SJSU SAN JOSÉ STATE UNIVERSITY

MTI MINETA TRANSPORTATION INSTITUTE

A National-Level Hazard: Growing Assaults on Transit Staff

Brian Michael Jenkins
Bruce R. Butterworth
Contributing Author: Sachi Yagyu

MINETA TRANSPORTATION INSTITUTE

Founded in 1991, the Mineta Transportation Institute (MTI), an organized research and training unit in partnership with the Lucas College and Graduate School of Business at San José State University (SJSU), increases mobility for all by improving the safety, efficiency, accessibility, and convenience of our nation's transportation system. Through research, education, workforce development, and technology transfer, we help create a connected world. MTI leads the California State University Transportation Consortium (CSUTC) funded by the State of California through Senate Bill 1 and the Climate Change and Extreme Events Training and Research (CCEETR) Program funded by the Federal Railroad Administration. MTI focuses on three primary responsibilities:

Research

MTI conducts multi-disciplinary research focused on surface transportation that contributes to effective decision making. Research areas include: active transportation; planning and policy; security and counterterrorism; sustainable transportation and land use; transit and passenger rail; transportation engineering; transportation finance; transportation technology; and workforce and labor. MTI research publications undergo expert peer review to ensure the quality of the research.

Education and Workforce Development

To ensure the efficient movement of people and goods, we must prepare the next generation of skilled transportation professionals who can lead a thriving, forward-thinking transportation industry for a more connected world. To help achieve this, MTI sponsors a suite of workforce development and education opportunities. The Institute supports educational programs offered by the Lucas Graduate School of Business: a Master of Science in Transportation Management, plus graduate certificates that include High-Speed and Intercity Rail Management and Transportation Security Management. These flexible programs offer live online classes so that working transportation professionals can pursue an advanced degree regardless of their location.

Information and Technology Transfer

MTI utilizes a diverse array of dissemination methods and media to ensure research results reach those responsible for managing change. These methods include publication, seminars, workshops, websites, social media, webinars, and other technology transfer mechanisms. Additionally, MTI promotes the availability of completed research to professional organizations and works to integrate the research findings into the graduate education program. MTI's extensive collection of transportation-related publications is integrated into San José State University's world-class Martin Luther King, Jr. Library.

A National-Level Hazard: Growing Assaults on Transit Staff

Brian Michael Jenkins
Bruce R. Butterworth

Contributing Author:
Sachi Yagyu

May 2026

A publication of the
Mineta Transportation Institute
Created by Congress in 1991

College of Business
San José State University
San José, CA 95192-0219

Mineta Transportation Institute
College of Business
San José State University
San José, CA 95192-0219

Email: mineta-institute@sjsu.edu

transweb.sjsu.edu/research/2560

Acknowledgments

The authors thank Lisa Rose for editorial services, as well as MTI staff Project Assistant Cameron Simons and Graphic Designer Katerina Earnest.

Cover image: “Signs and flowers make up a makeshift memorial at Potomac Ave. metro station, where WMATA employee Robert Cunningham was killed on February 1, 2023,” February 2, 2023, Amanda Andrade-Rhoades/For The Washington Post via Getty Images.

Contents

Summary of Key Findings	**1**
Introduction	**3**
Understanding the New Phenomenon Required New Data	**6**
Refining the Presentation of the Data	**9**
What Did We Find?	**11**
About the Authors	**40**

List of Figures

Figure 1.	All Attacks, Fatalities, and Injuries Worldwide Over Time	11
Figure 2.	All Attacks by Country Group over Time	12
Figure 3.	Attacks in the U.S. and Canada 2003-2024	13
Figure 4.	Attacks in the U.S. and Canada by Victim Job Category Over Time	19
Figure 5.	Attacks in Group 1 By Victim Job Category Over Time	21
Figure 6.	Attacks in the U.S. and Canada by Attacker Group Over Time	23
Figure 7.	U.S. and Canada Attacks by Number of Attackers Over Time	25
Figure 8.	U.S. and Canada Attacks by Attacker Gender Over Time	27
Figure 9.	Attacks in Group 1 by Attack Method and/or Weapon Over Time	34
Figure 10.	U.S. and Canada Attacks by Type of Weapon Over Time	36
Figure 11.	Attacks by Country: The U.K. compared to the U.S and Canada	38

List of Tables

Table 1.	All Attacks by Country Group (2003-2024)	12
Table 2.	All Attacks by Country Group by 2-year Periods	14
Table 3.	US/Canada and Group 1 % of attacks and Relative Lethality	16
Table 4.	U.S. and Canada Attacks by Victim Job Category	18
Table 5.	Attacks in Group 1 by Victim Job Category	20
Table 6.	Attacks in U.S. and Canada by Attacker Group	22
Table 7.	Distribution of Attackers as Passengers in Attacks in the U.S. and Canada	23
Table 8.	U.S. and Canada Attacks by Number of Attackers	24
Table 9.	Attacks in the U.S. and Canada by Attacker Age	26
Table 10.	U.S. and Canada Attacks by Attacker Gender	27
Table 11.	U.S. and Canada Attacks and Lethality by Attacker Gender Over Time	28
Table 12.	Attacks in the U.S. and Canada by Preceding Staff Action	30
Table 13.	Group 1 Attacks by Assault Method and/or Weapon	33
Table 14.	Attacks in U.S. and Canada by Attack Method With or Without Weapon	35

Summary of Key Findings

This report analyzes an important shift in the threat landscape faced by staff and passengers on public buses and trains—the transition from organized ideological terrorism to widespread, random social aggression directed at both passengers and transit employees. While high-profile terrorist incidents historically dominated security concerns, the current data points to a domestic crisis of personal violence that increasingly threatens the frontline workforce whose safety is vital to public transportation.

Attacks on public surface transportation staff are a growing problem worldwide. Assaults on transit staff saw an exponential surge between 2015 and 2024, with 86% of all recorded attacks occurring in the last four years of this ten-year period

The rise in attacks on transportation staff is consistent with the geographic shift in violence noted in earlier MTI research. Our 2022 report on *Changing Patterns of Violence Pose New Challenges to Public Surface Transportation Security* noted that countries with advanced economies (for convenience called "Group 1" countries), with the U.S. in the lead, and the UK second, were accounting for a growing percentage of attacks worldwide, and that more of these attacks could be described as "random public violence".

The U.S. and Canada account for much of the increase. Together, they account for 41% of all global attacks on transit workers between 2021 and 2024. The U.S. alone accounts for more than one-third of the global total.

Attacks on transportation employees differ from the historical pattern of terrorist attacks on surface transportation, which often aimed at mass casualties. Only a small percentage involve fatalities, although most involve injuries, which are unfortunately but sometimes serious. Regardless of how serious, they are also deeply disturbing to transit staff who sometimes put their lives on the line for passengers

Large-scale attacks remain mostly confined to countries with developing economies (Group 2 countries) and involve insurgent groups or criminal organizations. **Most of the assaults in this report can be described as social aggression.**

The apparent rise in random violence on public transit systems parallels other manifestations of social aggression and may be a "canary in the coal mine" for a fraying social fabric.

The violence mostly affects public-facing employees such as bus drivers and on-board train and station staff, particularly those who are isolated. Bus drivers are at the highest risk, accounting

for 63% of attacks in the U.S. and Canada—their vulnerability can be attributed to their physical accessibility to the public and their role as the "lone enforcer" of transit regulations.

Attacks on staff on board buses or trains are almost always carried out by passengers while attacks in train stations and bus depots include a broader population of perpetrators.

Nearly 86% of the attacks were carried out by a single individual rather than a group. The attackers are mainly young adults—male attackers predominate. This is consistent with other forms of violent crime.

A significant number of attacks appear to arise from precipitating events. For example**, nearly 25%** of precipitated assaults began with employees performing mandatory duties, such as fare enforcement or enforcing rules such as no smoking, and **the vast majority of the rest involve employees performing ordinary operational or security duties.**

Putting it simply, the transit employees who were attacked were just trying to do their jobs, including those mandated by regulation that go beyond getting passengers to their destinations safely and on time.

In part, the violence could be a legacy of the pandemic—although the increase started before the pandemic. Confrontations over COVID-19 mandates accelerated a trend of "air rage" incidents in airliners and ground transit-based violence.

In over half of the cases, no weapons of any kind were involved, and in most of the rest of the attacks, the weapons used were ad-hoc, such as rods or pipes. This indicates that most attacks are unplanned.

Introduction

On December 26, 2025, a passenger became violent and physically attacked a bus driver in Milwaukee County, Wisconsin as she was driving. After repeatedly punching her, he then spat at her before exiting the bus. The assailant then boarded a second bus and attacked its driver before fleeing. He was arrested and charged with two counts of battery, but criminal prosecution was delayed pending the outcome of a court-ordered competency examination. Such incidents have become increasingly common.

While terrorist bombings and mass shootings or stabbings aboard trains and buses and at stations attract the most media attention, assaults on transit workers have become a growing problem, especially in the United States, but also in Canada. This report focuses on these attacks and analyzes their pattern between 2003 and 2024.

Violent assaults on transit workers worldwide increased significantly during the decade from the beginning of 2015 to the end of 2024, with the sharpest increase occurring between 2021 and 2024. The growing volume of attacks does not reflect a surge in ideologically motivated violence; few if any of these incidents would be categorized as terrorist attacks. Instead, most appear to be cases of *random social aggression*—a behavioral and societal issue as opposed to campaigns of political violence.

The United States has taken the lead in the number of assaults on transit employees. In part, this may simply reflect America's size—the U.S. has the third largest population in the world. It may also reflect a reporting bias, which also applies to similar "western" countries. While there is anecdotal reporting of violence on transportation systems, statistics are hard to come by for China and India, the world's two most populous nations. The United States is also a violent nation, ranking in the top quarter of the world most violent countries. Most other countries in this quartile are theaters of on-going interstate, civil, or guerrilla wars. America's violence does not reflect on-going armed conflict.

What we are seeing here appears to reflect a broader societal trend. Attacks on transit employees in the United States parallel other indicators of growing violence in American society. Homicides began an upward trend in 2015, increasing sharply in 2020 and remaining on a high plateau until 2022. Mass shootings began a steep upward climb in 2019. Aggravated assaults began to increase in 2015, reaching a peak in 2020. Road rage deaths and unruly passenger incidents on commercial airliners also increased during this period.

What might explain the increased violence? Some point to the 2020 Black Lives Matter protests, which strained relations between police and communities, and in some cases reduced resources for police. Others blame the COVID-19 pandemic, which began in late 2019 and saw frequent

confrontations—some violent—about wearing masks and other measures (including vaccinations) calculated to slow the spread of the virus.

The COVID-19 impact on social norms, however, should not be surprising. Historically, pandemics have left in their wake societies described as on edge, quick to violence. Yet, the indicators of violence and attacks on public transportation employees began to tick upward in the 2017-18 period *before* the protests and pandemic, although turning sharply upward in 2019-20.

Other analyses of American society point to the growing decline of institutions and activities that connect the U.S. socially: declining attendance at religious institutions; declining membership in community organizations and membership societies; declining participation in Parent-Teacher Associations, scouting, veterans' groups, and amateur sports. Still others point to the adverse effects of the internet and social media—we are simultaneously more connected while more isolated. Political polarization has exacerbated social tensions and eroded comity. Americans have grown more fearful, less trusting, more sensitive to perceived insults, more apprehensive about personal safety, more hostile to encroachment—anticipating danger in public spaces, they act accordingly. The emotional time fuse is shorter.

Statistics support these observations, and they seem logical, but as explanations for the increase in random social violence in public places, they remain in the realm of theory. And there may be other factors—increased mental illness and strained resources for intervention and treatment, economic disparities, inadequate law enforcement, fewer people taking public transportation, and shortcomings in education are also mentioned.

Public transportation venues are not the target of America's social unease but merely places where strangers come together—and sometimes behave badly. What happens aboard buses and subways and train stations may be the "canary in the coal mine", warning the U.S. of a fraying society.

At the same time, however, this is not exclusively a U.S. phenomenon. Cities in other economically advanced countries—Canada, the United Kingdom, France—have also seen rising assaults on transit employees. That pushes the U.S. to look at common experiences to explain the violence: societal stress, the pandemic, changes in law enforcement, and a broader shift in social mores.

Reducing the risk to transit employees, however, cannot await social transformation. It is an immediate critical issue that requires attention, and both passengers and transit employee unions are demanding it.

Will assaults on passengers and staff continue to rise? The U.S. murder rate began to decline dramatically in 2023, reaching its lowest rate since 1900 in 2025. Cases of aggravated assault also

declined. Will attacks in public transportation facilities, and specifically on transit staff, follow this downward trajectory?

Federal funding for this research ended unexpectedly in mid-March 2025. Without complete statistics for the past year, we cannot offer an answer. Anecdotal reporting suggests that violence on public surface transportation has declined in some venues, but not in others.

Understanding the New Phenomenon Required New Data

Getting a better understanding of attacks on transit employees would require additional data that did not appear in the "MTI Database on Terrorist and Serious Criminal Attacks against Public Surface Transportation," considered one of the most comprehensive data sets in the world on this topic. The MTI database began as a simple chronology of attacks in 1996, then placed on data platforms and expanded over the years to create a powerful analytical tool. The effort was supported initially by the Department of Transportation, later by the Department of Homeland Security.

From 2011 to March 19, 2025, it was one of the Transportation Security Administration's principal sources of detailed information on attacks on public surface transportation worldwide that had taken place worldwide since 1970. Improvements were continuously made to the database to make data searches and analysis more accurate, easier, and more powerful. By March 2025, the database contained more than 8,000 attacks and was updated twice monthly. It was supplemented by a periodically updated, and detailed user's guide, separate research reports on trends prepared by MTI, and periodic briefings to TSA analysts, transit operators, law enforcement audiences, and Congressional committees.

One of the trends we noted at the end of the 2010s was the rise of violent anti-social attacks around the world, but especially in the economically advanced nations. This was noted in our 2022 report, Changing Patterns of Violence Pose New Challenges to Public Transportation in the United States.

The tapestry of violence in public transportation venues was clearly changing. Terrorist violence was evolving from attacks carried out by organized groups to increasing attacks carried out by self-selecting individuals who were untethered to any group and inspired by a combination of ideology and personal motivations. Concurrently, individuals without any clear ideological motivation were increasingly carrying out random attacks.

While the database alerted us to this last trend, it did not enable the U.S. to adequately analyze what was going on. And the deluge of anti-social criminal attacks against rail and bus passengers overwhelmed our resources, compelling us in September 2021 to suspend collecting data on anti-social attacks against passengers, although we continued to collect data on all attacks against transit staff.

The phenomenon created new challenges for our research. In dealing with terrorist attacks in transportation venues, previous research focused on the main attributes of the attacks—targets, tactics, and techniques, which are the primary elements of information that help shape security measures.

These are still important attributes in protecting the public, passengers, and transit employees against random social violence, but behavioral issues—the mindset and behavior of the perpetrator, the social environment, and the specific circumstances leading up to the assault—acquire greater importance. Although reporting of incidents has improved, the type of behavioral information needed is seldom collected and rarely compiled.

A comprehensive analysis of the phenomenon would have required MTI to develop an entirely new set of data fields and values, which exceeded the resources provided by our government contract. Nevertheless, beginning in 2022, we undertook—on our own initiative—to create a separate, stand-alone database that added specialized categories and values, and focused exclusively on attacks on staff. This new "staff attacks" database, which is smaller, uses Microsoft Excel rather than Microsoft Access, which houses MTI's primary public transportation security data. (Excel generally remains, for smaller data sets, an adequate, cost-efficient platform.)

Of course, certain values and fields are shared with the original MTI database. In terms of the basic facts, such as where the attack happens, the authors used the same category of country group, region, country, state or province, and city. Date, time and whether attacks occurred during on or off-peak traffic times remained the same. The same values for casualties were used.

The similarities end there. Sixteen new data fields were created along with new values. In addition to the basic categories cited above, five existing data fields, such as attack method and/or type of weapon, and type of attacker, were significantly altered by adding new or changing old values. Four of these new data fields are particularly important for our analysis.

First, in order to obtain more precise information about which staff members were most targeted, we created 19 specific "Victim by Job" descriptions or values. For buses, for example, these included bus driver, on-board operational staff (e.g., conductor, ticket collector, etc.), and on-board security personnel, as well as bus station and stop security and operational personnel. For trains, values included train operators, on-board operational and security staff, train station operational and security staff, railway workers outside of stations, and others. These were assigned to one of four new target groups or categories.

Second, new categories of attack methods have been added to the ones taken from the MTI database, such as assault, stabbing; assault, automatic or semi-automatic weapons; and arson. The new entries include, for example "Physical Assault without Weapons or Objects," "Assault including Rod, Pipe, Stick or Other Object Used for Battery or Thrown," and even "Throwing or Pouring Liquids (Acid, Beer, Urine, etc.)."

Third, a number of data fields were added to better understand the profile of the attacker. These include (where known) the number of attackers, age, and gender as well as indicators of reported

and therefore possible mental illness, intoxication, or drug use. Needless to say, sometimes these categories were unknown or overlapped.

Fourth and finally, it was also important to categorize the circumstances of each event—specifically the actions employees took or were involved in before an attack.

In sum, this new database provides far greater detail to better understand the increase and pattern of attacks against transit staff. Although it is still a work in progress that will require further additions and modifications, the new configuration and collection effort has led to some key findings.

It also provides a template that could be used and then specialized by government authorities and transit agencies to fit the circumstances of a particular country or transit environment.

Refining the Presentation of the Data

Before looking at these attacks, however, it is also necessary to briefly also describe how we changed our portrayal of the data. Nearly a decade ago, we realized that the general patterns of violence—and specifically the violence that occurred in public surface transportation venues—differed greatly in various regions of the world.

Worldwide statistics illustrate global trends. But they can also obscure important differences by combining countries experiencing high levels of political violence in the form of interstate warfare, chronic civil or guerrilla wars, or ongoing terrorist campaigns with countries that are not immune to terrorist attacks, but where the volume of political or ideological violence is much lower. The totals from the former could overwhelm the totals in the latter set of countries and thereby distort threat assessments and analysis.

To address this issue, in our more recent MTI research reports, we divided the countries of the world into three broad groups. Group 1 countries are those with advanced economies. These countries were not immune to political violence, and they occasionally suffered major terrorist attacks with high body counts. But generally, the level of political violence was lower, and the lethality of the attacks was overall much lower than that seen, for example, in the countries of South Asia or the Middle East.

Group 2 countries comprised those with developing economies and included those burdened with ongoing internal armed conflicts. India and Pakistan are examples. Tũrkiye and Colombia are included in Group 2 although both have advanced economies and are members of the Organization for Economic Cooperation and Development—OECD.

Finally, we put Israel and the Palestinian territories in Group 3. Israel clearly has an advanced economy—and would otherwise be in Group 1—but the ongoing violence there could distort the patterns in other places.

The groupings are inherently arbitrary but not intended to be a political statement. But while far from perfect, they have enabled the U.S. to discern some trends that would otherwise have been missed or distorted.

The reader will note that this report focuses on Group 1 countries, occasionally contrasting what we see there what we see in Group 2 countries. However, we go one step further and focus on the United States and Canada as a separate category. This is because both countries have seen a significant increase in random, anti-social attacks on surface transportation systems. In a separate section at the end of this report, we also offer a few observations on the United Kingdom, which had the second largest number of attacks (53), after the United States (174), and

which shares not just a common (though often un-common) language, but also a shared history, and many governmental and social characteristics with the the U.S. and Canada. In nearly all respects, the UK's experience is similar to those of the U.S. and Canada, though with some interesting differences.

We also noted that patterns of violence were changing, which was hardly surprising when looking at data reaching back more than 50 years. Not wanting the dead weight of history to prevent discerning recent changes, we have in our previous and this report set aside events occurring before 2003. This enables U.S. to concentrate on data where we have more comprehensive collection and more detailed reporting.

The following section presents the key findings from the statistical analysis. The **figures** represent the trends (depicted in eleven two-year increments), and the **tables** mostly provide the total numbers of the entire 22-year period.

What Did We Find?

Attacks on public surface transportation staff are a growing problem worldwide.

Our new dataset includes 530 attacks from 2003 through 2024. If we were able to dig deeper into each event—that is, if we had the incident reports and other data—our analysis might change, but not by much). As we see in Figure 1 below, the sharpest increase in attacks has occurred in the decade between 2015 and 2024, which accounts for 96% of all attacks worldwide. The four-year period from 2021 through 2024, by itself, accounts for 86%. We also see the relatively low number of fatalities (about 1 fatality for every 10 attacks) and a nearly 1 to 1 ratio of injuries per attack—some no doubt minor, but also some serious very serious, such as knife wounds.

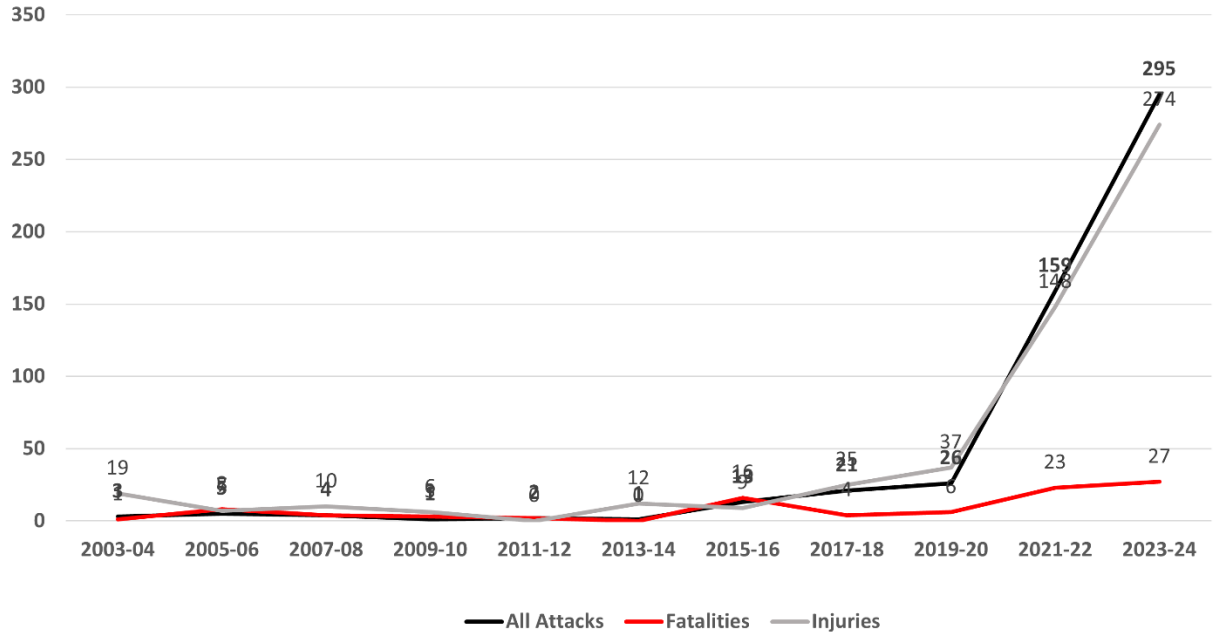

Figure 1. All Attacks, Fatalities, and Injuries Worldwide Over Time

Attacks on staff differ from the historical pattern of attacks on surface transportation.

As Figure 2 below shows, Group 1 countries saw the sharpest increase in attacks on staff and accounted for most of the incidents. The rate of increase in Group 2 countries is markedly less dramatic and then falls, while for Group 3 the rate increases only slightly and even then, falls. This is not to ignore the fact that Israel has also seen purely anti-social attacks on its transit staff, especially bus drivers, some of whom were *Palestinian, and some not, with several of the*

attackers being non-Palestinian Israeli citizens. It shows the extent to which a kind of contagion of anti-social violence appears to be spreading through much of the world.

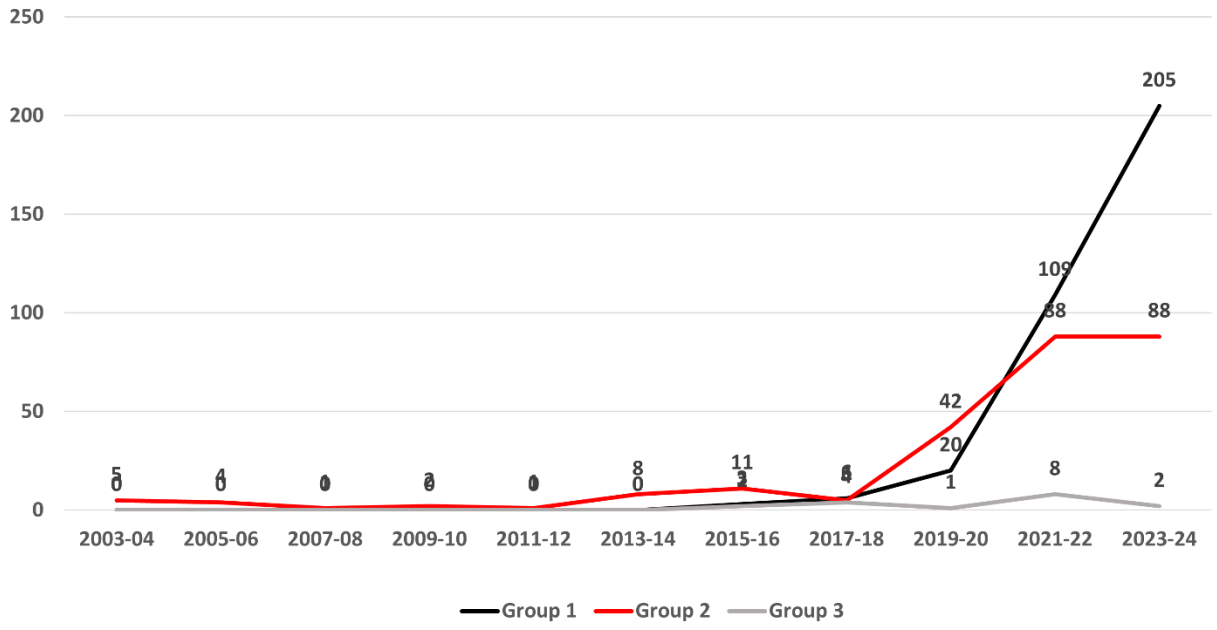

Figure 2. All Attacks by Country Group over Time

Historically, Group 2 countries have accounted for a vast majority of the attacks and casualties. However, as **Table 1 below** shows, this pattern is reversed where attacks against transit staff are concerned. Looking at the entire 22-year period between 2003-2024, Group 1 countries account for 64.7% of the attacks on staff, Group 2 countries accounted for 32.1%, and Group 3 accounts for 3.2%. Lethality in Group 2 is greater. The overall rate of fatalities per attack (FPA) is four times as high for FPA in Group 1, and slightly more for injuries per attack (IPA).

Table 1. All Attacks by Country Group (2003-2024)

Country Group	# Attacks	% Attacks	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Group 1	343	64.7%	64.7%	26	27.4%	333	60.0%	0.1	1.0
Group 2	170	32.1%	96.8%	68	71.6%	205	36.9%	0.4	1.2
Group 3	17	3.2%	100.0%	1	1.1%	17	3.1%	0.1	1.0
Total/Percentages/ Averages	**530**	**100.0%**	**100.0%**	**95**	**100.0%**	**555**	**100.0%**	**0.2**	**1.0**

The U.S. and Canada account for much of the increase.

The United States alone accounts for 32% of all attacks worldwide on staff between 2003 and 2024. It also is the source of the greatest increase in attacks. Between 2021 and 2024, the U.S. and Canada together account for 41% of all attacks occurring worldwide, with the U.S. alone accounting for 36%. **Figure 3 below** shows the dramatic increase in attacks in the U.S. between 2019 and 2024, with a smaller increase in Canada.

In part, this may reflect a reporting bias, but not entirely. Previous research conducted by the Mineta Transportation Institute and recently published surveys in Canada, France, the United Kingdom, and Japan all note increases in assaults on both passengers and staff.

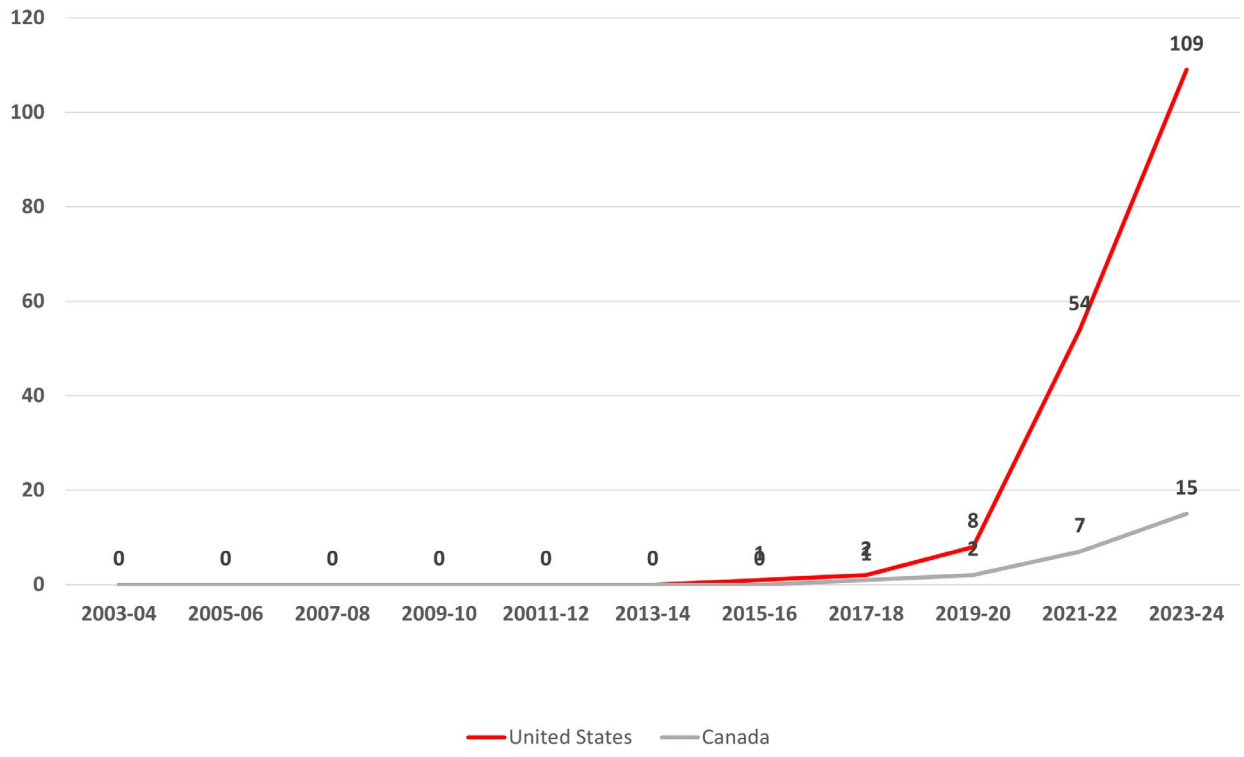

Figure 3. Attacks in the U.S. and Canada 2003-2024

The rise in attacks on transportation staff is consistent with the geographic shift in violence noted in earlier MTI research.

In a 2022 MTI report, Changing Patterns of Violence Pose New Challenges to Public Surface Transportation in the United States, which covered the 18-year period from 2004 through 2021), we noted that while Group 2 countries accounted for nearly 88% of all terrorist and serious criminal attacks and 95% of the fatalities, the percentage of the total attacks in Group 1 countries had increased steadily, from 3.4% of the total in in 2012-2013 to 35% of the total in 2020-2021.

As we already saw in Table 1, the mostly anti-social attacks on transportation employees follow a similar trajectory. As we see in **Table 2 below**, in the ten-year period between 2015 and 2024, the 343 attacks on transportation staff in Group 1 countries accounted for 65% or the worldwide total of 530 attacks. In the 2023-2024 period, that percentage increased to 69%.

Table 2. All Attacks by Country Group by 2-year Periods

Country Group	2003-04	2005-06	2007-08	2009-10	2011-12	2013-14	2015-16	2017-18	2019-20	2021-22	2023-24	Totals/ Averages
Group 1	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**20**	**109**	**205**	**343**
Fatalities	0	0	0	0	0	0	2	0	7	7	10	26
Injuries	0	0	0	0	0	0	3	6	29	97	193	328
FPA	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.4	0.1	0.0	0.1
IPA	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.5	0.9	0.9	1.0
Group 2	**3**	**5**	**4**	**1**	**2**	**1**	**8**	**11**	**5**	**42**	**88**	**170**
Fatalities	1	8	4	3	2	0	14	3	0	16	17	68
Injuries	19	7	10	6	0	12	3	14	8.0	43.0	83	205
FPA	0.3	1.6	1.0	3.0	1.0	0.0	1.8	0.3	0.0	0.4	0.2	0.4
IPA	6.3	1.4	2.5	6.0	0.0	12.0	0.4	1.3	1.6	1.0	0.9	1.2
Group 3	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**1**	**8**	**2**	**17**
Fatalities	0	0	0	0	0	0	0	1	0	0	0	1
Injuries	0	0	0	0	0	0	2	5	0	8	2	17
FPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
IPA	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.3	0.0	1.0	1.0	1.0

Table 2 also illuminates periods where lethality is greater. The colored cells show where lethality measurements—FPA for Fatalities Per Attack and IPA for Injuries Per Attack—were higher in any two-year period than the lethality averages for each country group for all years. Regardless, lethality remains low compared to terrorist attacks against passengers, and high lethality in years with few attacks is not as meaningful as high lethality in years with more attacks, such as those in Group 1 and 2 since 2019.

The growing volume of attacks on transportation employees mirrors other manifestations of social aggression, especially in American society.

Our finding is consistent with reporting by the U.S. Bureau of Transportation Statistics on assaults in all transit modes. It also parallels other indicators of violence in the United States during the same period.

Attacks on transportation employees differ from terrorist attacks, which are often aimed at high body counts.

There have been a number of significant terrorist attacks against transportation targets worldwide. In 2004, terrorists in Spain killed 191 people aboard trains in Madrid. In 2005, suicide bombers in London killed 52 persons aboard the London Tube and a London bus. In 2006, coordinated bombings killed 209 people aboard commuter trains in Mumbai. Bombs on a train between India and Pakistan killed 68 in 2007, while an armed assault on the Mumbai station killed 62 in 2008. In 2010, suicide bombers killed 40 people aboard subways in Moscow. Sixteen people were killed by a terrorist bomb in the Brussels subway in 2016. In these seven incidents, 638 died and thousands were injured. Although not the specific target in these terrorist attacks, transportation employees were, of course, among those killed.

We note, however, that there are other terrorist attacks in Group 1 countries where, for example, anarchist or environmentalist extremists aim to cause economic disruption and avoid casualties.

Only a small percentage of the attacks involve fatalities.

In the assaults examined here, the pattern is different. We see more incidents, especially in Group 1 countries, but fewer incidents with fatalities. Almost all of the attacks on transit staff targeted a single individual. Statistically, the attacks are less lethal measured as fatalities per attack (FPA). The attack is not about body count as it often is in some terrorist attacks.

If we look at **Table 3 below**, it shows that most fatalities occur in Group 2 and reflect the higher incidence of lethal terrorism. The greater number of deaths (and also somewhat larger number of injuries) is accounted for by a small number of deadly incidents.

In contrast, Group 1 countries account for nearly 65% of all attacks but only 27.4% of all fatalities. Attacks in the U.S. and Canada account for 37.5% of all attacks, but only 13.7% of all fatalities. Indeed, Group 2 countries are more deadly with an FPA of 0.4. The FPA for Group 1 countries is four times less at 0.1.

Table 3. US/Canada and Group 1 % of attacks and Relative Lethality

Data Set	# Attacks	# Fatalities	# Injuries	Group 1 % of Attacks	Group 1 % of Fatalities	US/ Canada % of Attacks	US/ Canada % of Fatalities	US/ Canada % of Injuries	FPA	IPA
US/ Canada	199	13	192						0.1	1.0
Group 1	343	26	328	64.7%	27.4%	58.0%	50.0%	58.5%	0.1	1.0
All	530	95	555			37.5%	13.7%	34.6%	0.2	1.0
Group 2	170	68	205						0.4	1.2
Group 3	17	1	17						0.1	1.0

But the picture changes when we look at injuries. The rate of injuries per attack (IPA) for Group 2 is 1.2, slightly more than one injury per attack, whereas the IPA for Group 1 is somewhat less, 1.0, or exactly one injury per attack. That is not much of a difference.

Another way of demonstrating this is by examining how the percentage of attacks corresponds with the percentage of injuries. With 37.5% of the worldwide attacks, the U.S. and Canada account for 34.6% of the injuries. And even though attacks in Group 2 countries are sometimes more lethal, the ratio of injuries to attacks is not dramatically different—Group 2 countries account for 32.1% of all attacks and 36.9% of all injuries (by contrast, it accounts for 71.5% of all fatalities).

Looking at actual numbers also illustrates the IPA calculations. In Group 1 countries, 343 attacks took place causing 328 injuries. Similarly, 199 attacks took place in the U.S. and Canada resulting in 192 injuries.

Since most attacks involve a single victim, a virtual one-to-one ratio of injuries per attack means the single targeted person is injured—sometimes seriously.

Large-scale attacks remain confined to Group 2 countries and involve insurgent groups or criminal organizations.

There are only seven attacks on transportation employees with three or more fatalities. All of these occurred in Group 2 countries and involved improvised explosive devices or armed assaults on police officers guarding rail facilities or passenger buses or workers clearing tracks after previous explosions. The attacks were carried out by insurgent groups in Thailand, India, and Myanmar, and by Somali jihadists in Kenya, and by guerilla groups in India and Thailand that involve workers outside of stations (mostly employees working on tracks). Two other cases involved execution-style killings of bus drivers in Honduras and taxi or bus drivers in Mexico.

These were most likely carried out by criminal gangs enforcing protection rackets. The seven cases resulted in 30 fatalities.

Public facing employees—bus drivers, on-board train and station staff—are at greatest risk, with bus drivers facing the most dramatic increase in attacks.

As already mentioned, in order to better understand who is being targeted, we created a more detailed list of victim job categories.

By drilling down into the actual jobs—such as bus driver or a train operator, or security staff on board trains or at train stations, it should help transit operators, law enforcement and security personnel, and employee organizations to determine which type of employee is at the greatest risk of attack. For example, we have found that the bus driver is, by far, the employee most at risk, with one factor most likely being that they are usually alone.

As seen in **Table 4 below**, bus drivers account for nearly 63% of the 199 attacks that took place in the United States and Canada, followed by train station staff at 11%, on-board train staff at 8%, and station security personnel also at 8%. Together these four job descriptions account for nearly 90% of attacks. Bus drivers account for most (69.2%) of the fatalities.

A Special Note on School Bus Drivers

Before looking more closely at the jobs of those who were attacked, we point out that 19 of the attacks that took place in the U.S. and Canada—albeit a small number—involved school buses, almost always school bus drivers. The safety of children is a high priority in societies, and even a small number of attacks deserves attention. There were no fatalities and only 15 injuries. But a disturbing statistic is that only six out of the 19 attacks (32%) were carried out by individuals described as teenagers or juveniles or as being below the age of 18. In the remaining 13 (68%) of the attacks, the narratives show that ***the majority (nine) were carried out by irate or out-of-control parents of children riding the school buses.***

Table 4. U.S. and Canada Attacks by Victim Job Category

Victim Job Category	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Bus Driver	125	62.8%	62.8%	9	69.2%	121	63.0%	0.1	1.0
Train Station Staff - Operations	22	11.1%	73.9%	0	0.0%	19	9.9%	0.0	0.9
Train On-Board Operation Staff (Conductor, Fare Collector, etc.)	16	8.0%	81.9%	1	7.7%	17	8.9%	0.1	1.1
Train Station Security Staff - Guards, Police, Military	16	8.0%	89.9%	1	7.7%	14	7.3%	0.1	0.9
Train Operator	5	2.5%	92.5%	0	0.0%	4	2.1%	0.0	0.8
Bus On-Board Operations Staff - (Bus Conductor, Ticket Collector, Assistant, etc.)	4	2.0%	94.5%	0	0.0%	4	2.1%	0.0	1.0
Bus Station/Stop Security Staff - Guards, Police, Military	4	2.0%	96.5%	1	7.7%	4	2.1%	0.3	1.0
Bus Driver and On-Board Operations Staff (Conductor, Ticket Collector, Assistant etc.)	2	1.0%	97.5%	0	0.0%	4	2.1%	0.0	2.0
Train - Railway Workers Outside of Stations (on Tracks, in Other Offices)	2	1.0%	98.5%	1	7.7%	0	0.0%	0.5	0.0
Bus On Board Security Personnel	1	0.5%	99.0%	0	0.0%	1	0.5%	0.0	1.0
Bus Station/Stop Operations Staff	1	0.5%	99.5%	0	0.0%	2	1.0%	0.0	2.0
Train On-Board Security Personnel (Guards, Police, Military)	1	0.5%	100.0%	0	0.0%	2	1.0%	0.0	2.0
Total/Percentages/ Averages	**199**	**100.0%**	**100.0%**	**13**	**100.0%**	**192**	**100.0%**	**0.1**	**1.0**

Figure 4 below examines frequency of attacks by job description (for the four victim job categories where there were more than five attacks). We see a sharp increase starting in 2019-2020 for bus drivers, and a slight but steady increase for train on-board operations staff.

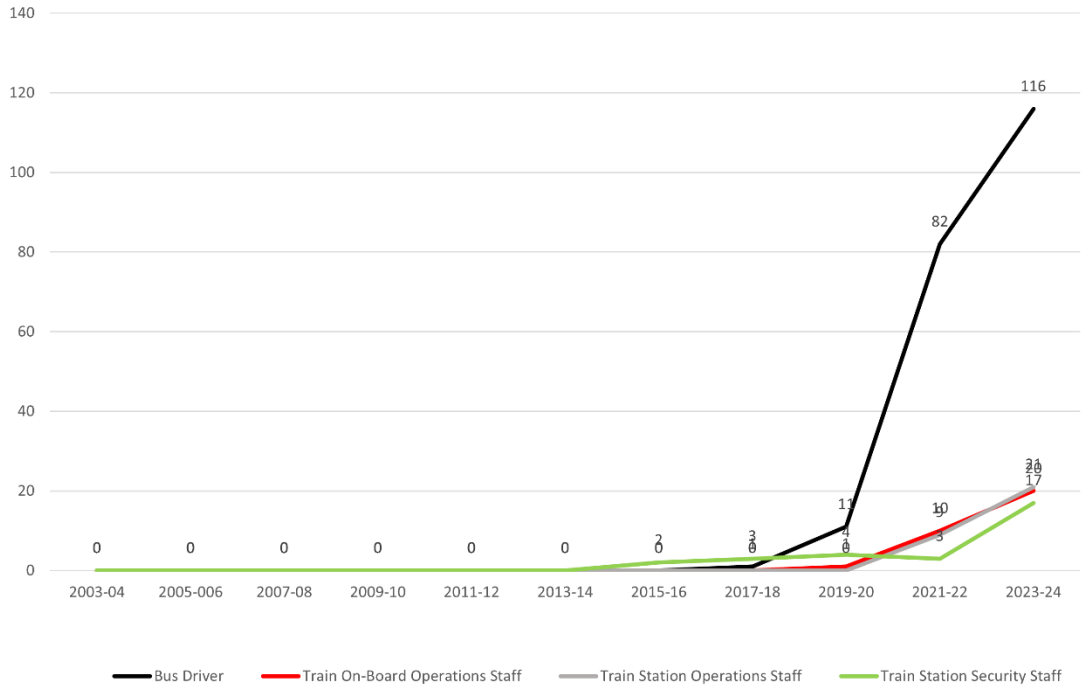

Figure 4. Attacks in the U.S. and Canada by Victim Job Category Over Time

As we see in **Table 5 below**, these same four categories in Group 1 together account for roughly the same overall percentage, but the order of them differs somewhat. For example, train station operation staff is the 4th in Group 1 rather than the 2nd, and train on-board operations staff is the 2nd rather than the 3rd. However, bus drivers clearly predominate in both sets.

Table 5. Attacks in Group 1 by Victim Job Category

Victim job Category	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Bus Driver	216	63.0%	63.0%	19	73.1%	199	59.8%	0.1	0.9
Train On-Board Operation Staff (Conductor, Fare Collector, etc.)	30	8.7%	71.7%	1	3.8%	35	10.5%	0.0	1.2
Train Station Security Staff - Guards, Police, Military	30	8.7%	80.5%	3	11.5%	33	9.9%	0.1	1.1
Train Station Staff - Operations	30	8.7%	89.2%	1	3.8%	25	7.5%	0.0	0.8
Bus On-Board Operations Staff - (Bus Conductor, Ticket Collector, Assistant, etc.)	8	2.3%	91.5%	0	0.0%	9	2.7%	0.0	1.1
Bus Station/Stop Security Staff - Guards, Police, Military	6	1.7%	93.3%	1	3.8%	6	1.8%	0.2	1.0
Train Operator	6	1.7%	95.0%	0	0.0%	5	1.5%	0.0	0.8
Train On-Board Security Personnel (Guards, Police, Military)	5	1.5%	96.5%	0	0.0%	6	1.8%	0.0	1.2
Bus Driver and On-Board Operations Staff (Conductor, Ticket Collector, Assistant etc.)	3	0.9%	97.4%	0	0.0%	6	1.8%	0.0	2.0
Bus Station/Stop Operations Staff	3	0.9%	98.3%	0	0.0%	5	1.5%	0.0	1.7
Bus On-Board Security Staff (Guards, Police, Military)	2	0.6%	98.8%	0	0.0%	2	0.6%	0.0	1.0
Train - Railway Workers Outside of Stations (on Tracks, in Other Offices)	2	0.6%	99.4%	1	3.8%	0	0.0%	0.5	0.0
Bus On Board Security Personnel	1	0.3%	99.7%	0	0.0%	1	0.3%	0.0	1.0
Train - Police guarding tracks and other outside locations	1	0.3%	100.0%	0	0.0%	1	0.3%	0.0	1.0
Total/Percentages/ Averages	**343**	**100.0%**	**100.0%**	**26**	**100.0%**	**333**	**100.0%**	**0.1**	**1.0**

Also, **in Figure 5,** we also see a very similar and dramatic ramping up of attacks against bus drivers but somewhat less of an increase for attacks against train on-board operations staff. (Only the four victim job categories that experienced over seven attacks are displayed.)

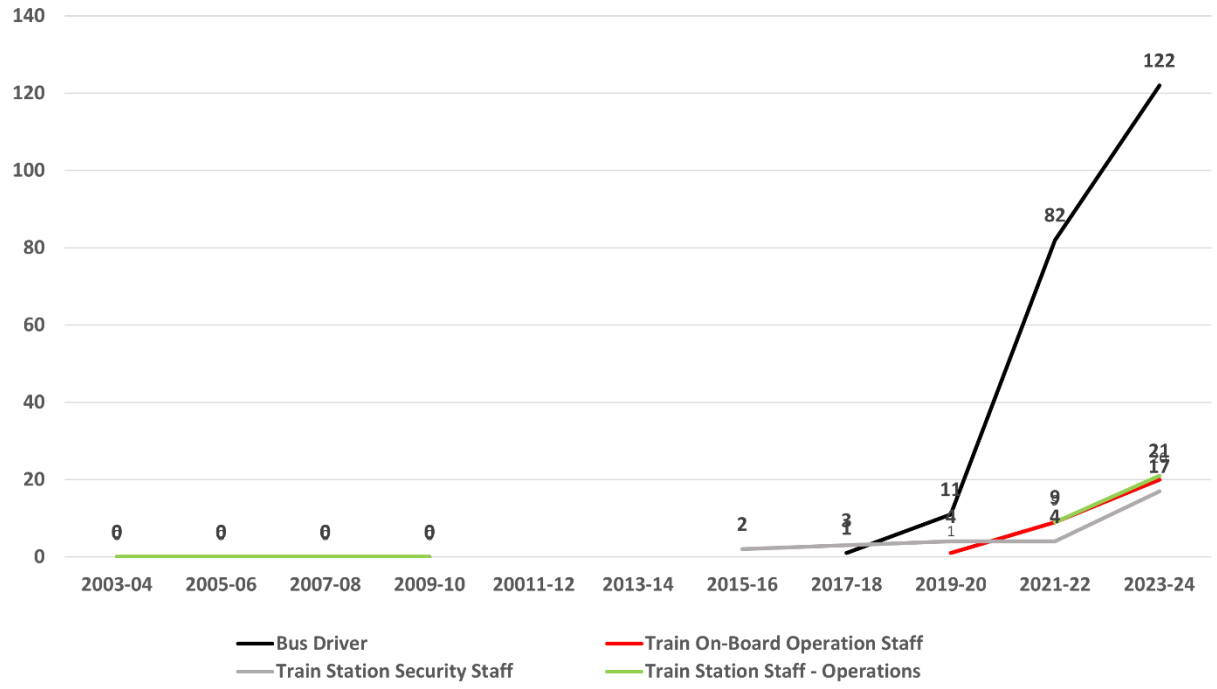

Figure 5. Attacks in Group 1 By Victim Job Category Over Time

As a final comment on the issue of which categories of employees are most frequently targeted, it is important not to misunderstand the term "targeted." It is true that in some cases, certain categories of employees may be the targets of planned attacks. Guerrillas may target work crews on remote tracks, gangs running protection rackets may target bus drivers, lone terrorists may deliberately go after uniformed security personnel.

However, and as we will discuss in another section that follows, most of the assaults on transportation employees appear to be unplanned. The assailant does not go into a train station in order to attack a station worker or board a bus with the intention of attacking the driver. Most attacks appear to be random actions. Some incidents result from immediate circumstances—an altercation with an employee or intervention by an employee to enforce a rule or protect passengers that suddenly erupts into violence. Other attacks appear to be come out of nowhere, propelled by the inexplicable internal drives of someone who is intoxicated, high on drugs, or mentally disturbed.

Most of the assaults can be described as social aggression, and these attacks have increased significantly in recent years.

Historically, most attacks on surface transportation were inspired by ideology or ordinary criminal motives—theft, gang rivalry, or in some cases, what appeared to be mental disturbance. The attacks on transportation employees look different. Most of the violence seems to be social aggression unconnected with political motives or traditional crime. Social aggression—whether committed by an individual, a group or when the number of attackers is unknown—accounts for approximately 92% of the cases.

Table 6. Attacks in U.S. and Canada by Attacker Group

Attacker Group	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Socially-Aggressive Criminal Behavior - Individual	156	78.4%	78.4%	7	53.8%	157	81.8%	0.0	1.0
Socially-Aggressive Criminal Behavior - Group/Gang	25	12.6%	91.0%	0	0.0%	26	13.5%	0.0	1.0
Mentally Disturbed Individual(s)	9	4.5%	95.5%	2	15.4%	7	3.6%	0.2	0.8
Unknown Groups or Individuals	7	3.5%	99.0%	3	23.1%	2	1.0%	0.4	0.3
Socially-Aggressive Criminal Behavior - Numbers Unknown	2	1.0%	100.0%	1	7.7%	0	0.0%	0.5	0.
Total/Percentages/ Averages	**199**	**100.0%**	**100.0%**	**13**	**100.0%**	**192**	**100.0%**	**0.1**	**1.0**

Angry, violent individuals account for 82% of all cases worldwide, 92% of the cases in Group 1 countries, the same percentage as for the United States and Canada. Descriptions identifying the attacker as a possibly mentally disturbed individual figure in only about approximately 4.5% of the cases. (This attribution derives from media accounts of the incident and is not a diagnosis by a mental health professional.)

The information available in these cases is insufficient to allow for deciding which factors were most important: intoxicated by alcohol, drug-addicted, or mentally ill. These factors may also exist in some of the cases listed as social aggression, which is a broad behavioral category. Statistical depictions do not reflect diagnostic precision—the reality in this area of inquiry is slippery.

Finally, as we see in **Figure 6 below**, social aggression (not including the two attacks in which the numbers of attackers were unknown) accounts for the recent increase in the number of attacks in the U.S. and Canada.

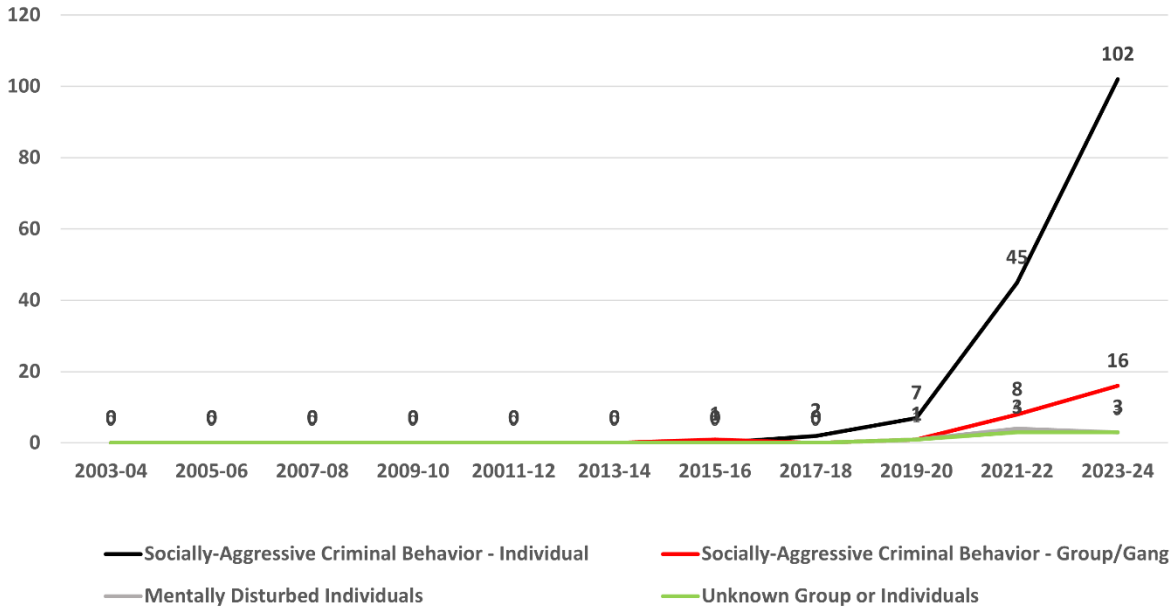

Figure 6. Attacks in the U.S. and Canada by Attacker Group Over Time

Attacks on staff on board buses or trains are almost always carried out by passengers while attacks in train stations and bus depots include other a broader population of perpetrators.

Excluding two cases where employees were outside of a station or not in a bus or train, and the 24 cases where this factor is unknown, 55% of the attackers were passengers. But this hides an important fact: where the attack took place matters. As table 7 below shows, when the attack took place in a bus or a train, nearly 86% were passengers, whereas in a train station or a bus stop, only 7.5% were passengers—the rest were not passengers.

Table 7. Distribution of Attackers as Passengers in Attacks in the U.S. and Canada

Location	Passengers	% in Location	Non-Passengers	% in Location	Total
Bus or Train	171	85.9%	85.9%	12	92.3%
Station or Stop	15	7.5%	93.5%	1	7.7%

The most obvious explanation is that train and metro stations and bus depots, in addition to being transit centers, house restaurants and other businesses patronized by non-passengers, often serve as shelters for the homeless, and host crowds that may offer targets to malevolent actors.

More than 86% of the attacks were carried out by a single individual rather than a group.

Based on calculations from **Table 8 below**, leaving aside only two attacks out of total of 199 where the number of assailants is unknown, individuals rather than groups of two or more persons account for 171 or 86% of the assaults in the U.S. and Canada. Groups (two or more assailants) account for the remaining 26 or 13% of the attacks where the assailant number is known.

Table 8. U.S. and Canada Attacks by Number of Attackers

# Attackers	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
1 Attacker	171	85.9%	85.9%	12	92.3%	166	86.5%	0.1	1.0
2 Attackers	15	7.5%	93.5%	1	7.7%	13	6.8%	0.1	0.9
3-5 Attackers	9	4.5%	98.0%	0	0.0%	9	4.7%	0.0	1.0
Unknown # Attackers	2	1.0%	99.0%	0	0.0%	1	0.5%	0.0	0.5
11-20 Attackers	1	0.5%	99.5%	0	0.0%	2	1.0%	0.0	2.0
6-10 Attackers	1	0.5%	100.0%	0	0.0%	1	0.5%	0.0	1.0
Total/Percentages/ Averages	**199**	**100.0%**	**100.0%**	**13**	**100.0%**	**192**	**100.0%**	**0.1**	**1.0**

Finally, as we see from **Figure 7 below**, which shows attacker numbers where there are multiple attackers (excluding two attacks, one involving 6-10 attackers and one involving 11-20 attackers), lone aggressors drive the steep rise in attacks after 2020.

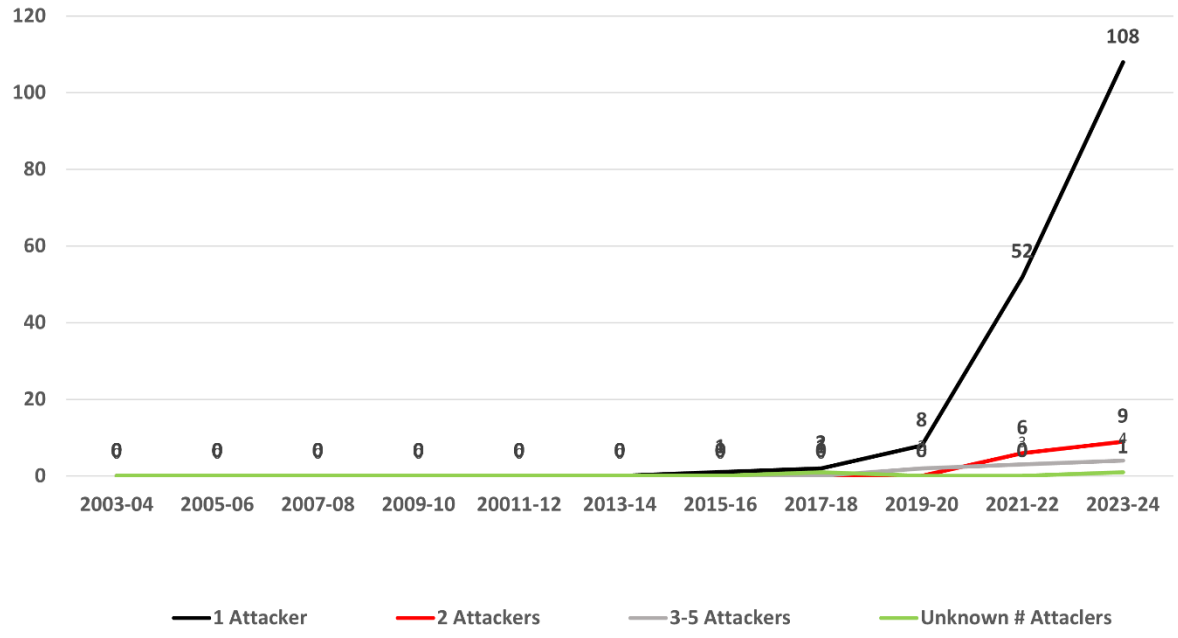

Figure 7. U.S. and Canada Attacks by Number of Attackers Over Time

The attackers are mainly young adults.

Conclusions are more tenuous here as the age of the attacker is seldom reported. As **Table 9 below** shows, for the attacks in the U.S. and Canada we know or can guess the ages of the attackers in only 94 or 43% of the cases; in the rest of the attacks (105 or 57%) the attackers are presumed to be adults. We have general descriptions of the attackers as minors, juveniles, or teenagers in another 21 attacks (another 10.1%).

For the remaining 74 (37%) where there is an age reported, roughly two thirds (66%) fall into the categories that are between 19 and 30 years old. This is roughly consistent with the general pattern of violent crime in the United States. According to FBI figures for Crime in the United States. In 2016, for example, 38.5% of those arrested in the U.S. for violent crimes were between the ages of 19 and 29—extending the age bracket to 34 brings it to 52%.

Table 9. Attacks in the U.S. and Canada by Attacker Age

Age Categories of Attackers	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
No Data: Presumably Adults	105	52.8%	52.8%	7	53.8%	89	46.4%	0.1	0.8
31-40	21	10.6%	63.3%	1	7.7%	21	10.9%	0.0	1.0
No Data: Presumably Non-Adult: Minors/Juvenile/ Teenager/Student	20	10.1%	73.4%	0	0.0%	21	10.9%	0.0	1.1
26-30	17	8.5%	81.9%	1	7.7%	14	7.3%	0.1	0.8
19-25	15	7.5%	89.4%	3	23.1%	29	15.1%	0.2	1.9
41-50	9	4.5%	94.0%	0	0.0%	7	3.6%	0.0	0.8
10-18	6	3.0%	97.0%	0	0.0%	7	3.6%	0.0	1.2
51-75	6	3.0%	100.0%	1	7.7%	4	2.1%	0.2	0.7
Total/Percentages/ Averages	**199**	**100.0%**	**100.0%**	**13**	**100.0%**	**192**	**100.0%**	**0.1**	**1.0**

As for lethality, Table 9 also shows that the rates for fatalities and injuries are higher for the 19-25 age bracket. This bracket has an FPA of 0.2, and an IPA of 1.9, which is twice as high (for FPA) as the overall average of 0.1 FPA and nearly twice as high for the overall average of 1.0 IPA. Again, this is roughly consistent with the pattern of violent crime in the United States as reported by the FBI.

What then can we conclude from all of this? **Contrary to what many may want to think, this is not a wave of attacks driven by unruly children or out-of-control teenagers—it is driven by adults, with the most lethal attacks committed by young adults.**

Male attackers predominate.

Continuing with our demographic profile of the attackers, **Table 10 below** reveals that in the U.S. and Canada, males account for 76% of the 158 attacks where the gender of an attacker has been reported. This is consistent with research on Anti-Social Personality Disorder, which found that males account for roughly 75% of the cases. Female attackers account for about 20% of remainder of these "Known" attacks. Finally, seven of the known attacks involve both male and female attackers.

Male attackers are somewhat more violent, accounting for nine or 82% of the fatalities in the known cases and 78% of the injuries. Given the small number of cases, however, the difference is not significant, and lethality remains low for both male and female attacks.

Table 10. U.S. and Canada Attacks by Attacker Gender

Attacker Gender	Attacks	Attack %	% of Known Attacks	Fatalities	% Fatalities	% of Known Fatalities	Injuries	% Injuries	% of Known Injuries	FPA	IPA
Male	120	60.3%	75.9%	9	69.2%	81.8%	122	63.5%	77.7%	0.0	1.0
Unknown	41	20.6%		2	15.4%		35	18.2%		0.0	1.1
Female	31	15.6%	19.6%	2	15.4%	18.2%	28	14.6%	17.8%	0.0	1.0
Male & Female	7	3.5%		0	0.0%		7	3.6%		0.0	0.5
Total/ Percentages/ Averages	**199**	**100.0%**		**13**	**100.0%**		**192**	**6.5%**		**0.1**	**1.0**

Looking at these same attacks over time in **Figure 8 below**, we see that incidents involving male attackers have increased most sharply. This reflects the same general patterns we have already seen, but the rise in attacks by males seems even sharper starting in 2019-2020 than for other attack characteristics.

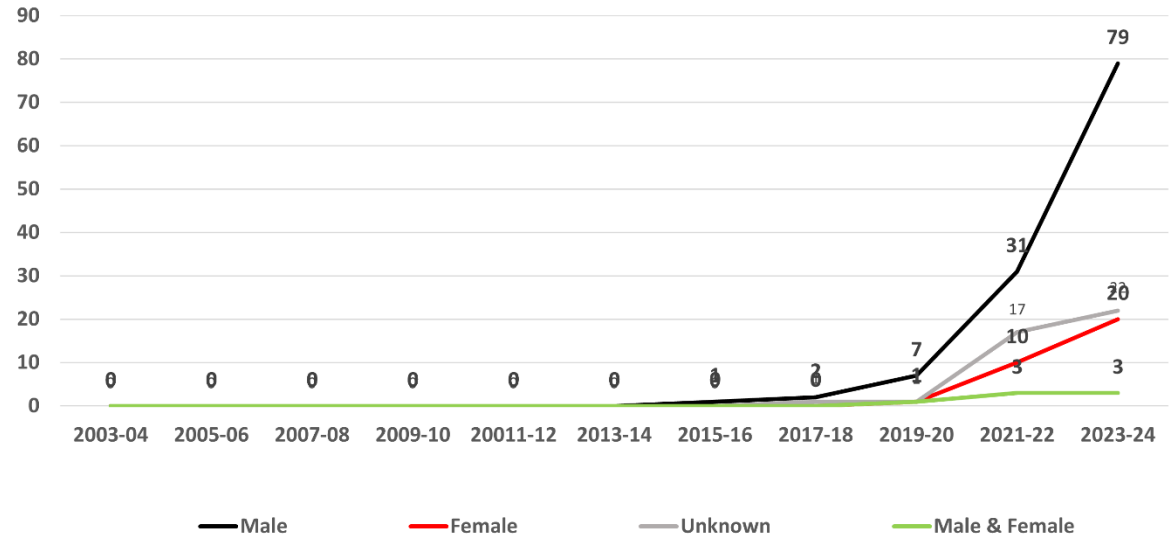

Figure 8. U.S. and Canada Attacks by Attacker Gender Over Time

As for lethality over time, as displayed in **Table 11** below, the only thing that stands out where there is more than one attack, is that attacks by males had higher FPA and IPA in the 2019-2020 period.

Table 11. U.S. and Canada Attacks and Lethality by Attacker Gender Over Time

Attacker Gender	2003-04	2005-06	2007-08	2009-10	20011-12	2013-14	2015-16	2017-18	2019-20	2021-22	2023-24	Totals/ Averages
Male	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**7**	**31**	**79**	**120**
Fatalities	0	0	0	0	0	0	1	0	4	2	2	9
Injuries	0	0	0	0	0	0	2	2	20	25	73	122
FPA	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.6	0.1	0.0	0.1
IPA	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0	2.9	0.8	0.9	1.0
Unknown	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**17**	**22**	**41**
Fatalities	0	0	0	0	0	0	0	0	0	2	0	2
Injuries	0	0	0	0	0	0	0	0	1	15	19	35
FPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
IPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9	0.9	0.9
Female	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**10**	**20**	**31**
Fatalities	0	0	0	0	0	0	0	0	1	0	1	2
Injuries	0	0	0	0	0	0	0	0	0	8	20	28
FPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.1
IPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.0	0.9
Male & Female	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**3**	**9**
Fatalities	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	1	3	3	7
FPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	1.0	0.8

The sharp increase in the number of assaults by males and resulting injuries (and a few fatalities) in the 2019–2020 time frame supports other research indicating that men saw wearing masks during the COVID-19 pandemic as a sign of weakness and mask mandates (enforced on public transportation) as an infringement on their rights. This became a factor in some of the confrontations leading to assaults on transportation staff who had the responsibility for enforcement, a point we will return to shortly. Commercial airlines saw a sharp increase in incidents of unruly passengers or "air rage" owing to mask mandates. Whether the pandemic

caused a longer-term sensitivity to infringements on rights and personal boundaries, is a tempting hypothesis with implications for employee training.

A significant number of attacks appear to arise from precipitating events.

Do assaults on transportation staff *come out of nowhere*, or are there preceding circumstances which can be identified? The data suggest a mixed conclusion.

Staff actions preceding the assault are presented in **Table 12 below**. In 55.8% of the cases, employees were described or are assumed to be carrying out normal operational duties, or normal security duties (another 4%) when they are attacked, for a total of nearly 60% of all attacks.

But "normal duties" could include unwittingly doing something that precipitated an attack. Without more detailed narratives, we cannot be certain. There are also situations in 3% of the cases ("unknown/unlikely") where carrying out of normal operational or security duties isn't described or cannot be assumed—for example, an assault that happens before the work cycle has started or where there is a vague reference to a possible argument with unknown persons.

Table 12. Attacks in the U.S. and Canada by Preceding Staff Action

Staff Action Preceded Attack?	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Carrying Out Normal Operational Duties	111	55.8%	55.8%	5	38.5%	104	54.2%	0.0	0.9
Schedule/Doors (Being Late/Not Making Unscheduled Stops)	17	8.5%	64.3%	0	0.0%	33	17.2%	0.0	1.9
Dealing with Disruptive (noisy etc.), Intoxicated/Drug-Impaired or Mentally Disturbed Passengers	16	8.0%	72.4%	0	0.0%	12	6.3%	0.0	0.8
Fare Regulatory Enforcement	14	7.0%	79.4%	1	7.7%	10	5.2%	0.1	0.7
Carrying Out Normal Security Personnel Duties	8	4.0%	83.4%	1	7.7%	6	3.1%	0.1	0.8
Unknown/Unlikely	6	3.0%	86.4%	3	23.1%	4	2.1%	0.5	0.7
Driver Interaction With Other Vehicles or Pedestrians	5	2.5%	88.9%	2	15.4%	3	1.6%	0.4	0.6
Miscellaneous (Unspecified Argument, Station Traffic Enforcement, etc.)	5	2.5%	91.5%	1	7.7%	4	2.1%	0.2	0.8
Law Enforcement Detaining or Arresting	4	2.0%	93.5%	0	0.0%	5	2.6%	0.0	1.3
Mask Regulatory Enforcement	4	2.0%	95.5%	0	0.0%	2	1.0%	0.0	0.5
Smoking Regulatory Enforcement	4	2.0%	97.5%	0	0.0%	3	1.6%	0.0	0.8
Other Regulatory Enforcement (Bicycles, Seats, Riding Outside, etc.)	2	1.0%	98.5%	0	0.0%	2	1.0%	0.0	1.0
Stopping Crime (robbery, Assault, Rape, etc.)	2	1.0%	99.5%	0	0.0%	3	1.6%	0.0	1.5
Accused of Disrespect or Bias	1	0.5%	100.0%	0	0.0%	1	0.5%	0.0	1.0
Total/Percentages/ Averages	**199**	**100.0%**	**100.0%**	**13**	**100.0%**	**192**	**100.0%**	**0.1**	**1.0**

Turning to the remaining 74 cases, being behind schedule or refusing to make unscheduled stops appears in 8.5% of all attacks. Dealing with disruptive (noisy, intoxicated, under the influence of drugs, or mentally disturbed) passengers appears as a precipitating factor in 8% of the attacks. Fare enforcement comes next, figuring in 7%. No smoking enforcement and mask enforcement during the pandemic together accounted for 4%. Other regulatory enforcement accounts for another 1%, bringing all enforcement issues to nearly a quarter of the precipitating circumstances in cases where we have specific information.

Even with limited information about the circumstances immediately preceding the assault, we are able to at least hypothesize that actions taken by victimized staff members—in compliance with their duties—such as enforcing fare collection, no smoking or (during the pandemic) mask wearing requirements, may have led to the assault. **This raises questions of policy, communication, resources and training to reduce the number of these attacks**.

If we had sufficient information on a greater number of cases, we may find that enforcement plays an even greater role. This also helps to explain why bus drivers are so frequently victims. They are accessible to passengers. They drive the bus and are thus seen by some passengers as responsible for being late and for refusing to make unscheduled stops. They are also usually the lone enforcer of regulations.

This discussion is **not in any way** *intended* to shift responsibility from the attacker to the employee. But it does raise a policy issue about what transportation operators expect employees to do. On the one hand, transportation carriers have a duty of care to their passengers. On the other hand, employees cannot be expected to endanger their own lives, although in some cases they do. In one percent of the attacks, operational employees (as opposed to security employees) were attacked while intervening to protect passengers, preventing robberies, assault, or rape.

And there are recent examples of heroism on the part of employees that need to be kept in mind.

Not long ago, on November 1, 2025, a rail customer host aboard a train from Doncaster to London was seriously wounded when he heroically intervened to protect passengers against a mass stabbing attack. Ten were injured in the attack.

Meanwhile, an earlier, similar episode in the United States ended tragically when, on February 1, 2023, a Washington Metro employee, 64-year-old Robert Huntington, was shot and killed when he attempted to protect a woman threatened by a gun-waving assailant who had already shot two people. A second employee attempted to calm the gunman. The episode ended when others at the station tackled and subdued the gunman. A make-shift memorial to his heroism is shown on the first page of this report.

Reaching further back, on March 19, 2022, a quick-thinking Florida bus driver drove her bus to a police station when a gunman started shooting passengers thereby saving lives. Many other transit workers helped endangered passengers escape or assisted wounded passengers.

Meanwhile, police and proprietary security personnel, especially when uniformed, are sometimes the targets of planned attacks in stations because terrorists see them as *legitimate* targets. More relevant to this study, these same personnel may end up in confrontations with individuals who are harassing or threatening other passengers. Presumably, they are trained to deal with such circumstances, but these are never easy situations to handle.

In the majority of attacks, no weapons were involved. Including attacks with ad-hoc or make-shift weapons suggests that a majority of attacks are unplanned.

We look now at the attack method used, including methods with or without a weapon, and also when the weapon is a firearm or a knife—first examining attacks in all Group 1 countries, and then only at attacks in the U.S. and Canada.

Table 13 below shows all attack methods in Group 1 countries. Physical assault without weapons accounts for 53% of attacks. Assaults with makeshift weapons—rods, pipes, sticks, used for battery or throwing) account for 9.6% of the attacks. Stabbing accounts for 17.2% and firearms account (usually handguns) account for 9.9%. These four types account for just over 90% of the assaults. Miscellaneous attack methods, which include a number of non-lethal "BB guns," account for 4.7%. Throwing dangerous objects and throwing or pouring liquids (e.g., acid, urine) account another for a total of 2.4%. Altogether these represent all but 96% of all assaults. (There was one reported sexual assault of a female employee, and one vehicle ramming in an interaction with a vehicle driver.)

Assaults without weapons in Group 1 countries account for 59.5% of the total injuries, but only 15.4% of the fatalities. In terms of overall lethality, not surprisingly, lethality is the highest when automatic or semi-automatic weapons or knives are used. Firearms account for 61.5% of all fatalities and stabbings another 19.2%, for a combined total of 80.7%. And firearms have an FPA of 0.5, five times the overall FPA of 0.1. By contrast, the rate of injuries per attack (IPA) for any attack method is not far above or below the overall average of 1.0.

Table 13. Group 1 Attacks by Assault Method and/or Weapon

Assault Method with or without Weapon	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Physical Assault without Weapons or Objects: (Fist, feet, Body, teeth etc.)	183	53.4%	53.4%	4	15.4%	198	59.5%	0.0	1.1
Assault, Stabbing	59	17.2%	70.6%	5	19.2%	50	15.0%	0.1	0.8
Assault, Automatic or Semi-Automatic Weapons	34	9.9%	80.5%	16	61.5%	27	8.1%	0.5	0.8
Assault including Rod, Pipe, Stick or Other Object Used for Battery or Thrown	33	9.6%	90.1%	1	3.8%	28	8.4%	0.0	0.8
Miscellaneous - Pepper Spray, BB Guns, Rockets or RPG etc.	16	4.7%	94.8%	0	0.0%	16	4.8%	0.0	1.0
Kidnapping, Hijacking, Robbery Or Hostage Taking	8	2.3%	97.1%	0	0.0%	6	1.8%	0.0	0.8
Throwing or Pouring Liquids (Acid, Beer, Urine etc.)	5	1.5%	98.5%	0	0.0%	3	0.9%	0.0	0.6
Assault, limited to throwing Dangerous Objects	3	0.9%	99.4%	0	0.0%	3	0.9%	0.0	1.0
Sexual Asault	1	0.3%	99.7%	0	0.0%	1	0.3%	0.0	1.0
Vehicle Ramming	1	0.3%	100.0%	0	0.0%	1	0.3%	0.0	1.0
Total/Percentages/ Averages	**343**	**100.0%**	**100.0%**	**26**	**100.0%**	**333**	**100.0%**	**0.1**	**1.0**

Figure 9 displays this same data over time, but only the five attack methods where there were more than eight attacks. Clearly, physical assaults without any weapon—punching, kicking, biting—have grown the fastest.

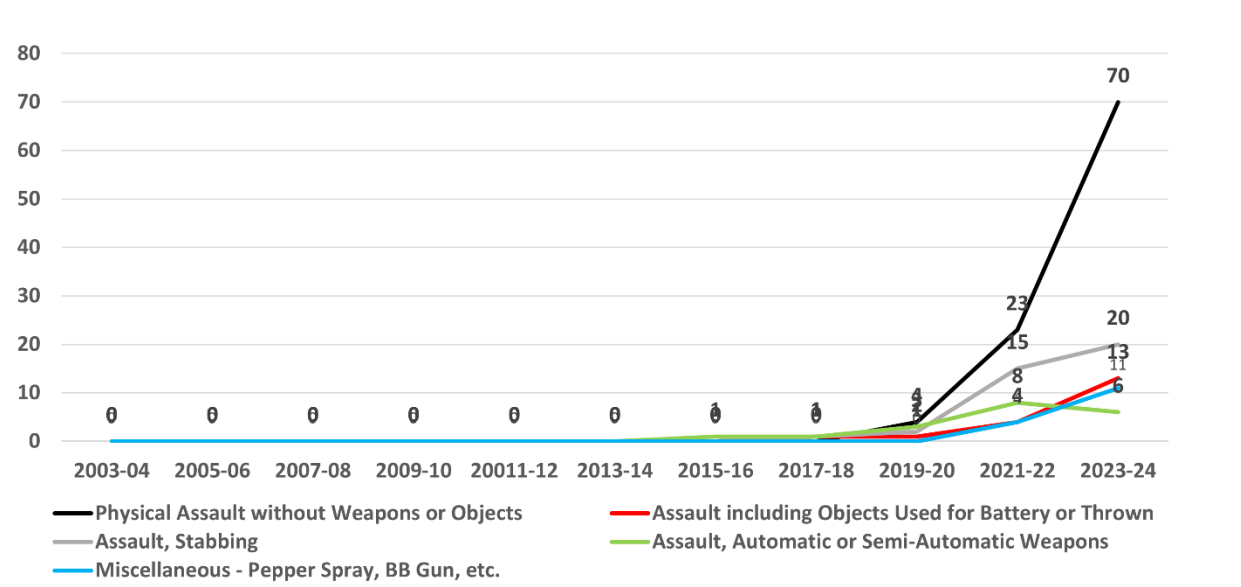

Figure 9. Attacks in Group 1 by Attack Method and/or Weapon Over Time

We now look at attacks in the U.S. and Canada in **Table 14 below** and find similar results. Physical assault without weapons accounts for nearly 49% of attacks. Assaults with makeshift weapons (e.g., rods, pipes, sticks, used for battery or throwing) account for 9.5% of the attacks. Stabbing accounts for 19.1% and firearms (usually handguns) account for 9.5%. These four types account for almost 97% of the assaults. Using BB guns and other methods account for 7.5%, throwing or pouring liquids (e.g., acid, urine) account for 1.5%, and throwing dangerous objects an additional 1%. Altogether these represent 97% of all assaults.

Once again, lethality reflects the weapon used. Assaults without weapons account for the highest volume of injuries (56.3%) because they comprise the largest category of attacks (48.7%). Overall lethality is therefore low.

The situation is reversed when we look at shootings and stabbings. Assaults with firearms account for 9.5% of the attacks, but roughly nearly 61.5% of the fatalities. Stabbings account for 19.1% of the attacks but the remainder of the remainder of the fatalities. The two methods together account for all but one fatality (92.3% of all fatalities), whereas in Group 1 they account for a smaller amount—80.7%.

A key point in all of this is that the predominance of assaults without weapons or makeshift weapons that can be grabbed in a fight suggests that **most of the assaults are not planned**.

Table 14. Attacks in U.S. and Canada by Attack Method With or Without Weapon

Assault Method with or without Weapon	# Attacks	% Attack	% Cum	# Fatalities	% Fatalities	# Injuries	% Injuries	FPA	IPA
Physical Assault without Weapons or Objects: (Fist, feet, Body, teeth etc.)	97	48.7%	48.7%	1	7.7%	108	56.3%	0.0	1.1
Assault, Stabbing	38	19.1%	67.8%	4	30.8%	33	17.2%	0.1	0.9
Assault including Rod, Pipe, Stick or Other Object Used for Battery or Thrown	19	9.5%	77.4%	0	0.0%	16	8.3%	0.0	0.8
Assault, Automatic or Semi-Automatic Weapons	19	9.5%	86.9%	8	61.5%	11	5.7%	0.4	0.6
Miscellaneous - Pepper Spray, BB Guns, Rockets or RPG etc.	15	7.5%	94.5%	0	0.0%	14	7.3%	0.0	0.9
Kidnapping, Hijacking, Robbery Or Hostage Taking	5	2.5%	97.0%	0	0.0%	5	2.6%	0.0	1.0
Throwing or Pouring Liquids (Acid, Beer, Urine etc.)	3	1.5%	98.5%	0	0.0%	3	1.6%	0.0	1.0
Assault, limited to throwing Dangerous Objects	2	1.0%	99.5%	0	0.0%	1	0.5%	0.0	0.5
Vehicle Ramming	1	0.5%	100.0%	0	0.0%	1	0.5%	0.0	1.0
Total/Percentages/ Averages	**199**	**100.0%**	**100.0%**	**13**	**100.0%**	**192**	**100.0%**	**0.1**	**1.0**

Looking at frequency of these same attacks over time in **Figure 10 below** (and the same attack methods as we did in Group 1—in this case all with more than five attacks), we see once again a dramatic rise in assaults without weapons.

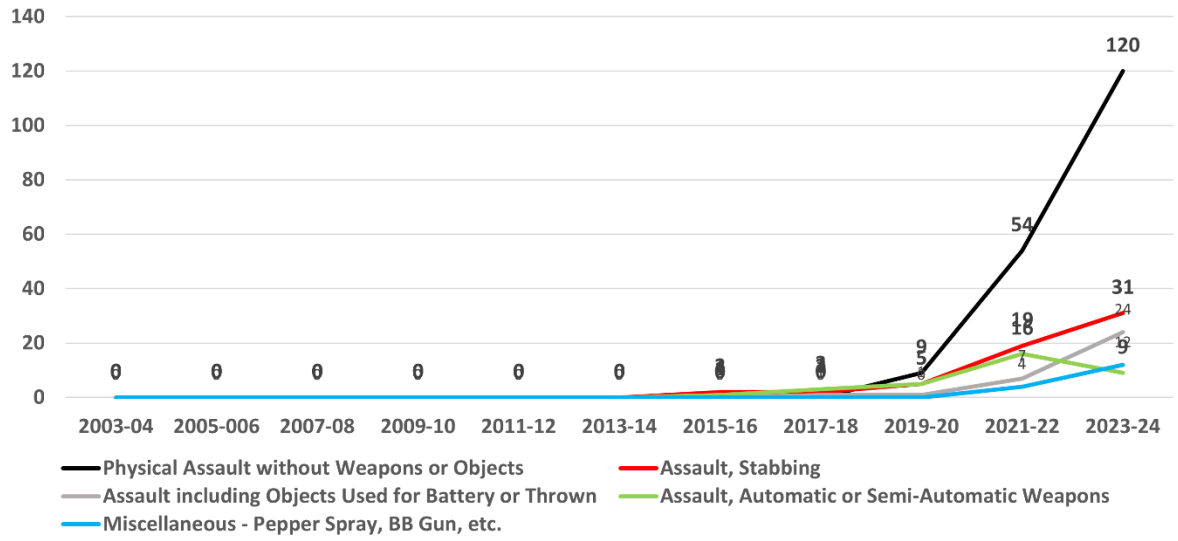

Figure 10. U.S. and Canada Attacks by Type of Weapon Over Time

There is no significant surge in attacks during peak hours or non-peak hours.

In a 2021 report, we have examined whether attacks on public surface transportation systems surge during peak hours, broadly defined as 6:00 to 10:00 AM and 4:00 to 8:00 PM. We confined the inquiry to Group 1 countries where rush hours were more easily identified. There was no discernible peak hour surge. However, when we looked only at weekday traffic, there was a discernible difference with more attacks on average during rush hours. More importantly, attacks during peak traffic hours resulted in far more casualties. This confirmed that terrorists, determined to cause mass casualties, carried out their attacks during peak traffic periods when the systems were crowded.

The research also showed that terrorists timed their attacks not only to coincide with weekday rush hours, but also selected transportation targets, days, and times of attack associated with holiday and vacation travel. The August 2, 1980, terrorist bomb at the Bologna train station in Italy, which killed 85 people and injured more than 200, was detonated on the morning of the first Saturday of the August holiday when the station was packed.

Looking at the attacks on transportation staff, we do not see a significant difference between peak and off-peak hours. Examining attacks in the U.S. and Canada and excluding the 19 incidents that were on school buses, we did not have information on time of day for 16% of the remaining 180 incidents. Attacks during off-peak hours comprised 66% of the remaining attacks. However, off-peak hours comprise two-thirds of the 24-day (and some transit systems close at night). A purely random distribution of attacks therefore would see 67% of the attacks, so the figure of

66% is nearly identical and not significant. Instead, it confirms that these attacks are unplanned––close to random. There was no difference in deaths per attack.

Current data collection is inadequate

Further research can tell us more about the profile of the attackers, the patterns and locations of attacks, and the circumstances preceding the attack. We also need to learn more about the security measures, including the presence and utility of security cameras, the presence of police or security personnel, immediate response and follow-up, and other measures that will allow an assessment of comparative security policies and strategies.

The end of federal funding leaves a critical data gap during a period of record-high violence toward surface transportation employees. Government data collection efforts have improved but lack the detail necessary to understand and address the phenomenon.

Protecting transit staff is no longer just a security challenge but a behavioral one, requiring immediate policy shifts in employee training, enforcement expectations, and workplace protection.

A brief look at the United Kingdom

To conclude, we take a quick look at the United Kingdom (UK) where 53 attacks account for 16% of all attacks in Group 1, the second largest amount after the United States. The analysis of the UK experience—the general conclusions, the numbers and percentages—generally follow those for the U.S. and Canada. But there are some interesting variations. The number of attacks is small (and the analysis therefore less confident) but that may be a result of under-reporting.

As **figure 9 below** shows, the rate of increase of attacks in the UK is significantly less dramatic than it is for the U.S. but more than for Canada.

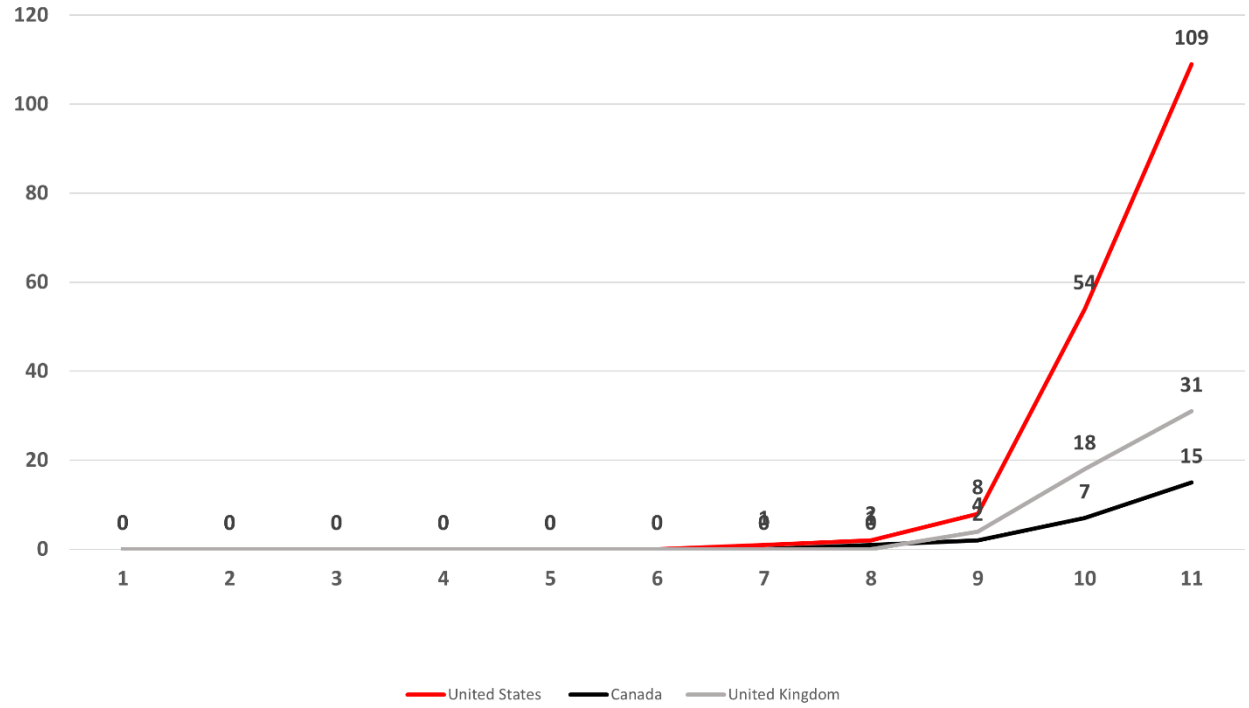

Figure 11. Attacks by Country: The U.K. compared to the U.S and Canada

The results on *victim job categories* pretty much mirror those for the U.S. and Canada. Bus drivers account for the largest number of attacks (52.8%) but are followed by train on-board operations staff (11.3%), and the same percentage for train station operations staff (11.3%). As for lethality, there were only two in the UK, and one was a bus driver (the other was an operational employee at a train station). Bus drivers also bore the largest share of injuries. And, over time, the attacks against bus drivers have also increased faster and more consistently than any other job category.

Social aggression is the main driver, with the total for all attacks so motivated being even higher than in the U.S. and Canada (98% instead of 92%); and it accounts nearly the entire surge.

As for *number, age and gender* of attackers, individual attackers dominate (72%). The majority of attackers were specified or presumed to be adults—in the 53 attacks, only 12 were known or assumed to be carried out by individuals below the age of 18. Finally, 91% of the attacks where the gender was known were male. *Basically, younger male adults populate the majority of the attacker landscape in the UK and are the main source of the surge.*

Of the 51 cases where we know what *staff were doing before the attack*, as was the case in the U.S. and Canada, 25% involved enforcement of fare, mask, smoking, and other rules. In another 57%, staff were simply performing routine operational and security duties, although in another 12% they were forced to deal with disruptive passengers.

Finally*, looking at assault methods*, attacks without weapons (74%) or with ad-hoc weapons (9%) account for the majority of the attacks and its surge. Given the United Kingdom's gun control laws, it is no surprise that no firearms were used, and given the attention paid in the press to stabbings, it's also interesting to note that they account for only 7.5% of the assaults.

About the Authors

BRIAN MICHAEL JENKINS

Brian Michael Jenkins is the Director of the Mineta Transportation Institute's Allied Telesis National Transportation Security Center and, since 1997, has directed the Institute's continuing research on protecting surface transportation against terrorism and other serious forms of crime.

BRUCE R. BUTTERWORTH

Bruce R. Butterworth is a Senior Transportation Security Researcher at MTI and former Director of Aviation Security Operations at the Federal Aviation Administration. Bruce has taken a leading role in creating MTI's unique database of attacks on public surface transportation.

Contributing Author

Sachi Yagyu

Sachi Yagyu is a Transportation Security Specialist at MTI and previously served as a Research Librarian and Library Research Services Team Lead at the RAND Corporation. She holds an MLS Degree from UCLA.

MTI FOUNDER

Hon. Norman Y. Mineta

MTI BOARD OF TRUSTEES

Directors