

Using Court Data to Target Groups at Highest Risk of Injury

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Executive Summary

This project utilized a proven methodology and data-driven approach to identify populations at highest risk of unintentional injury and suicide in Ohio; a major burden to EMS, other first-responders and healthcare systems state-wide. Through systematic linking of Ohio death records to court-data for a state-wide representative sample of unintentional poisoning, motor vehicle and suicide deaths from 2008-2012, the study estimated the prevalence of recent court-related contacts among injury victims across civil, traffic and criminal courts to determine the potential of identifying high risk populations through improved data-sharing and targeted prevention strategies. After assessing variability in risks, case types and rates of court-related contacts among demographic subgroups (women, Veterans and African Americans), predictive models identified high risk individuals across multiple court systems. Results indicate that recent criminal and traffic court involvement was high among all injury-related decedents. Involvement in multiple court cases greatly increased the odds of injury-related death, especially accidental poisoning. Rural residents who died from injury-related causes were twice as likely to be court-involved than urban residents. African-Americans that were involved in the criminal or traffic courts were more likely to die from suicide or motor vehicle accidents than Whites. Finally, this study assessed the feasibility for integration of court-related data into injury surveillance systems such as the Ohio Violent Death Reporting System.

Introduction

According to the Centers for Disease Control, nearly 180,000 people in the United States die annually from injuries and violence. Additionally, more than 2.8 million are hospitalized from injuries and violence, and nearly 32 million are treated in emergency rooms. Injuries and violence are the number one cause of death for American adults under the age of fifty. Among injury-related deaths only, the top three causes are accidental poisoning, motor vehicle accidents, and suicide, respectively. In Ohio, the top causes of death for adults under fifty are injury- and violence-related, with unintentional injuries (overwhelmingly accidental poisoning and motor vehicle accidents), the leading cause. Moreover, suicide is the fourth leading cause of death for Ohioans in this age group.

Systematic, data-driven and targeted injury prevention strategies are greatly needed to increase the efficiency and effectiveness of local injury prevention efforts. Taking lessons from other epidemiological approaches to injury prevention, the overall goal of this project was to determine the epidemics of both unintentional and intentional injury among populations at highest risk to identify key opportunities to interrupt patterns of injury-related behavior. Rather than relying on systems which typically encounter only the most extreme cases (e.g., mental health, hospitals, criminal courts), this approach broadens the target population to others in the community who are at an elevated but time-limited risk of injury and self-harm while also more efficiently targeting populations at chronically higher risk of injury and repeat injury.

Using this data-based approach, injury-prevention messages and programs can be tailored to specific populations and audiences at locations which will have the most impact, instead of population-based marketing campaigns and other media-based approaches which may be less

effective or more difficult to evaluate in terms of local impact. Local or regional approaches could include development of a system to prompt direct mailings to the homes of medium-to-high risk clients, providing information on suicide hotlines, support services for those experiencing multiple financial stressors or hardships such as divorce or relationship trouble, financial difficulties, job loss or foreclosures as well as support and resources for families among those experiencing such stressors. It will also provide tools for court personnel, local public health departments and other partners to identify populations at highest risk of injury, providing opportunities for court-based or community-based prevention and screening strategies and additional training for law enforcement while enhancing capacity to evaluate outcomes. Among veteran populations which have relatively good access to mental health services, court-related data can be used by case-workers to identify clients at impending risk, including those in the system who may not fully adhere to treatment and therapy.

Literature Review

Very little research exists on the relationship between court entanglement and injury-related deaths, and almost all of this research has focused on suicide. While many studies have found that suicide risk is high for incarcerated men and women and for those newly released from a penal institution (Tartaro and Lester 2005), only a handful of studies have explored the relationship between completed suicide and less serious criminal court offenses and/or other legal strains in the general population (Webb et al, 2012), and only one has explored the impact court of court-entanglement on other injury-related deaths, such as accidental poisonings and motor-vehicle accidents (Cook and Davis 2012).

Theories of stress (or strains) have long suggested that much of criminal, deviant and/or impulsive behavior is related to the presence of strains (or stressors) in an individual's life (e.g., Agnew 1992; Durkheim 1897; Merton, 1938), which is supported by numerous studies in criminology and deviance. Studies of the effects of strain on suicide behavior is less examined, but this research finds that strains such as being arrested, incarcerated, or newly released from incarceration, as well as changes in economic security, and marital disruption elevate the risk of suicide (Stack and Scourfield 2005; Stack and Wasserman 2007; Tataro and Lester 2005; Wyder, Ward and De Leo 2009). Given that many of these strains might include court cases, it is prudent to examine the role of court involvement on the risk of injury-related deaths.

Sample and Methods

The study utilized public-record data sources linked by use of multiple personal identifiers including name, data of birth and when available, social security number using an iterative matching method which was previously piloted in Summit County, OH linking death records to the Summit County Criminal Justice Information System (SCCJIS) and validated in conjunction with a systematic review of medical examiner's records. The data come from a state-wide representative sample of injury-related deaths across the three leading causes of injury-related deaths (poisoning, suicide and motor vehicle deaths) and a comparison group of all-cause non-injury deaths. A multi-stage stratified random-sample of motor vehicle (n = 500), suicide (n = 500), unintentional poisoning (n = 500) and all-cause deaths (n= 500) based on ICD-10 codes were matched to local court-docket data to extract dates and key details of recent court involvement across civil, traffic and criminal cases in the previous year. Additionally, a total

oversample population (n = 500) across the three sub-groups of interest was drawn (Non-Hispanic Black: n = 260, Veterans: n = 190 and women: n = 50) to obtain stable estimates for each group.

A stratified random sample of select injury-related causes of death (suicides [n = 500], accidental poisoning [n = 500], and motor vehicle accidents [n = 500] represented approximately half (48.5%) of all such deaths in the 11 sampled counties (N = 3,115) and 8.8% of all suicides, accidental poisonings and motor vehicle crash deaths statewide in Ohio (N = 16,992) over the time period 2008-2012.

A total of 1,506 criminal, civil and traffic court cases were matched to the 1,500 sampled decedents in the year prior to death (criminal cases, n = 621; civil cases, n = 204; traffic cases, n = 681), with matching by last and first name, middle initial and date of birth to archived court-dockets within each of 11 sampled counties. Details of all court cases (n = 1,506) including offense date, filing date, court appearances, fines, sentences, probation, disposition, warrants and any other court-related activities were systematically recorded for each case.

Criminal cases (n = 621) in the past year were matched to 285 of the 1,500 decedents, with over half (50.5%) of those with past-year court involvement having had multiple criminal cases (10+ court cases, n = 3; 5-9 cases, n = 20; 3-4 cases, n = 50; 2 cases, n = 71). Similarly, traffic cases (n = 681) were clustered among 323 total decedents (5+ court cases, n = 27; 3-4 cases, n = 51; 2 cases, n = 64) while 181 of sampled decedents (56%) had a single traffic offense. Multiple civil cases were less common than for other court types, with 204 civil cases spread among 146 individuals (3+ cases, n = 7; 2 cases, n = 29) with a majority (n = 110) of those with civil cases having only a single civil case in the past year.

Aims and Results

Aim 1. Estimate recent legal involvement and court contacts among injury-related deaths.

Court-involvement

Overall, 40% (95% CI {28.2-50.9}) of all injury-related death victims (suicides, accidental poisonings and motor vehicle crash victims) had one or more court-related contacts in the year before death across all court types (see Table 1). By court type, 20% (95% CI {15.9-24.0}) had a criminal court case in the year prior to death, while 11% (95% CI {6.0-15.9}) had a civil case and 18% (95% CI {5.0-29.0}) had one or more traffic cases.

Table 1. Proportion of injury-related deaths with past-year court involvement by cause of death and court type for all age groups (N = 1,500)

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	14.8% (6.0-23.2)	9.0% (2.9-15.1)	17.0% (5.8-28.2)	30.0% (11.7-48.2)
Accidental Poisoning	27.8% (23.7-31.8)	13.3% (7.1-19.5)	17.2% (4.8-28.6)	51.6% (40.9-62.2)
MV Accidents	11.4% (6.4-16.3)	9.1% (2.7-15.4)	18.8% (7.8-29.8)	29.4% (14.4-44.4)
Total	20.0% (15.9-24.0)	11.1% (6.0-15.9)	17.5% (5.9-29.1)	39.6% (28.2-50.9)

Accidental poisoning deaths

As presented in Table 1, just over half (51.6%, 95% CI {40.9-62.2}) of accidental poisoning death victims had at least one court contact across all court types (criminal, civil and traffic) in the year prior to death. Of the three injury-related causes of death sampled, accidental poisonings had the highest frequency of recent criminal court contact (27.8%, 95% CI {23.7-31.8}) and civil claims (13.3%, 95% CI {7.1-19.5}) in the year before death. Over a quarter of accidental poisoning death victims (28.6%, 95% CI {18.5-38.7}) had multiple court cases in the

previous year, with a similar frequency of multiple traffic cases (13.2%, 95% CI {7.8-29.8}) and multiple criminal cases (12.1%, 95% CI {5.8-18.}). In contrast, multiple civil cases were relatively uncommon (3.3%, 95% {1.1-5.5}) among accidental poisoning deaths.

Suicide deaths

Among suicide deaths, 30% (95% CI {11.7-48.2}) had any court-related contact in the year before death (see Table 1). Criminal court involvement 14.8% (95% CI {6.0-23.2}) and traffic court involvement (17.0%, 95% C.I {5.8-28.2}) were the most frequent court type, with civil court (9.0%, 95% CI {2.9-15.1}) less common. Multiple cases across all court types were also frequent among suicide victims (18.1%, 95% CI {6.6-29.6}), with multiple criminal court cases (8.6%, 95% CI {3.9-13.3}) the most common among those with multiple cases.

Motor vehicle deaths

Presented in Table 1, motor-vehicle crash victims (18.8%, 95% CI {7.8-29.8}) were only slightly more likely than suicide decedents (17.0%, 95% CI {5.8-28.2}) and Accidental Poisoning victims (17.2%, 95% {4.8-28.6}) to have had a recent traffic-related court case. Motor vehicle injury-related death victims (29.4%, 95% CI {14.4-44.4}) were less likely to be involved in courts than Accidental Poisoning victims (51.6%, 95% CI {40.9-62.2}) but had similar rates of court involvement as suicide deaths (30.0%, 95% CI {11.7-48.2}). Motor vehicle accident victims (15.6%, 95% CI {7.3-23.9}) were less likely than both suicide (18.1%, 95% CI {6.6-29.6}) and accidental poisoning victims (28.6%, 95% CI {18.5-38.7}) to have multiple cases across all court types including traffic cases. Multiple criminal cases were relatively uncommon among motor vehicle crash victims (4.7%, 95% CI {2.3-7.0}) compared to injury-related deaths overall (9.4%, 95% CI {5.4-13.3}).

As seen in Table 2, nearly a quarter of the sample of all injury-related deaths had multiple court cases (22.3%, 95% CI {13.9-30.7}) in the year before death, with 8.2% of decedents involved in more than one court type across criminal, civil and traffic courts (result not shown). Having multiple cases was equally common among those with criminal (9.4%, 95% CI {5.4-13.3}) and traffic court involvement (9.7%, 95% CI {5.7-13.9}) and less common among civil cases (2.7%, 95% CI {1.2-4.2}).

Table 2. Proportion of injury-related deaths with multiple court cases by cause of death and court type for all age groups (N = 100)

Cause of Death	Multiple Criminal Cases	Multiple Civil Cases	Multiple Traffic Cases	Multiple Cases, All Courts
Suicide	8.6% (3.9-13.3)	2.3% (0.4-4.2)	7.2% (1.2-13.2)	18.1% (6.6-29.6)
Poisoning	12.1% (5.8-18.3)	3.3% (1.1-5.5)	13.2% (9.6-16.7)	28.6% (18.5-38.7)
MV Accidents	4.7% (2.3-7.0)	2.2% (0.3-4.0)	6.5% (1.4-11.6)	15.6% (7.3-23.9)
Total	9.4% (5.4-13.3)	2.7% (1.2-4.2)	9.7% (5.7-13.8)	22.3% (13.9-30.7)

Age-group differences

Overall, there was a strong age-related gradient in terms of frequency of court contacts prior to injury-related deaths, regardless of the cause of death (Tables 3A-C). Over a quarter of younger adults age 19-34 had criminal court involvement prior to death (28.3%, 95% CI {22.3-34.2}), over four times higher compared to those age 50-64 (6.2%, 95% CI {1.6-10.9}). Moreover, nearly half of young adults (47.7%, 95% CI {35.0-60.3}) had any type of court contact. Civil court case involvement, however, was around 11.0% across all age groups. Both young adults age 19-34 and adults age 34-49 had high rates of traffic court involvement, particularly among suicide victims, with notable declines in the 50-64 age group. Accidental

poisoning victims ages 19-34 had the highest frequency of court contact of any group (63.3%, 95% CI {50.5-76.1}); with over a third (38.9%, 95% CI {28.8-48.9}) having criminal court contact. Overall court involvement (52.3%, 95% CI {43.8-60.8}) and criminal court involvement (31.5%, 95% CI {25.2-37.8}) was also high for accidental poisoning victims age 35-49.

Table 3A. Proportion of injury-related deaths with past-year court involvement by cause of death and court type for age group 9-34

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	20.8% (8.3-33.3)	7.5% (1.6-13.5)	21.6% (4.3-38.9)	35.9% (12.9-59.0)
Poisoning	38.9% (28.8-48.9)	15.8% (4.1-27.5)	17.3% (1.6-33.1)	63.3% (50.5-76.1)
MV Accidents	17.2% (5.8-28.5)	5.2% (1.6-8.7)	22.9% (8.3-37.4)	34.3% (16.3-52.3)
Total	28.3% (22.3-34.2)	10.6% (4.1-17.0)	20.0% (3.9-36.2)	47.7% (35.0-60.3)

Table 3B. Proportion of injury-related deaths with past-year court involvement by cause of death and court type for age group 35-49

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	20.6% (16.0-25.2)	10.7% (2.5-18.8)	20.7% (7.2-34.2)	33.7% (12.8-54.5)
Poisoning	31.4% (25.2-37.8)	11.1% (4.0-18.2)	16.8% (7.4-26.2)	52.3% (43.8-60.8)
MV Accidents	9.8% (5.2-14.5)	12.6% (4.2-21.1)	17.5% (7.1-28.0)	30.5% (15.7-45.3)
Total	22.6% (16.7-28.4)	11.3% (5.0-17.5)	18.2% (8.0-28.4)	42.4% (32.1-53.7)

Table 3C. Proportion of injury-related deaths with past-year court involvement by cause of death and court type for age group 50-64

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	8.3% (3.2-13.3)	8.5% (0.2-16.8)	9.0% (2.4-15.6)	20.8% (6.6-34.9)
Poisoning	6.3% (0.0-13.0)	13.7% (6.4-21.0)	17.8% (0.0-36.1)	34.4% (14.1-54.8)
MV Accidents	1.6% (0.0-3.4)	10.7% (0.0-21.8)	14.0% (2.9-25.2)	19.9% (4.2-35.6)
Total	6.2% (1.6-10.9)	11.0% (6.5-15.6)	13.4% (2.9-24.0)	26.0% (11.5-40.5)

Urban vs Rural Counties

Recent court contacts were significantly more common among rural (51.3%, 95% CI {36.3-66.3}) than urban counties (35.4%, 95% CI {23.6-47.3}). Rural-urban differences (Table 4 A-B) were most pronounced for civil court contacts (19.4% vs. 7.9%) though criminal court and traffic court contacts were also more common among injury-related deaths in rural counties. This difference does not reflect higher rates of offending in the general population of rural counties than urban counties, but among those who died by injury-related causes. Within specific causes of death, the largest rural-urban difference was for suicide, with 44.5% (95% CI {30.9-58.0}) of suicide decedents in rural counties having court involvement compared to 26.9% (95% CI {4.8-45.9}) for suicide decedents in urban counties. Of interest, a similar rural-urban difference was found among Accidental Poisoning victims, with 64.1% (95% CI {45.8-82.3}) having had any court contact compared to 46.5% (95% CI {40.3-52.6}) in urban counties. The most pronounced difference among accidental poisoning victims was for civil court involvement.

Table 4A. Proportion of injury-related deaths in urban areas with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	12.8% (3.1-22.4)	7.2% (0.2-14.2)	16.2% (2.6-29.7)	26.9% (4.8-45.9)
Poisoning	26.9% (24.5-29.4)	9.1% (7.1-11.2)	16.9% (0.1-33.8)	46.5% (40.3-52.6)
MV Accidents	11.8% (4.5-19.0)	6.7% (0.1-13.8)	17.4% (0.2-32.7)	27.2% (6.2-48.2)
Total	18.7% (14.9-22.5)	7.9% (4.7-11.2)	16.7% (0.1-31.9)	35.4% (23.6-47.3)

Table 4B. Proportion of injury-related deaths in rural areas with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	24.3% (12.4-36.2)	17.3% (9.3-25.2)	21.2% (12.5-29.9)	44.5% (30.9-58.0)
Poisoning	30.0% (19.0-40.9)	23.4% (13.1-33.8)	18.0% (9.6-26.4)	64.1% (45.8-82.3)
MV Accidents	10.6% (7.0-14.2)	13.7% (4.3-23.2)	16.5% (1.4-31.7)	33.5% (17.5-49.5)
Total	23.4% (15.0-31.9)	19.4% (12.0-26.8)	19.7% (1.2-27.7)	51.3% (36.3-66.3)

Aim 2. Estimate recent legal involvement and court contacts among injury-related death victims among key sub-groups. Key groups traditionally underrepresented in research on injury-related death and suicide risk were over-sampled to obtain stable sub-group estimates of recent court involvement including women, African Americans, and US military veterans. These groups differ markedly in risk of suicide, injury and motor-vehicle related death and they also have different risk and protective factors. Thus state-level estimates obtained based on the predominant group (white, non-veteran males) may not reflect risks and opportunities for prevention among these groups. Results of this sub-group analysis will help inform development of prediction models (Aim 3) which can be developed in local communities to target populations at highest risk.

Women

Among women, (see Table 5A) recent court involvement was found among a third of injury-related death victims (33.5%, 95% CI {16.6-50.5}), with the highest frequency of involvement among accidental poisoning victims (41.3%, 95% CI {21.2-61.4}). Nearly a quarter of women had criminal court contacts in the year before death among those who died by accidental poisoning (24.3%, 95% CI {12.6-36.0}). Though men had an overall higher rate of court involvement (42.2%, 95% CI {31.4-53.0}) than women, women (18.8%, 95% CI {7.4-30.1}) were slightly more likely than men (16.9%, 95% CI {5.5-28.4}) to have a recent traffic court case, especially among accidental poisoning victims (see Table 5B). Additionally, the risk of injury-related death was twice as high for men who were involved in civil court cases than for

women. However, there was no difference in the proportion of suicides with recent criminal court contact between men and women.

Table 5A. Proportion of injury-related deaths among women with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	13.1% (4.4-21.7)	5.1% (0.1-10.1)	13.0% (5.9-20.1)	22.2% (12.0-32.5)
Poisoning	24.3% (12.6-36.0)	9.2% (4.6-13.8)	22.8% (7.4-38.2)	41.3% (21.2-61.4)
MV Accidents	7.6% (2.6-12.5)	10.1% (3.9-16.3)	14.0% (4.1-23.8)	24.8% (10.4-39.2)
Total	18.4% (8.5-28.4)	8.4% (4.3-12.3)	18.8% (7.4-30.1)	33.5% (16.6-50.5)

Table 5B. Proportion of injury-related deaths among men with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	15.3% (6.6-24.0)	10.1% (3.3-16.8)	18.2% (4.3-32.0)	32.1% (11.2-53.0)
Poisoning	30.0% (24.4-35.5)	15.8% (8.1-23.6)	13.8% (6.9-20.7)	57.9% (46.5-69.3)
MV Accidents	12.8% (7.0-18.6)	8.7% (2.0-15.4)	20.6% (7.9-33.4)	31.1% (14.8-47.3)
Total	20.6% (16.8-24.4)	12.1% (6.4-17.7)	16.9% (5.5-28.4)	42.2% (31.4-53.0)

Race

As displayed in Table 6A, Black decedents were no more likely than other racial/ethnic groups to have had recent criminal court contacts, but this type of court contact elevated suicides and motor vehicle accidents compared to other race/ethnic groups. Overall, the frequency of traffic court cases were elevated among Black decedents (25.9%, 95% CI {4.7-47.2}) across all injury-related causes of death compared to other groups (16.9%, 95% CI {6.2-27.6}). By contrast, all types of injury-related deaths among Blacks with civil court cases were relatively infrequent (5.5%, 95% CI {0.1-11.2}) compared to other groups (11.3%, 95% CI {6.2-16.4}).

Table 6A. Proportion of injury-related deaths among Blacks with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	26.3% (2.4-50.2)	6.1% (0.1-12.5)	20.5% (0.1-43.2)	35.8% (2.7-68.9)
Poisoning	27.0% (13.5-40.6)	3.9% (0.1-8.5)	24.6% (8.6-40.6)	47.8% (22.1-73.6)
MV Accidents	20.0% (10.5-29.6)	6.3% (0.1-14.2)	32.9% (8.1-57.6)	44.7% (23.4-65.9)
Total	24.5% (10.4-38.6)	5.5% (0.1-11.2)	25.9% (4.7-47.2)	42.6% (15.1-70.0)

Table 6B. Proportion of injury-related deaths among Whites and other race/ethnicities with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	14.0% (6.4-21.6)	9.2% (2.9-15.5)	16.8% (6.4-27.2)	29.6% (12.2-47.0)
Poisoning	27.8% (23.7-32.0)	13.8% (7.3-20.2)	16.9% (5.0-28.8)	51.8% (41.2-62.3)
MV Accidents	10.4% (5.9-14.8)	9.4% (4.0-15.8)	17.2% (7.5-26.9)	27.6% (13.3-41.8)
Total	19.6% (15.5-23.8)	11.3% (6.2-16.4)	16.9% (6.2-27.6)	39.4% (28.6-50.2)

Veteran Status

Veterans (34.0%, 95% CI {17.0-51.0}) were less likely than non-veterans (40.3%, 95% CI {29.2-51.3}), on average, to have court-related contacts prior to death, as shown in Table 7A. However, when age and other factors are taken into account, veterans were not significantly different than non-veterans in terms of overall court-involvement. Veterans were, however, significantly more likely (31.6%, 95% CI {8.5-54.7}) to be involved in a traffic court case prior to an accidental poisoning death compared to non-veterans (15.9%, 95% CI {5.2-26.7}).

Table 7A. Proportion of injury-related deaths among veterans with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	11.5% (1.3-21.7)	12.2% (5.4-19.1)	20.3% (11.9-28.7)	30.0% (17.3-42.8)
Poisoning	18.5% (6.8-30.3)	11.0% (3.2-18.7)	31.6% (8.5-54.7)	47.1% (19.1-75.6)
MV Accidents	4.3% (0.1-8.9)	7.8% (0.7-14.8)	12.8% (1.5-24.2)	20.6% (4.7-36.5)
Total	12.4% (4.8-20.1)	10.8% (5.3-16.4)	22.7% (10.8-34.5)	34.0% (17.0-51.0)

Table 7B. Proportion of injury-related deaths among non-veterans with past-year court involvement by cause of death and court type

Cause of Death	Criminal Court	Civil Court	Traffic Court	Any Court
Suicide	15.3% (6.1-24.6)	8.5% (2.1-14.8)	16.5% (4.0-29.0)	30.0% (10.4-49.6)
Poisoning	28.6% (24.9-32.3)	13.5% (7.0-20.0)	15.9% (5.2-26.7)	52.0% (41.8-62.2)
MV Accidents	12.2% (7.2-17.2)	9.2% (2.6-15.9)	19.5% (8.4-30.7)	30.4% (15.2-45.7)
Total	20.9% (17.0-24.8)	10.9% (6.0-16.0)	16.9% (5.5-28.3)	40.3% (29.2-51.3)

Aim 3. Develop prediction models of injury death risk (motor vehicle, poisoning and suicide) among court-involved populations. The same data sources which can be used retrospectively to assess risk of injury-related death and suicide can be used prospectively to develop more refined prediction models for both fatal and non-fatal injury along with development of strategies for intervention and prevention based on case characteristics and case types (traffic, civil, criminal). Multivariate models including court-case level, injury victim level and community-level characteristics were developed to obtain the strongest predictors for accidental poisoning, suicide and motor vehicle accidents among court-involved clients.

Suicide and factors associated with court-involvement

Factors significantly associated with criminal-court involvement among suicide victims included younger age, rural county of residence, black race (primarily within urban counties) and recent involvement in a traffic-related offense in addition to the criminal charge. Specifically, as presented in Table 8A, younger suicide victims ages 19-35 were twice as likely as older suicide victims (age 50-64) to have evidence of recent criminal court involvement (OR = 2.08, 95% CI {1.19-3.64}, p = .016).

Table 8A: Factors associated with recent criminal court-involvement among suicide decedents

(N=500)	OR	95% CI	p-value
Age			
19-34	2.08	1.19 3.64	.016
35-49	1.46	0.81 2.63	.183
Male	1.20	0.61 2.38	.557
Black	2.63	1.68 4.11	.001
Veteran	0.65	0.24 1.78	.368
Rural	2.88	1.25 6.66	.018
Firearm	0.50	0.29 0.88	.022
Other Court Involvement			
Traffic	5.05	1.72 14.81	.007
Civil Court	1.13	0.26 4.95	.857

Most striking is the rural versus urban differences accounting for all other factors, with rural suicide decedents nearly three times more likely to have had recent criminal court contacts compared to those in urban counties. (OR = 2.88, 95% CI {1.25-6.66}, p = .018). Use of firearms as a method among suicide victims with criminal court-involvement was one-half lower compared to those without criminal court involvement (OR = 0.50, p = .022).

Suicide victims with civil court involvement were more often male who also had a traffic-related offense in the previous year (results not shown). As shown in Table 8B, suicide decedents age 19-49 were twice as likely as those 50 and older to have had recent traffic-court involvement. Suicide victims with traffic court involvement were significantly more likely to have had other recent court involvement, including criminal (OR = 5.12, 95% CI {1.76-14.9}, p = .007) and civil (OR = 2.37, 95% CI {1.01-5.59}, p = .048); and as was the case with criminal court involvement, reduced use of firearms as method of suicide (OR = 0.80, 95% CI {0.65-0.98}, p = .035).

Table 8B. Factors associated with traffic court involvement among suicide decedents

(n=500)	OR	95% CI	p-value
<i>Age</i>			
19-34	2.37	1.37 4.12	.006
35-49	2.34	1.03 5.32	.043
<i>Male</i>			
Black	1.29	0.32 5.22	.695
Veteran	1.08	0.79 1.46	.606
Rural	1.69	0.54 5.28	.332
Firearm	1.05	0.41 2.71	.905
<i>Other Court Involvement</i>			
Criminal	0.80	0.65 0.98	.035
Civil Court	5.12	1.76 14.90	.007
	2.37	1.01 5.59	.048

Accidental poisoning and factors associated with court-involvement

As seen in Table 9, age was the single most important factor associated with criminal court-involvement among accidental poisoning death victims, with those age 19-34 ten times more likely to have criminal court contacts than older poisoning death victims (OR = 10.0, 95% CI {4.42-22.8}, $p < .001$). By contrast, the age of the victim was not associated with civil or traffic court-involvement among accidental poisoning deaths (tables not shown). Rural residential location and having a criminal case were the only factors strongly associated with among accidental poisoning deaths that were involved with the civil courts within the year prior to their death (OR = 3.30, 95% CI {1.49-7.30}, $p = .007$). With respect to those with recent traffic-court involvement, veterans were almost four times higher than non-veterans to have died from accidental poisoning (OR = 3.79, 95% CI {1.17-12.3}, $p = .028$). Of interest, the odds of men who died from poisoning with traffic-court involvement were 60% lower than for women (OR = 0.40, 95% CI {0.18-0.89}, $p = .028$).

Table 9. Factors associated with criminal court involvement among accidental poisoning deaths (N=500)

	OR	95% CI	p-value
Age			
19-34	10.0	4.42 - 22.8	.001
35-49	6.98	2.62 - 18.5	.001
Male	1.18	0.61 - 2.27	.586
Black	1.70	0.94 - 3.06	.072
Veteran	0.84	0.49 - 1.42	.465
Rural	1.29	0.55 - 3.01	.519
Other Court Involvement			
Traffic	0.98	0.26 - 3.69	.976
Civil	0.19	0.08 - 0.46	.002

Motor vehicle fatalities and factors associated with court-involvement

As with accidental poisoning deaths, age is the most important factor associated with criminal court-involvement among motor-vehicle crash victims (Age 19-34 vs. Age 50+, OR = 11.7, 95% CI {4.61-29.5}, $p < .001$), as seen in Table 10. Cross-court involvement with traffic court was also significantly more common among motor-vehicle crash victims who were involved in criminal courts. In contrast, no differences were found among motor-vehicle deaths with civil court involvement. In analyses not shown, Blacks that died in motor-vehicle accidents were 2.5 times more likely to be involved in traffic court than Whites and others. Moreover, also being involved in both traffic and criminal courts elevated the odds of motor-vehicle death six-fold.

Table 10. Factors associated with criminal court-involvement among motor vehicle-related deaths

(N=500)	OR	95% CI	p-value	
Age				
19-34	11.67	4.61	29.5	.001
35-49	5.98	2.30	15.5	.002
Male	1.61	0.83	3.12	.140
Black	1.61	0.50	5.21	.387
Veteran	0.53	0.27	1.03	.060
Rural	0.93	0.51	1.69	.799
Other Court Involvement				
Traffic	5.76	2.84	11.7	.001
Civil	1.22	0.36	4.13	.727

Aim 4. Compare current measures of intimate partner problems, perpetration of interpersonal violence, recent criminal legal problems and non-crime legal problem obtained from psychological autopsy and police reports in the OH-VDRS to results obtained using court-records.

One important criterion for inclusion of data elements in both a local and national surveillance networks is the ability to have uniform, systematic and valid data across all geographies or jurisdictions. A second important consideration is the burden on data collectors and coders and associated costs to obtain these data elements. Published estimates of recent criminal and non-criminal legal troubles in the National Violent Death Reporting System and Ohio VDRS may underestimate the prevalence of recent legal troubles among suicide victims. Whereas the OHIO VDRS reported 8.1% of recent criminal legal troubles among male suicides, court-linked data in this study (see Table 11) found that 15.3% of males had recent criminal court contacts. Differences were especially pronounced among women (2.1% in OHIO VDRS

versus 13.1% based on court data). These differences could reflect that data used in the Ohio Violent Death Reporting System are used to determine intent and may not capture minor offenses or other case types which may not appear in psychological autopsies including proxy reports and police records, where available. Additionally, the NVDRS does not collect traffic court involvement, which may be a limitation given that 25% of suicides in the current study had recent traffic-court involvement. Overall, court-linked data indicates a much higher frequency of recent court contacts compared to data collected by the National Violent Death Reporting System. Ohio, like most states, is moving towards entirely paperless court docket systems with great potential for data sharing across courts using cloud computing platforms and other methods. Thus, court data may be used to complement these sources while providing an unbiased estimate of relevant precipitants.

Table 11. Estimates of recent court involvement based on surveillance data sources, Ohio VDRS, National VDRS and the current study using a court-record linked database.

	OHIO VDRS 2011		NATIONAL VDRS 2010		OHIO COURT DATA 2008-2012	
	<u>Criminal</u>	<u>Non-criminal</u>	<u>Criminal</u>	<u>Non-criminal</u>	<u>Criminal</u>	<u>Non-Criminal</u>
Male	8.1%	8.2%	10.6%	4.4%	15.3%	10.1%
Female	2.1%	5.5%	4.1%	3.4%	13.1%	5.1%
Total	6.8%	7.6%	9.2%	4.1%	14.8%	9.0%

Summary of Results and Conclusions

The results indicate that those who have died in Ohio from injury-related related deaths had high rates of court involvement prior to their death. Approximately 30% of those who died from suicide or motor-vehicle crashes and over one-half of those who died from accidental poisoning had any recent court involvement prior to their deaths. Moreover, being engaged in multiple court cases, especially across court types, greatly increased the odds of injury-related death. Fully one-fourth of the study decedents had multiple court cases. These findings buttress strain theories, which suggest increased pressures elevates criminal, deviant, and impulsive behavior.

The findings also suggest that age and area of residence condition the relationship between court entanglement and injury-related death. Specifically, younger adults age 19-49 are much more likely to have been involved with the courts than those ages 50 and older. Moreover, those in rural areas have more court involvement than those in urban areas; this difference was most marked for suicide and accidental poisoning victims.

The study also uncovered a few differences across population sub-groups that bear notice. First, there were relatively few gender differences, but men who were involved in civil court were twice as likely to commit suicide compared to women. Research that finds marital disruption triggers more suicides among men than women (Wyder, Ward and De Leo 2009). While our analyses did not distinguish between types of civil cases, the gender difference in suicide might be attributed to marital dissolution, although further research is necessary. With respect to race, Blacks appear to suffer more from the effects of legal entanglement than do Whites. Specifically, almost twice as many Blacks who were involved in the criminal or traffic

courts committed suicide or died from motor vehicle deaths compared to Whites. Veterans are not much different from non-veterans, with the exception of traffic court involvement, which doubled their odds of dying from accidental poisoning.

Recommendations

The study findings suggest that using electronic court-docket data may serve as an important assessment tool to identify litigants at high risk for injury-related death. Moreover, given the burden of the mental health system, it can also serve as a point of intervention, particularly important among those who have not had mental health treatment. The courts may be one of the last systems to which those at high risk of injury-death were exposed.

Not only does any court involvement elevate the risk of injury-related death, but being involved in multiple court cases increases the risk. Additionally, rural residents are more likely to be court-involved than urban residents. This implies courts in rural counties might have an even more critical role in intervention, given the relative lack of, or access to available resources, including mental health services. Adults under the age of 50, (who, as noted earlier, are highest at risk for suicide, accidental poisoning, and motor vehicle deaths in both the United States and Ohio), were more court involved than older decedents. Given that younger males have little or no contact with both primary and mental health care (Booth and Owens 2000; Luoma, Martin and Pearson 2002), the courts may serve as a primary locus for injury-related death prevention, such as referral to appropriate services.

Criminal and traffic court involvement appear to elevate the risk of injury-related death much more so than civil court involvement. If intervention efforts were to be implemented,

programs in the criminal courts (and less so, traffic) would have more potential impact on reducing injury-related deaths in Ohio. These efforts should specifically target those: 1) with multiple court cases, especially across different types of courts, 2) under age fifty, especially males, 3) who live in rural areas, 4) who are African-American, and 5) who are veterans in traffic courts.

Court data have great potential for identifying clients experiencing multiple hardships and stressors and could be used at the local level to develop targeted strategies for injury-related death prevention. Given the success of targeted injury-related death prevention efforts in other states that have utilized NVDRS data (Campbell et al. 2006), more systematic approaches to the integration of court data into the OH NVDRS should be developed.

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