Scientific Session II - Cox-Templeton Injury Prevention Abstract Competition

Paper #7
January 21, 2026
11:00 am

THE ASSOCIATION BETWEEN SCHOOL CLOSURES AND NEIGHBORHOOD FIREARM VIOLENCE: EVIDENCE FROM CHICAGO AND IMPLICATIONS FOR PREVENTION

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Presenter: Justin S. Hatchimonji, MD, MBE, MSCE

Discussant: Ashley Williams, MD – University of South Alabama Medical Center

Objectives: Interpersonal firearm violence is a leading cause of death in the United States. While several sociodemographic risk factors have been identified, many of these factors are complex and multifaceted, making them difficult targets for intervention. Public schools, however, are ubiquitous, and there is strong evidence to suggest that education is a social determinant of health. The mass closure of 49 Chicago public schools in 2013 was a significant and potentially detrimental event for several already marginalized communities. We hypothesize that these closures were associated with an increase in neighborhood firearm violence near these schools.

Methods: We obtained fatal and nonfatal shooting location data from the Chicago Police Department (CPD), 2010-2024. A list of closed schools was assembled from a variety of publicly available sources. Schools and shootings were plotted using ArcGIS. We used Census American Community Survey (ACS) 5-year estimates on demographics, population estimates, poverty and unemployment over the same time period. Tracts with geographic centroids within half a mile of a closed school were categorized as within that neighborhood ("within-radius"). We described trends over time within and outside of the half-mile radius. Finally, we performed a difference-in-differences (DID) Poisson regression analysis, comparing within-radius neighborhoods to out-of-radius neighborhoods. We compared neighborhood rates of shootings, our primary outcome, pre-closure (2010-2012) and post-closure (2014-2024), subsequently stratifying for buildings that remained closed (n=17) vs those that subsequently re-opened in some capacity.

Results: There were 47,112 shootings in Chicago over the study period; 7,705 (16.4%) were fatal. 40,729 (86.5%) victims were male; 36,607 (77.7%) were Black, and 7,804 (16.6%) were Hispanic. Overall, 40,590 (86.2%) were under the age of 40. Both in 2010 and 2024, shootings were concentrated on the West and South sides of the city, where the 2013 school closures were concentrated. Examination of the city's 853 census tracts reveals an increase in shooting rate from 2010 to 2024 in the neighborhoods closest to shuttered schools, with concomitant decreases in many out-of-radius neighborhoods (Figure 1). Shooting rates by neighborhood ranged widely across the city. The average out-of-radius shooting rate per capita was 1.7/1,000 in 2010 and 1.5/1,000 in 2024. For neighborhoods with closed schools that reopened, rates were 2.5/1,000 in 2010 and 3.1/1,000 in 2024, and for neighborhoods with schools that remain closed, rates were 3.0/1,000 in 2010 and 4.7/1k in 2024. Poisson DID adjusting for race, poverty, and unemployment revealed a citywide increase in shooting rate post-closure (Incidence rate ratio [IRR] 1.18, $p<0.001$), but a pronounced interaction between closure and geography (post-closure IRR for tracts with reopened schools 1.17, $p=0.009$; post-closure IRR for tracts with still-closed schools 1.51, $p<0.001$) (Figure 2).

Conclusions: The 2013 closure of 49 Chicago public schools was associated with an increase in firearm violence in neighborhoods within half a mile of a closed school. This effect was less pronounced in neighborhoods where school buildings were reopened. These data should inform policy and community investment decisions.

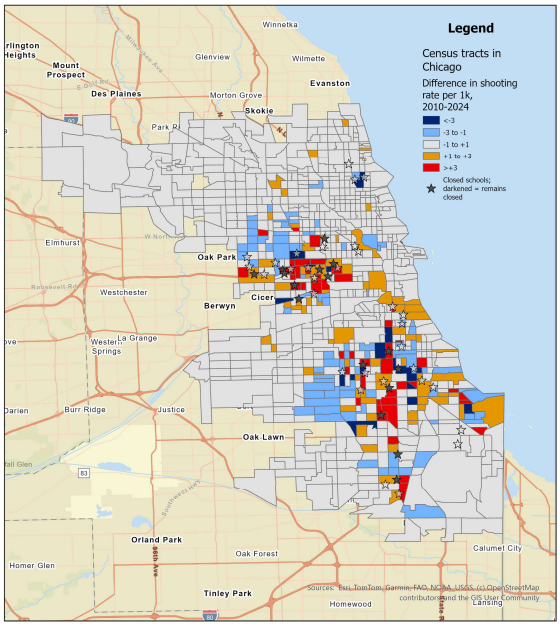

Figure 1. Difference in shootings per 1,000 people by census tract, 2010 to 2024. Stars represent closed schools; darker shaded stars represent school buildings that remain closed.

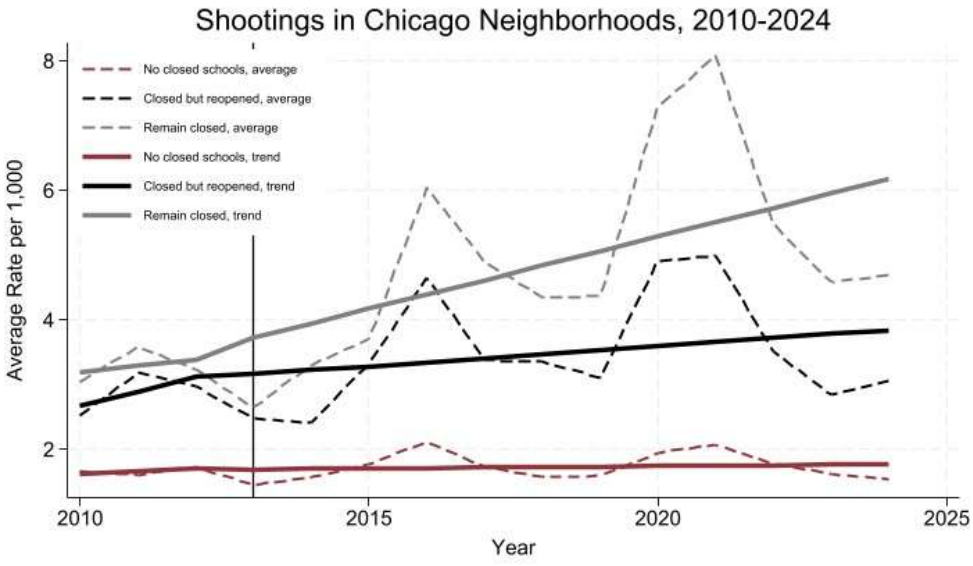

Figure 2. Trends over time in shooting rates per 1,000 in tracts without closed schools, with schools that closed and re-opened, and with schools that remain closed.

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Paper #8
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11:15 am

UNBUCKLED AND UNPROTECTED: THE DEADLY COST OF NO SEATBELT LAW IN NEW HAMPSHIRE

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Eastern Virginia Medical School

Presenter: William Miller Rice, BS

Discussant: Alexandra Briggs, MD – Dartmouth Hitchcock Medical Center

Objectives: New Hampshire (NH) is the only U.S. state without a mandatory seatbelt law for adults, as all others have either primary or secondary enforcement. A primary seatbelt law allows law enforcement officers to stop and ticket a driver solely for not wearing a seatbelt. In contrast, a secondary seatbelt law permits a citation for seatbelt non-use only if the driver has been pulled over for another traffic violation. Although NH consistently reports the lowest adult seatbelt usage in the U.S. (77.9% compared to over 90% nationally), the direct impact of the state's lack of seatbelt legislation on unrestrained motor vehicle crash (MVC) mortality has not been previously studied. To address this, we compared NH to geodemographically similar Maine (ME, primary enforcement) and Vermont (VT, secondary enforcement), hypothesizing that NH would have higher odds of unrestrained MVC death after risk adjustment.

Methods: This retrospective cross-sectional study analyzed all fatal adult MVCs in NH, ME, and VT from 2017–2023 using the National Highway Traffic Safety Administration's Fatality Analysis Reporting System, excluding motorcycle crashes. A univariable logistic regression assessed associations between the primary outcome of unrestrained MVC mortality and potential confounders, including demographics (sex, age, race), rurality, risky driving behaviors (alcohol/drug intoxication, speeding), crash conditions (lighting, weather, number of occupants, airbag deployment), out-of-state driver status, and prehospital times (alpha < 0.05). A multivariable logistic regression model was then conducted, including significant variables from the univariable analysis, with NH and VT compared to ME as the reference. Chi-squared and one-way ANOVA assessed differences in baseline characteristics among the 3 states. P-values < 0.05 were considered statistically significant for all analyses.

Results: Between 2017 and 2023, there were 487 fatal adult MVCs in NH, 284 in VT, and 729 in ME. NH exhibited the highest proportion of unrestrained fatalities (71.9%), significantly greater than VT (58.8%) and ME (53.4%) ($p < 0.001$). Compared to ME and VT, NH had a higher proportion of female occupants, more speeding-related crashes, fewer rural crashes, more nighttime crashes, and shorter prehospital times (Table 1). In multivariable logistic regression, NH was independently associated with nearly twice the odds of unrestrained MVC fatality compared to ME (OR 1.98, 95% CI 1.34–2.24), whereas VT was not significant (OR 1.05, 95% CI 0.76–1.44). Additional factors associated with increased odds of unrestrained MVC fatality included male sex (OR 1.73, 95% CI 1.34–2.24), rural location (OR 1.57, 95% CI 1.14–2.15), alcohol intoxication (OR 1.69, 95% CI 1.26–2.28), and illicit drug use (OR 2.35, 95% CI 1.61–3.44). Factors associated with decreased odds of unrestrained MVC fatality were age (OR 0.98, 95% CI 0.98–0.99), snowy weather (OR 0.52, 95% CI 0.30–0.88), and airbag deployment (OR 0.72, 95% CI 0.55–0.96) (Figure 1).

Conclusions: Compared to its northern New England neighbors VT and ME, NH motor vehicle occupants had nearly twice the odds of unrestrained MVC mortality. Notably, no significant difference was observed between secondary enforcement (VT) and primary enforcement (ME) states. These findings highlight the influence of seatbelt legislation on occupant behavior and reinforce the association between mandatory seatbelt laws and lower rates of unrestrained MVC mortality. Given that NH remains the only state without a mandatory adult seatbelt law, these results underscore a pressing need for the state to enact such legislation to align with national public safety standards and reduce this heightened risk of MVC mortality on its residents.

Variable		New Hampshire		Vermont		Maine		p-value
		n	%	n	%	n	%	
Sex	Male	830	62.7%	472	66.8%	1,169	67.1%	**0.028**
	Female	494	37.3%	235	33.2%	573	32.9%	
Age (mean, SD)		47.2	19.6	47.1	19.5	47.4	19.4	0.952
Race	Black or African American	185	45.8%	104	47.5%	218	44.3%	0.052
	White	208	51.5%	111	50.7%	273	55.7%	
	Other Race	11	2.7%	4	1.8%	1	0.2%	
Rural vs. Urban Setting	Rural	640	48.7%	599	85.2%	1,375	79.3%	**<0.001**
	Urban	675	51.3%	104	14.8%	361	20.7%	
Alcohol Intoxication		253	20.9%	137	20.8%	400	24.7%	**0.025**
Illicit Drug Use		146	12.6%	124	17.6%	127	7.3%	**<0.001**
Speeding at Time of Crash		276	28.1%	149	22.8%	312	19.8%	**<0.001**
Daylight at Time of Crash		733	55.6%	477	67.5%	1,009	58.0%	**<0.001**
# of Occupants (mean, SD)		1.7	1.0	1.7	1.0	1.8	1.1	0.079
Airbag Deployment		664	59.3%	403	63.0%	935	58.3%	0.120
Out of State Driver Status		361	27.3%	193	27.3%	306	17.6%	**<0.001**
Prehospital Time (mean, SD)		8.5	218.5	48.4	69.8	18.5	214.7	**<0.001**

Table 1. Baseline Characteristics.

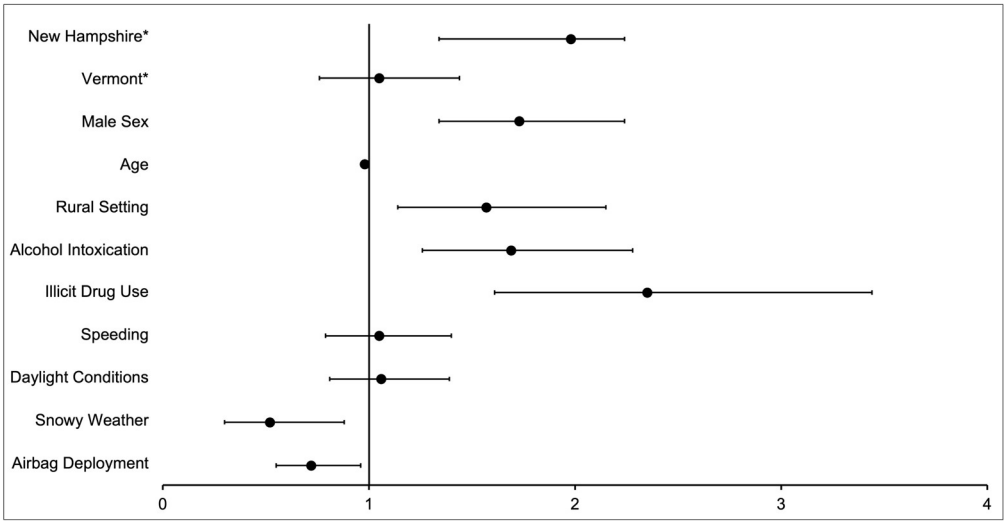

Figure 1. Multivariable Logistic Regression for Unrestrained MVC Mortality. *Maine was used as reference group.

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Paper #9
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PARTICIPATION IN "TAI CHI FOR ARTHRITIS AND FALL PREVENTION" EVIDENCE-BASED FALL PREVENTION PROGRAM REDUCES FALLS IN OLDER COMMUNITY DWELLERS

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Presenter: Emma Blomberg, BS

Discussant: Tanya Anand, MD – University of Arizona

Objectives: Falls remain the leading cause of injury among older adults (65+) across the United States. Falls often lead to a heightened fear of falling or reduced confidence contributing to a decline in physical activity and, ultimately, functional ability and independence. Our Trauma Center has been providing Tai Chi for Arthritis and Fall Prevention (TCAFP), an evidence-based fall prevention program, virtually since the COVID-19 pandemic. TCAFP is an 8-week intervention designed for older adults and adults with arthritis, involving twice-weekly, one-hour practices. The primary aim of this study was to determine whether virtual TCAFP program effectively reduced fall frequency and fear of falling and improved the ability to recover safely from falls through improved mobility.

Methods: Older adults who participated in our trauma center TCAFP from September 2020 to March 2024 and who filled out the pre- and post-program surveys were included. They also completed a follow up questionnaire at 6- and 12-months intervals post-program. Descriptive statistics were obtained. Univariate analysis was performed comparing answers to the pre and post-TCAFP surveys. $P < 0.05$ was considered significant.

Results: Of the 386 participants who answered the pre-TCAFP survey, 173 filled out both the pre- and post-TCAFP surveys and were included in the study. The median age of participants was 68 y; 83.2% were female and 91.9% were white. Most graduated from college (91.9%); 8.1% came from an economically or educationally disadvantaged background and 37.6% grew up in a rural area. Sixty-three percent of our participants indicated having arthritis/bone/joint disease, 42.2% hypertension, and 21.1% osteoporosis. Most participants indicated that their health was good (43.6%), very good (38.4%), or excellent (9.9%) at baseline and this did not change significantly after participation to TCAFP (good :41.5%, very good: 39.8%, or excellent: 11.7%, $p = 0.550$). Pre-TCAFP, 24 (14%) participants reported having fallen in the last 3 months prior to the program, post-TCAFP, only 5 (2.9%) reported having fallen since the beginning of TCAFP program ($p < 0.001$). While report on fear of falling did not change post-TCAFP ($p = 0.704$), assurance in finding a way to get up after a fall (sure and very sure 72.4% vs. 84.4% $p = 0.014$) and to protect themselves if they fell (sure and very sure 38.4% vs. 52.4% $p = 0.003$) improved significantly. Only 81 participants answered the follow-up survey at 6-months post-TCAFP. Twelve (14.8%) reported they had fallen since the last time they filled out the survey. Thirty five (43.2%) indicated continuing their TCAFP practice at home; only 6 reported a fall at 6 month post-TCAFP. Only 68 participants answered the follow up survey at 12-months post-TCAFP. Seventeen (25%) reported they had fallen since the last time they filled out the survey. Twenty-four (35.3% indicated continuing their TCAFP practice at home, only 6 reported a fall at 12 months post program.

Conclusions: TCAFP is effective in reducing the frequency of falls in the older adult population. While TCAFPP participation did not improve fear of falling, it improved our participants' ability to protect themselves during a fall and increased confidence in recovering safely, potentially reducing the risk of serious injury if a fall occurs. Our data shows that reduced participation over time increased fall risk compared to periods of active participation in the program. Long-term effectiveness of TCAFP depends on continued participation in the program. Strategies to keep participants' engagement in TCAFP beyond the 8-week workshop are needed.

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Paper #10
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THE IMPACT OF FATHERS AND MALE ROLE MODELS ON RECOVERY AND RESILIENCE IN PEDIATRIC VICTIMS OF VIOLENT TRAUMA

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University of Tennessee Health Science Center - Memphis

Presenter: Kevin J. Lang, MD

Discussant: Ken Wilson, MD – University of Chicago

Objectives: Despite growing awareness of social determinants of health in pediatric trauma care, the influence of fathers and male caregivers on the recovery and long-term outcomes of violently injured children remains unexamined. Understanding this potential protective factor in violent trauma patients is critical to informing wraparound service models and resilience-building strategies for high-risk youth.

Methods: We conducted a retrospective cohort analysis of a prospectively maintained database of patients aged 0-17 enrolled in a hospital-based violence intervention program (HVIP) at an ACS-verified Level 1 pediatric trauma center. Eligible patients sustained violent injuries (gunshot wounds, assaults, or stab wounds) and received longitudinal case management over 6-12 months. Data on caregiver presence, social determinants of health, safety assessments, school attendance, court involvement, and resiliency (via COPE questionnaires) were analyzed with a focus on the presence or absence of fathers or male role models in the household.

Results: Among 227 patients enrolled over 3 years, only 31 (14%) had a father present in the home, with 36 (16%) having any male caregiver. Mothers were present in 89% of households; siblings were caregivers in 15%. Mean age was 15 (IQR: 11-16), 67% were male, and 65% were the victims of gunshot wounds. No notable differences were found in post-discharge safety concerns or baseline social determinants of health. At one year, rates of violent reinjury (6.5% with father vs. 4.5% without) and juvenile court involvement (3.5% vs. 6.2%) were not significantly different. However, violently injured children with fathers in the home demonstrated greater resilience on COPE questionnaires, including being significantly more likely to accept emotional support from others, pray or meditate, and find comfort in spiritual beliefs (all $p < 0.05$). Children with fathers were significantly more likely to be enrolled in school after program enrollment (100% vs. 82%, $p=0.016$), and improved school enrollment was further associated with fewer juvenile court adjudications ($p=0.002$).

Conclusions: The vast majority of victims involved in violent injuries do not have a male figure in the household. Although overall rates of reinjury and legal involvement were similar, the presence of a father was associated with improved school engagement and psychological resilience following violent trauma. These findings underscore the potential value of increasing male involvement in the prevention of violent injury as well as recovery planning. This warrants further investigation in larger, multisite studies.