CONNECTICUT UNINTENTIONAL INJURY MORTALITY: TRENDS OVERALL AND AMONG LEADING INJURY CATEGORIES, 2000-2020

DATA BRIEF • JULY 2022

Background

Deaths due to unintentional injuries, commonly referred to as accidental deaths, have increased dramatically in Connecticut over the past decade.[1,2] In 2015, Connecticut's unintentional injury age-adjusted mortality rate (AAMR; 44.2 per 100,000) surpassed the U.S. rate of 43.2.[1] Unintentional injury was the only leading cause of death for which Connecticut's rate was higher than the U.S. rate for more than five years as of data year 2020.[1-3]

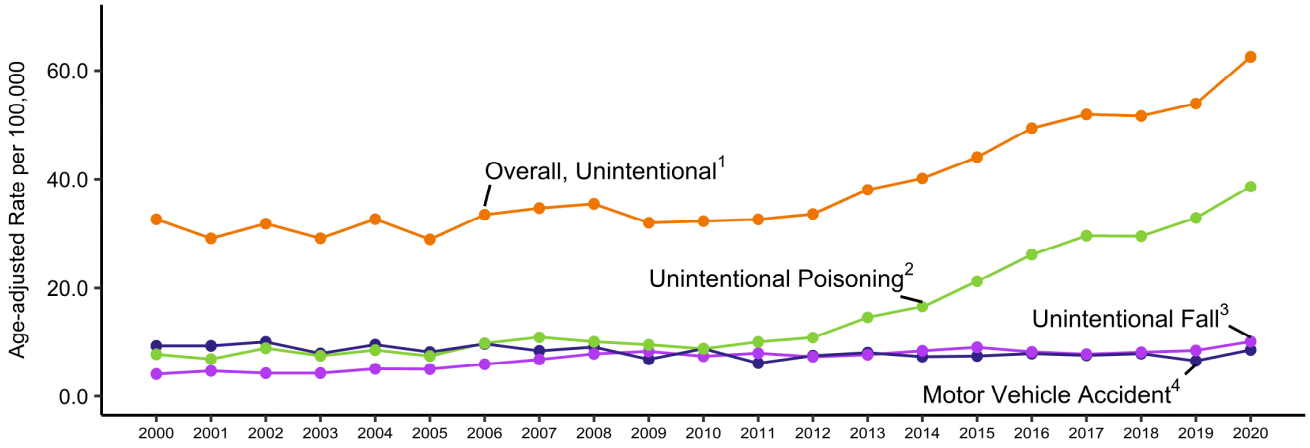
Unintentional injury deaths are defined as those due to forces outside the body to which injurious exposure occurred without predetermined intent (including events of nature, animals, objects, or things swallowed).[2,4,5] They are distinguishable from injury deaths due intentional causes, such as suicide, homicide, and war.[4-6] Most types of injury deaths (unintentional and intentional) are considered predictable and preventable.[6] The primary subcauses of unintentional injury deaths are unintentional poisonings, unintentional falls, and motor vehicle accidents (MVAs), which collectively represented 85% of all unintentional deaths in the U.S. and 90% in CT in 2020.[3]

A review of U.S. unintentional death rates by their three primary subcauses over the past 20 years shows that unintentional poisonings has overtaken both falls and accidents to become the highest-ranked subcause. This data brief assesses the changes in Connecticut's primary subcauses to better understand their contribution to the state's overall rise in unintentional injury mortality.

Analysis Results

Connecticut's unintentional injury death rate from 2000 to 2020 is marked by two distinct trends (Figure 1). Between 2000 and 2010, the age-adjusted rate was stable at 32.0 (per 100,000 individuals) each year. After 2010, the age-adjusted death rate increased at an average rate of 7.2% per year, nearly doubling from 32.6 in 2011 to 61.8 in 2020.

Figure 1. Age-Adjusted Rates for Unintentional Injury Deaths, Overall and by Three Leading Subcauses: Connecticut, 2000-2020



[1] Significant increasing trend (7.2 AAPC) from 2011 through 2020

[2] Significant increasing trend from 2000-2011 (3.1 AAPC), 2012-2015 (25.0 AAPC), and 2016-2020 (9.4 AAPC)

[3] Significant increasing trend from 2003-2007 (11.7 AAPC) and from 2008-2020 (1.5 AAPC)

[4] Significant decreasing trend (-1.2 AAPC) from 2000-2020

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Assessment of the 21-year trends in the three primary subcauses of accidental deaths show differing patterns. At the start of the period, MVAs and poisonings had similar age-adjusted rates (9.2 and 7.7, respectivly) while falls were lower (4.1) than both MVA and poisoning (Table 1). Over the 10 years that followed, the annual AAMRs for poisonings remained stable, rates for MVAs declined, and those for falls increased (Figure 1). In 2010, age-adjusted rates for each of the three subcauses of death were effectively the same (range 7.3-8.7; Table 1). Starting in 2012, AAMRs for poisonings began a dramatic rise of 25% each year through 2016 and then 9.4% annually through 2020, contributing to a 92% overall increase for this subcause from 2010 to 2020. Over this same period, falls continued to increase with a contribution of 8% of the overall increase in subcauses from 2010 to 2020, while MVAs continued to decrease. In 2020, the AAMRs due to falls and MVAs were similar (9.8 and 8.4, respectively) while poisoning AAMRs were substantially higher (38.3). The trend for drownings was stable around an average AAMR of 0.8 per 100,000 throughout the period from 2000 to 2020. AAMRs for all other causes of injury deaths (assessed as a group) declined over this 21-year period by 2.4% annually.

Another way to understand the impact of disparate rates of change among the subcauses to the overall rate of unintentional injury mortality is to quantify the relative contribution of each subcause to the overall change.[7] Between 2010 and 2020, the relative contribution to the increase in overall unintentional injury death was 86.6% for poisonings and 13.4% for falls.

Given that the last year of the analysis period was also the first year of the COVID-19 pandemic in Connecticut, the one-year changes in subcause mortality rates (2019 to 2020) were assessed. Poisonings and falls both showed significant increases in 2020 compared with 2019 that were consistent with sustained increasing trends observed in 2019. MVA rates also increased from 2019 to 2020 but fell within the range of variability observed for annual rates across the 20-year declining trend (Table 1).

Table 1. Counts and Age-Adjusted Rates for Unintentional Injury Deaths, Overall and by Subcauses: Connecticut, 2000, 2010, 2020

Cause of Death	2000		2010		2020	
	Number of Deaths	Age-adjusted Rate (95% CI)	Number of Deaths	Age-adjusted Rate (95% CI)	Number of Deaths	Age-adjusted Rate (95% CI)
All Unintentional Injury Deaths	1170	32.6 (30.7, 34.5)	1,295	32.3 (30.5, 34.1)	2,418	61.8 (59.2, 64.3)
Unintentional Poisoning	264	7.7 (6.8, 8.6)	311	8.7 (7.7, 9.7)	1,365	38.3 (36.2, 40.4)
Unintentional Fall	158	4.1 (3.5, 4.7)	331	7.3 (6.5, 8.1)	497	9.8 (8.9, 10.7)
Motor Vehicle Accidents	311	9.2 (8.2, 10.2)	318	8.7 (7.7, 9.7)	314	8.4 (7.5, 9.4)
Drowning	24	0.7 (0.4, 1.0)	28	0.8 (0.5, 1.1)	19	0.5 (0.3, 0.7)
Fires	18	0.5 (0.3, 0.7)	15	0.4 (0.2, 0.5)	16	0.4 (0.2, 0.5)
Other[a]	395	10.4 (9.4, 11.5)	292	6.4 (5.7, 7.1)	207	4.4 (3.8, 5.0)

Summary

Connecticut's age-adjusted mortality rate due to unintentional injuries rose rapidly between 2010 and 2020 compared with the previous decade's (2000-2010) relative stability. Deaths due to unintentional poisonings are the primary driver of the rising trend, accounting for 87% of the increase while deaths due to falls contributed the remaining 13%. Mortality rates for motor vehicle accidents declined over the 2000-2020 period, as have all other causes of unintentional injury death when evaluated as a group. Rates of drowning remained stable.

Increases in unintentional poisoning deaths have been linked to increased rates of opioid drug use, particularly fentanyl.[8] Connecticut's Office of the Chief Medical Examiner reported that the percent of accidental deaths in Connecticut involving fentanyl rose from 4% in 2012 to 84% in 2020.[9] Increasing mortality rates from falls may be related to a growing population of adults aged 75-84 years and ≥85 years for whom mortality rates due to falls are highest.[10]

For Further Information

The Connecticut Department of Public Health's Office of Injury and Violence Prevention oversees community-based programs that address risk and resiliency factors associated with injury.[11] Prevention strategies implemented by the Office target falls, motor vehicle accidents, concussions, and traumatic brain injuries, as well as intentional injuries. Programmatic focuses on prevention of unintentional poisoning deaths, in particular, include statewide implementation of the CDC-based Overdose Data to Action (OD2A) program for timely collection and monitoring of nonfatal and fatal drug overdoses, overdose education and Naloxone distribution, and support of legislative actions recently undertaken to prevent opioid drug abuse. [11,12]

Analytical Methods

For standardization and tabulation of mortality statistics, written cause of death statements made by the certifiers on death certificates are sent to the National Center for Health Statistics (NCHS) at the CDC which assigns cause of death codes according to the *International Causes of Disease 10th Revision* (ICD-10) classification system.[2]

Age-adjusted death rates were calculated using the direct method and adjusted to the 2000 U.S. standard population.[13] AAMRs were calculated using 18 age groups (as 0–4 years, 5–9, 10–14, 15–19, … 85 years and older). Population estimates used as denominators for 2000-2019 were those released annually by the U.S. Census Bureau's Population Estimate Program[14] while those used for 2020 were provisional estimates developed by DPH.[15] Point-in-time comparisons of age-adjusted subcause-specific mortality rates were based on Chi-square tests of independence. All analyses were made at $P < 0.05$, with Bonferroni adjustment for multiple comparisons.[16]

Trends in age-adjusted death rates were evaluated using the Joinpoint Regression Program (Version 4.9.1).[17] Joinpoint software fitted weighted least-squares regression models to the rates on the log transform scale. Analyses were set to allow a maximum of three joinpoints across the period, a minimum of three observed time points from any given joinpoint to either end of the data, and a minimum of four observed time points between any two joinpoints. The permutation tests for model (number of joinpoints) significance were set at $p < 0.05$.[17] Relative contributions of changes in unintentional injury mortality AAMR trends to overall unintentional mortality AAMRs were assessed following the methods of Becker.[7]

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Recommended Citation: Hayes LE, Olson J, Abdellatif E, and Backus K. Connecticut Unintentional Injury Mortality: Trends Overall and Among Leading Injury Categories, 2000-2020, Connecticut Department of Public Health, Hartford, Connecticut, June 2022.

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