 A “tactical reload” refers to changing the magazine of a weapon that has only fired a few rounds and retaining the original magazine for subsequent use; John Earnest attempted to conduct a mass casualty event at the Chabad of Poway synagogue in Poway, California on 27 April 2019; United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 58 and 69; Julia Zenkevich, “Psychologist Says ‘Psychotic’ Pittsburgh Synagogue Shooter Also Drove by JCC on Morning of Attack,” 90.5 WESA Pittsburgh’s NPR News Station, 29 June 2023, <https://www.wesa.fm/courts-justice/2023-06-29/synagogue-shooter-pittsburgh-mentally-ill>.

30 United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 76.

31 “Messy kills” usually aim for the abdomen in comparison to “quick kills” to the head or “painful kills” to extremities; United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 60, 75, and 78.



Visual 2. Robert Bowers practising at a gun range, posted on Gab in September 2018



Visual 3. Robert Bowers practising at a gun range, posted on Gab in September 2018

Bowers decided to conduct the shooting on a Saturday because events were being hosted at the congregation over that weekend, which would result in more activity and a higher density of targets.³² The initial attack date was 20 October 2018; however, as Rogers stated during the trial, Bowers indicated that there would have been children at the synagogue that weekend, which might have led to him losing potential supporters for his cause.³³ Thus, the perpetrator delayed the act of violence for one

³² United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 66.

³³ Sabrina Souza, "Pittsburgh Synagogue Mass Shooter Considered Other Targets, Psychologist Testifies," CNN, 30 June 2023, <https://www.cnn.com/2023/06/30/us/pittsburgh-synagogue-shooter-trial-friday/index.html>.

week to 27 October 2018, also because this was the day his car lease expired.³⁴ All the above mentioned on-the-ground behaviours contributed to extensive tactical planning and preparation over a period of six months.

Shortly prior to the event, Bowers erased content from his mobile phone and designed a software program that would ensure the destruction of his computer memory and those of six hard drives, deleting all data stored on the devices if he did not return home within 200 minutes.³⁵ On the morning of the attack (27 October 2018), the perpetrator concealed his weapons and ammunition under a blanket in his vehicle and scouted his primary and secondary target for the first time, noting that a police station was located between them.³⁶ He decided to attack the Tree of Life synagogue first, as he estimated it would yield more targets and because it was the specific location connected to HIAS.³⁷ When he reached the building, the assailant spotted only six people in the lobby and decided to leave three-quarters of his ammunition in the car to allow him to proceed quickly to the second target, the Jewish Community Center.³⁸ We argue that all of these tactical, on the spot decision-making strategies signalled Bowers' offline energy burst behaviour in the hours and minutes prior to the act of violence.

Case 2: Buffalo Supermarket Shooter

Online Behaviours

In February 2022, three months prior to the attack, Payton Gendron posted a total of 237 entries in his *Discord* log; this increased to 411 posts in March 2022. His online activity then decreased to 379 posts in April 2022, and dropped to 186 in May 2022, the month of the incident, varying between zero to 25 posts per day.

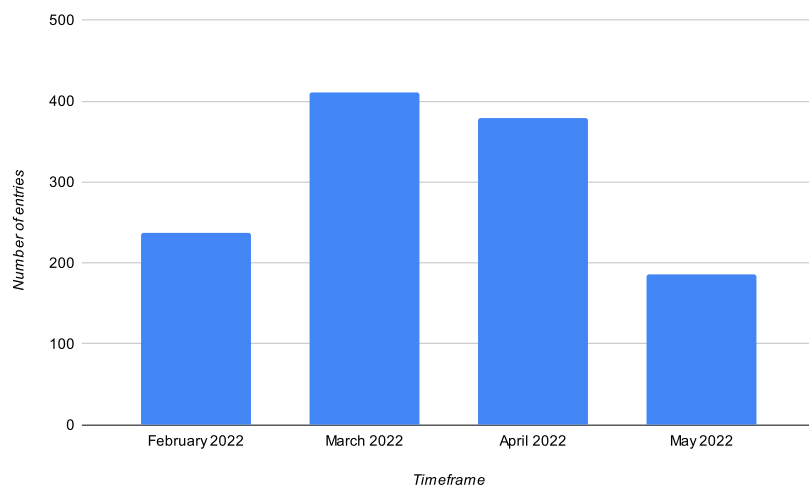


Figure 3. Frequency of Payton Gendron's Discord entries in the months leading up to his attack (February – May 2022)

³⁴ United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 66.

³⁵ United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 64; Julia Zenkevich, "Psychologist Says 'Psychotic' Pittsburgh Synagogue Shooter Also Drove by JCC on Morning of Attack".

³⁶ United States of America vs. Robert Bowers, 18–292, Defence Notes, Exhibition 182, 10.

³⁷ United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 72.

³⁸ United States of America vs. Robert Bowers, 18–292, W.D. Pa., 21 F. Supp., 6 July 2023, 71.

In the six days leading up to his act of violence (7–12 May 2022), Gendron’s online activity ranged from eleven to 25 posts per day, with a sudden termination of diary entries on the day prior to and the day of the attack (13–14 May 2022). However, the perpetrator returned from the shadows and published his targeted violence manifesto and online logs on his private *Discord* server minutes before he conducted his attack on 14 May 2022. This could be considered one form of online posting but was not included in our analysis, as it was not a log entry.

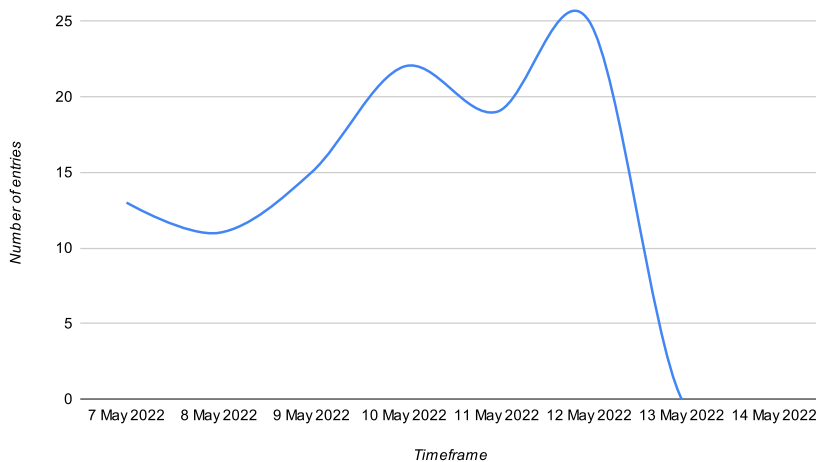


Figure 4. Frequency of Payton Gendron’s Discord entries in the seven days leading up to his act of violence and on the day of the attack (7–14 May 2022)

Offline Behaviours

According to Payton Gendron’s online logs, the Buffalo shooter made the final decision to attack four months prior to his act of terrorism. On 14 January 2022, he stated, “There is no turning back now, I am fully committed [*sic*] to using all my resources and power to commit this attack.”³⁹ Five days later, he purchased a Bushmaster XM-15, .223 calibre rifle, which was used during the attack.⁴⁰ Around the same time, the gun enthusiast also began acquiring tactical gear and live-streaming equipment, which he detailed in his manifesto for subsequent imitators.⁴¹ In February 2022, he selected a Tops Friendly Supermarket in Buffalo, New York as his target, due to the high density of black individuals living in the area, according to the offender’s diary entries.⁴² The perpetrator scouted his location of choice – which was a 3.5 hours’ drive from his place of residence in Conklin, New York – three times on 8 March 2022, and narrated his insights in the online log, which included several sketches of the store’s interior layout.⁴³ His detailed account included comments such as: “Made it to Tops

³⁹ Payton Gendron, “April 29 and Before Discord Transcript,” 14 January 2022.

⁴⁰ United States of America vs. Payton Gendron, 22-mj-124, “Criminal complaint”, W.D.N.Y., 15 June 2022.

⁴¹ Julia Kupper, Tanya Karoli Christensen, Dakota Wing, Marlon Hurt, Matthew Schumacher, and J. Reid Meloy, “The Contagion and Copycat Effect in Transnational Far-Right Terrorism: Analysis of Language Evidence,” *Perspectives on Terrorism* 16, no. 4 (2022): 4–26, <https://www.universiteitleiden.nl/binaries/content/assets/customsites/perspectives-on-terrorism/2022/issue-4/kupper-et-al.pdf>; Matthew Kriner, Barbarossa, and Bernardo, “The Buffalo Terrorist Attack”.

⁴² Payton Gendron, “April 29 and Before Discord Transcript,” 17 February 2022.

⁴³ Payton Gendron, “April 29 and Before Discord Transcript,” 8 March 2022.

at 12:00, took a picture of where I plan to park my car for the attack”, and “While inside I made the following observation: Inside: 53 black, 6 white, 2 armed black security with pistols. ~8 black on outside.”⁴⁴



Visual 4. Payton Gendron’s sketch after surveilling his target location on his first visit a few months prior to the attack, posted in his Discord logs in March 2022

On 29 April 2022, the attacker noted that he was in “full kit rn [right now] except boots, socks, and helmet (tested this setup earlier) except I have no idea where my tourniquets are”.⁴⁵ The following day (30 April 2022) he transported his “gear” and “guns” to his car.⁴⁶ In the two weeks before the event, Gendron’s self-narrated journey focused predominantly on reinforcing his belief system, adding substance to his manifesto, and expressing physical and psychological health issues, such as tooth and heart aches, anxiety, agitation, restlessness, and nervousness about the upcoming attack. However, in the seven days leading up to the incident, a spike in equipment-related content was noted, which we think was his offline energy burst – an increase in frequency and variety of on-the-ground, tactical preparations. This included comments about purchasing “jungle boots” and last-minute firearm gear such as “pistol grip” parts (7 May 2022), “combat shirt and pants” options (11 May 2022), and visiting gun stores to fix his “AR sling” and to check

⁴⁴ Payton Gendron, “April 29 and Before Discord Transcript,” 9 March 2022.

⁴⁵ Payton Gendron, “Post April 29th Discord Transcript,” 29 April 2022.

⁴⁶ Payton Gendron, “Post April 29th Discord Transcript,” 30 April 2022.

out “large caliber hunting ammo” (12 May 2022).⁴⁷ Throughout his operational preparations for the assault, Gendron remained consistent with his shooting practices, which included testing his firearms and ammunition, and modifying his weapons and magazines.⁴⁸

The perpetrator’s criminal complaint from June 2022 states that on the day prior to the event (13 May 2022), Gendron again surveilled the inside and outside of his target location in Buffalo before returning to his hometown.⁴⁹ On the day of the incident (14 May 2022), the assailant left a handwritten goodbye letter addressed to his parents in his bedroom, which included an apology for committing the act of violence that had to be carried out “for the future of the White race”.⁵⁰ He then drove back to Buffalo, and conducted his final surveillance check inside the store approximately 2.5 hours before the attack, noting the number of black people and the position of the security guard.⁵¹ During his final preparations, the offender put on his camouflage clothing and protective gear, set up his targeted violence live-stream on *Twitch*, and published his online logs and manifesto on his private *Discord* channel.⁵²

Case 3: Bratislava Bar Shooter

Online Behaviours

Three months before Juraj Krajčík’s act of terror (July 2022), the perpetrator disseminated seven tweets, which were followed by an increase to 62 posts in August 2022. 115 tweets, the highest number since the registration of his profile in April 2021, were noted in September 2022. In the month of the attack (October 2022), the number of tweets decreased to 30, varying between zero and ten posts per day.

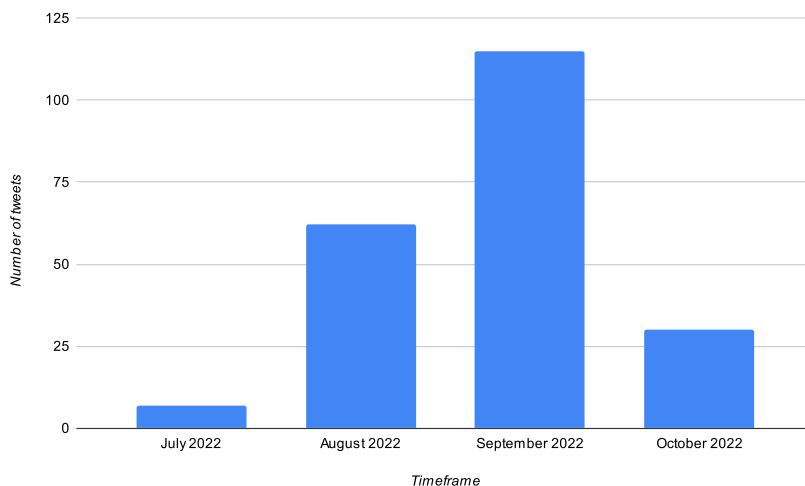


Figure 5. Frequency of Juraj Krajčík’s tweets in the months leading up to his attack (July – October 2022)

47 Payton Gendron, “Post April 29th Discord Transcript,” 7–12 May 2022.
 48 Matthew Kriner, Barbarossa, and Bernardo, “The Buffalo Terrorist Attack”; Amarnath Amarasingam, Argentino, and Macklin, “The Buffalo Attack,” 1–10.
 49 United States of America vs. Payton Gendron, 22-mj-124, “Criminal complaint”, W.D.N.Y., 15 June 2022.
 50 United States of America vs. Payton Gendron, 22-mj-124, “Criminal complaint”, W.D.N.Y., 15 June 2022.
 51 United States of America vs. Payton Gendron, 22-mj-124, “Criminal complaint”, W.D.N.Y., 15 June 2022.
 52 Julia Kupper, Christensen, Wing, Hurt, Schumacher, and Meloy, “The Contagion and Copycat Effect in Transnational Far-Right Terrorism,” 4–26; Amarnath Amarasingam, Argentino, and Macklin, “The Buffalo Attack,” 1–10.

In the week prior to his offence (5–11 October), Krajččík's online activity peaked three days before the incident with ten tweets (9 October 2022) and then declined to seven posts on 10 October 2022. One day prior to the attack (11 October 2022), the perpetrator almost went dark and only disseminated one tweet ("I have made my decision"). On the day of the event (12 October 2022) between 0900 and 1400 local time, he published his targeted violence manifesto on his *Twitter* account, along with three visuals and one tweet ("It will be done"). Krajččík also posted five tweets post-incident on 12 October 2022. These were not taken into consideration for the analysis, as this study focuses on pre-attack warning behaviours.

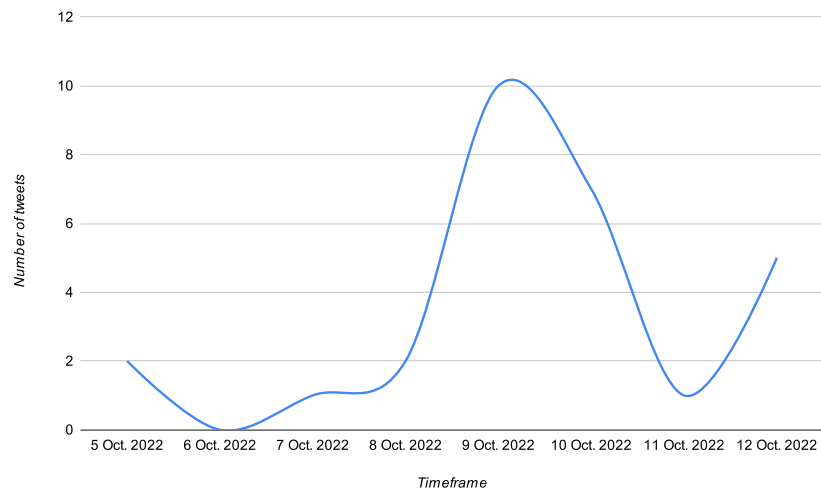


Figure 6. Frequency of Juraj Krajččík's tweets in the seven days leading up to his act of violence and on the day of the attack (5–12 October 2022)

Offline Behaviours

According to Juraj Krajččík's targeted violence manifesto, the Christchurch mosque shootings in March 2019 – carried out by Brenton Tarrant – and the Poway synagogue attack in April 2019 – carried out by John Earnest – served as the "main inspirations" and initial catalysts for his targeted act of violence:⁵³

"It all changed in May of 2019. [...] Since 2019, I have slowly been preparing: gathering targets, researching and monitoring them, reading about tactics and strategies. My targets switched as both the global situation and my personal knowledge evolved".⁵⁴

However, according to the manifesto, it was not until Payton Gendron's terrorist attack in May 2022 that his intentions evolved into concrete tactical planning for his own event, which initiated the writing of his manifesto and "seriously preparing [...] and working towards carrying out an operation".⁵⁵ In the 'final remarks' section of the proclamation,

⁵³ Juraj Krajččík, "A Call to Arms," 12 October 2022, 10–11.

⁵⁴ Juraj Krajččík, "A Call to Arms," 11.

⁵⁵ Juraj Krajččík, "A Call to Arms," 12.

Krajčík reiterated that although the manifesto file had been created in December 2021, “it lay dormant for months, until May of this year [2022], when I picked it up and began seriously working on it again”.⁵⁶

Three months later, Krajčík began scouting possible targets across his hometown, Bratislava, Slovakia’s capital. On 15 August 2022, the perpetrator tweeted, “Just taking a look at some places...”, along with three selfies which depicted him outside blocks of apartments – later identified as being owned by the Prime Minister Eduard Heger – while gesturing a white supremacy symbol with his left hand.⁵⁷ A second tweet stated, “As a proud LGBTQIAP+ Jew, I would like you all to join me at the Chabad office today, before we proceed to the LGBTQIAP+ bar for a drink.” This post was Krajčík’s attempt at deceiving the viewer and part of his operational security to enhance his tactical success. The images associated with the tweet depict the offender outside places associated with Jewish faith and culture in Bratislava’s downtown area, in addition to Tepláreň bar, which eventually became his target of choice.⁵⁸



Visual 5. Juraj Krajčík surveilling potential target locations, posted on his Twitter account in August 2022

Little is known about Krajčík’s tactical planning and preparations in the weeks between mid-August and the beginning of October 2022, as no official police report has been released about the terrorist incident and there has been a dearth of recent media reports on the case. In addition, neither Krajčík’s manifesto nor his *Twitter* profile shed light on any on-the-ground behaviours during this period; the perpetrator may have been contemplating whether or not to carry out his intended mass casualty event. However, on 11 October 2022, one day before his targeted act, the offender tweeted, “I have made my decision”, which was followed by an offline energy burst in the hours prior to his

⁵⁶ The original manifesto presumably has a typo in this section, as it states, “I created the file on December 2, 2022”, which is not possible, as the attack was carried out on 12 October 2022 and Krajčík committed suicide on 13 October 2022; Juraj Krajčík, “A Call to Arms,” 64.

⁵⁷ Julia Kupper, Rękawek, and Kriner, “Terrorgram’s First Saint”.

⁵⁸ Julia Kupper, Rękawek, and Kriner, “Terrorgram’s First Saint”.

attack on 12 October 2022. At approximately 1600 local time, Krajčík reportedly retrieved a handgun from his father's safe and left his family home.⁵⁹ He was captured on CCTV cameras around 1800 local time outside his target location, Tepláreň bar, where he waited behind the wall of a nearby building for more than one hour before opening fire.⁶⁰ We believe that these on-the-ground behaviours indicate an acceleration in activity from previous weeks.

⁵⁹ Julia Kupper, Rekawek, and Kriner, "Terrorgram's First Saint".

⁶⁰ Julia Kupper, Rekawek, and Kriner, "Terrorgram's First Saint".

4 Aggregation of Findings

Online Behaviours

Bowers' overall online activity declined between July and August 2018 but accelerated in frequency in September and October 2018 (decrease > increase > increase). In comparison, Gendron's digital behaviour showed patterns of an initial intensification between February and March 2022, and a drop in posts in April and May 2022 (increase > decrease > decrease). Krajčák's online activity elevated between July, August and September 2022 but declined in October 2022 (increase > increase > decrease).

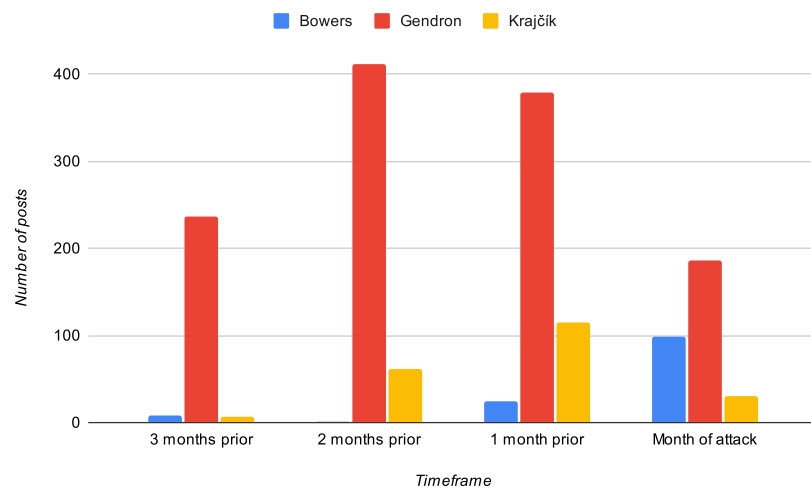


Figure 7. Perpetrators' online behaviours in the months leading up to their attacks

Interestingly, there was a deceleration of social media activities across all three perpetrators shortly prior to their targeted attacks, specifically the day before the acts of violence. As such, Bowers and Gendron did not author or disseminate any posts one day prior to the incidents, with Krajčák only tweeting one message. On the actual day of the attack, all three subjects re-emerged and circulated their final messages shortly prior to their acts of terrorism: Bowers uploaded a final post which acted as his targeted violence manifesto on *Gab* minutes before entering the synagogue; Gendron published his manifesto and online logs in his private *Discord* channel minutes prior to conducting his mass shooting; Krajčák spread his manifesto, three accompanying visuals and one message on *Twitter* – a final, short-lived online burst – in the hours leading up to his attack.

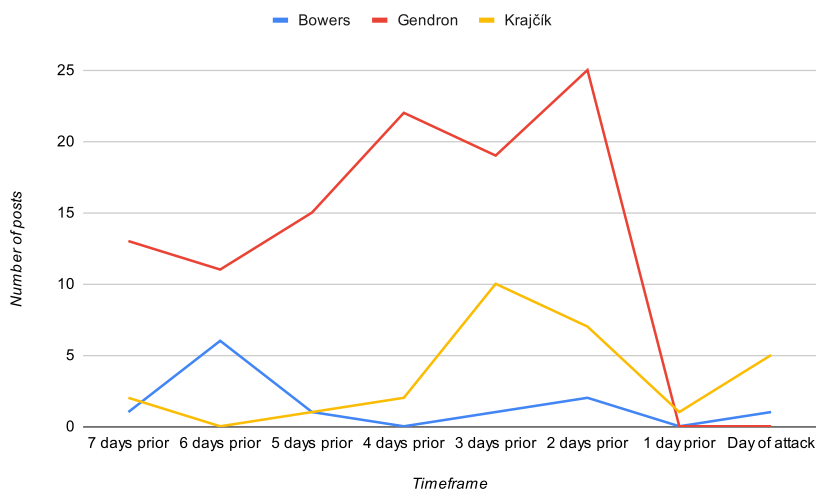


Figure 8. Perpetrators' online behaviours in the week leading up to their attacks

Offline Behaviours

The quantitative measurement of the on-the-ground behaviours related to an energy burst – and therefore any analyses of increases or decreases in activity – may not be as systematic as the numerical assessment of the digital activities. This is why we provided more evidence for the offline stages and examined a wide range of sources for each offender in comparison to the online behaviours. Baseline calibration remains an unsolved problem for both online and on-the-ground behaviours when the threat assessor enters the case at a late stage.

It is our judgement that the perpetrators in this paper signalled a clear increase in terrestrial behaviours when compared to their earlier actions: the energy burst for Bowers and Krajčik occurred in the hours before the attack, while Gendron's intensification extended to one week prior to the event. All three lone-actor terrorists showed similar trends of acceleration between their decision to attack and their actual attack, which averaged five months (Bowers = 6 months; Gendron = 4 months; Krajčik = 5 months). The on-the-ground planning phase included careful considerations of potential targets, followed by tactical preparations, such as frequent firearms training by Bowers and Gendron. We were not able to obtain any data related to Krajčik's weapons practice – possibly due to the stricter firearms regulations in Europe – which might explain why his attack resulted in a lower kill count. Each offender scouted their target location(s), though the time sequences differed: Krajčik made a reconnaissance of the bar three months prior to and in the hour before his attack; Gendron inspected the supermarket two months prior to the incident, as well as on the day before and day of the attack; Bowers waited until the hour prior to the act of violence to observe the synagogue, due to his concern about being detected, but had conducted online research on the layout and floor plan.

5 Discussion

The proximal warning behaviours, including energy burst, were originally conceived as patterns of increasing or accelerating risk of violence. The use of the term *pattern* emphasises the nonlinearity of risk assessment. Meloy et al. previously wrote, “In another applied science such as oceanography, a linear approach would suggest that high winds make for high waves. The nonlinear approach indicates that intermittent winds will build resonance (transferred energy) within waves over time, leading to the risk of a huge rogue wave in the absence of a high wind (Casey, 2010).”⁶¹ Such is our conception of energy burst online and on the ground, albeit negatively correlated, during the period before a terrorist attack. The resonance may be built by numerous variables in the life of the offender – both intrapsychic and interpersonal – and many unknown to the assessor. However, they all lead to the equifinality of a targeted attack, which is hopefully prevented. Our goal for this research initiative was to map this relationship carefully in the days, weeks and months before the attack, to discern a tempo or pattern which could be operationalised for counterterrorism efforts.

The findings of this preliminary study indicate that social media activity may have a characteristic pattern of energy burst measured in frequency which may begin three months before the incident (see *figure 7*), followed by a marked decrement in activity in the days before the attack as on-the-ground behaviour to prepare accelerates (see *figure 8*). Even without knowledge of on-the-ground activity, this social media acceleration, measured through the comparison of monthly activity, followed by a marked deceleration through the comparison of weekly activity, suggests the usefulness of a simple operational frequency count of social media activity by intelligence analysts or threat assessors that could betray the imminence of an attack by a person of concern. The operational psychology behind this pattern may be an intensification of *fixation* (preoccupation with the target or cause) and *identification* (self-identity as a warrior or soldier for the cause) as a prelude to cementing and building motivation, followed by practical preparation for the attack in the days before – measured in frequency and variety.⁶² Although Bowers did not show the social media deceleration during the month before the attack that Gendron and Krajčik did (see *figure 7*), his activity in the five days before the attack (see *figure 8*) is less than the other two terrorists – perhaps an individual difference – as all three also declined. It is unknown whether the findings of all three subjects are anomalies without a much larger sample, and whether or not such findings are correlational or predictive in any sense without a comparison group.

61 J. Reid Meloy, Jens Hoffmann, Angela Guldemann, and David James, “The Role of Warning Behaviors in Threat Assessment: An Exploration and Suggested Typology,” *Behavioral Sciences and the Law* 30 (2012): 260, <https://doi.org/10.1002/bsl.999>.

62 J. Reid Meloy, Alasdair Goodwill, Caitlin Clemmow, and Paul Gill, “Time Sequencing the TRAP-18 Indicators,” *Journal of Threat Assessment and Management* 8, no. 1 (2021): 1–19, <https://doi.org/10.1037/tam0000157>.

Our hypothesis and resulting findings of this inverse relationship between online and on-the-ground behaviours are supported in three related studies. The Federal Bureau of Investigation found in a study of 63 active shooters that a majority (54%) of these targeted attackers prepared for their incidents during the week prior and 28% during the 24 hours before the attack.⁶³ *Preparation* was narrowly defined as tactical “actions taken to procure the means for the attack, typically items such as a handgun or rifle, ammunition, special clothing and/or body armor”.⁶⁴ The study predicted a decrement in online behaviour in the final week, which we found. Williams, Tzani and Ioannou found that the average duration of time between posting a manifesto online and a targeted attack among 12 lone-actor terrorists was 1.75 hours, consistent with our final day activity of publishing a manifesto and other written materials in these three cases (the Buffalo shooter was included in their study).⁶⁵ Meloy et al. found in a time sequencing analysis of 125 lone-actor terrorists that *fixation* generally preceded *identification*.⁶⁶ Both preceded *leakage* (communication of intent to third parties) in the time before the attack, although there was no clear leakage in these three cases.

We acknowledge that our pilot study contains a very small sample. Without a comparison group of perpetrators who utilised online platforms to communicate preparatory activities related to a potential attack but *did not* go on to conduct an act of targeted violence, the postdictive or discriminant validity of the findings could not be tested. Furthermore, there is our own potential confirmation and selection bias. We sought to reduce this risk by providing an extensive methodology section, divided into online and offline behaviours for each offender, illustrate our findings with numerous examples, and be cautious in our interpretations.

63 James Silver, Andre Simons, and Sarah Craun, “A Study of Pre-Attack Behaviors of Active Shooters in the United States Between 2000 and 2013,” *Federal Bureau of Investigation*, June 2018, <https://www.fbi.gov/file-repository/pre-attack-behaviors-of-active-shooters-in-us-2000-2013.pdf/view>.

64 James Silver, Simons, and Craun, “A Study of Pre-Attack Behaviors of Active Shooters in the United States”.

65 Thomas James Vaughan Williams, Calli Tzani, and Maria Ioannou, “Foreshadowing Terror: Exploring the Time of Online Manifestos Prior to Lone Wolf Attacks,” *Studies in Conflict & Terrorism*, E-publication ahead of print (30 May 2023), <https://doi.org/10.1080/1057610X.2023.2205973>.

66 J. Reid Meloy, Goodwill, Clemmow, and Gill, “Time Sequencing the TRAP-18 Indicators,” 1–19.

6 Recommendations

Operational Implications

If we juxtapose our preliminary findings, an inverse relationship is suggested between the online and on-the-ground behaviours, much like inverted sine waves. Intelligence analysts, counterterrorism investigators and threat assessors, if focusing primarily on social media activity, would be wise to urgently recommend actual engagement with a person of concern by law enforcement if such a social media pattern were revealed. This should be completed prior to the publication of final messages in the form of targeted violence manifestos or other means on social media platforms, as these remarks tend to be disseminated in the minutes or hours before the incident, thus posing an imminent threat with limited time for intervention.⁶⁷ Having knowledge of both digital and terrestrial behaviours in a person of concern is even better in the months prior so that baseline calibrations can be determined.

As counter-terrorism efforts continue, it is crucial that the nexus between machine learning and human intelligence analysis and interpretation be both preserved and enhanced. Violent signals that are emerging from the social media noise can be identified through algorithmic innovations, while multidisciplinary threat assessment teams move forward with individualised assessment and management of both the online and on-the-ground behaviour of the identified person of concern. Investigating energy burst-related activities should be included in technology platform approaches to better understand how lone-actor terrorists mobilise to violence in these environments prior to an attack. This could be addressed through the operational activity of trust and safety teams tasked with identifying terrorist and violent extremist content.

Although the *prediction* of specific targeted violence attacks is unlikely ever to be achieved, the *prevention* of such low base rate events can be enhanced through the intensive case management of identified subjects of concern. We hope that the results of this exploratory study with a small sample will lay the groundwork for larger comparative analyses in this domain, particularly across attacks motivated by diverse ideologies and/or personal grievances. The findings of such research could contribute directly to both the development of algorithms for identifying pre-offence behaviours, and the improvement of the decision point within technology companies to contact law enforcement before an impending threat of an attack.

⁶⁷ Julia Kupper, "Preventing Attacks Using Targeted Violence Manifestos," Federal Bureau of Investigation, *Law Enforcement Bulletin*, 5 May 2022, <https://leb.fbi.gov/articles/featured-articles/preventing-attacks-using-targeted-violence-manifestos>.

Policy Recommendations

Technology Companies

Given the tried and tested effectiveness of the TRAP-18, technology companies that offer public and private social media posting services may consider adding the instrument to existing safety protocols. This could assist when liaising with law enforcement or counterterrorism authorities to prevent attacks. Those who are planning and preparing for a targeted attack will engage in both online and on-the-ground behaviours. Detecting violent signals online through algorithmic means should be supplemented by further individualised investigation of the person of concern by multidisciplinary threat assessment teams. Due to the exploratory nature of the study, more data and larger sample sizes are required to further develop this research. Relevant technology companies may consider providing the necessary data to enable a more in-depth study with more perpetrators.

Policymakers

Policymakers engaged in preventative countering violent extremism (CVE) work should also consider an official implementation of the TRAP-18, possibly by incorporating it into existing risk assessment protocols. This would help to better inform efforts to intervene prior to attacks and steer individuals away from criminal activity, including terrorism. Policymakers should never lose sight of the importance of both technological advances to assess risk online and the need for threat assessment teams to manage the actual on-the-ground risk of the person of concern.



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