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Veteran Suicides in Kansas, 2019-2020

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Introduction

Suicide is a major contributor to mortality in Kansas as the 9th leading cause of death for all ages [1]. The Centers for Disease Control and Prevention (CDC) has identified that certain groups experience higher risk for suicide compared to the general population, veterans being one of those groups with substantially higher risk [2, 3]. The CDC reports that veterans make up 13.9% of adult suicides nationally [3]. A report from the United States Veterans Administration (VA) found that veterans had an unadjusted suicide rate in 2020 of 31.7 per 100,000, compared to the non-veteran rate of 16.1 per 100,000 for the same year [4]. Additionally, this report noted that the use of firearms during suicides were higher among veterans nationally (71.0%) compared to non-veterans (50.3%). Understanding the burden of veteran suicides in Kansas can aid suicide prevention practitioners and advocates to identify areas for specific prevention activities.

Methods

The data in this report comes from the Kansas Violent Death Reporting System (KS-VDRS), a state-based surveillance system that collects data from multiple sources including death certificates, coroner/medical examiner reports, and law enforcement reports. KS-VDRS data was analyzed to describe the burden, characteristics, and mechanisms of injury of veteran and non-veteran suicides in Kansas among adults 18 years and older. Veteran status includes current or former military personnel who served in the U.S. Armed Forces: Air Force, Army, Coast Guard, Marine Corps and Navy (as defined in the [National Violent Death Reporting System Coding Manual](#)).

Numerator data was exported from KS-VDRS for the years 2019 and 2020. Population data was exported from the National Center for Health Statistics bridged race estimates (non-veteran) and the American Community Survey (ACS), US Census Bureau (veteran). SAS 9.4 software was used for statistical analyses. Age-adjusted rates and 95% confidence intervals (95%) were calculated using the direct standardization method. When comparing rates, non-overlapping confidence intervals are considered statistically significantly different. Chi-square tests were completed to test if the distributions of mechanism of injury and types of circumstances were significantly different between veterans and non-veterans. Chi-square p-values less than 0.05 are considered statistically significant.

Results

Overall

Between 2019 and 2020, there were 160 veteran suicides making up 17% of adult suicides in Kansas. Veterans had a suicide rate of 24.1 per 100,000 population (95% CI: 19.2, 29.0), which is nearly three times that of non-veterans (8.2 per 100,000; 95% CI: 7.6, 8.8) (Table 1).

Table 1. Frequency, Percent, and Age-Adjusted Rate per 100,000 of Veteran and non-Veteran Suicides, Kansas, 2019-2020

Veteran Status	N (%)	Rate* (95% CI)
Veterans	160 (17%)	24.1 (19.2, 29.0)
Non-veterans	808 (83%)	8.2 (7.6, 8.8)

*Per 100,000 population

Data Source: 2019-2020 Kansas Violent Death Reporting System

Veterans who died by suicide tended to be older compared to non-veterans. Nearly half (47%) of veterans who died by suicide are 65 years and older as compared to only 11% of non-veteran suicides. There was a higher percentage of males in the veteran group (96%) than non-veterans (76%) and a higher percentage of veterans were White, non-Hispanic (91%) compared to non-veterans (82%) (Table 2).

Table 2. Frequency and Percent of Veteran and non-Veteran Suicides by Demographic Characteristics, Kansas, 2019-2020

Demographic	Veteran N (%)	Non-veteran N (%)
Age		
18 – 24 years	17 (10%)	117 (14%)
25 – 34 years	22 (14%)	190 (23%)
35 – 44 years	11 (7%)	174 (22%)
45 – 54 years	19 (12%)	127 (16%)
55 – 64 years	16 (10%)	112 (14%)
65 – 74 years	27 (17%)	61 (8%)
75+ years	48 (30%)	27 (3%)
Sex		
Male	153 (96%)	615 (76%)
Female	7 (4%)	193 (24%)
Race/Ethnicity		
White*	145 (91%)	660 (82%)
Black*	7 (4%)	33 (4%)
American Indian/Alaska Native*	0	9 (1%)
Asian/Pacific Islander*	1-5	8 (1%)
Hispanic	1-5	78 (10%)

*Non-Hispanic

Counts less than 6 are grouped into ranges to maintain anonymity of decedents.

Data source: 2019-2020 Kansas Violent Death Reporting System

Mechanism of Injury

Results from the Chi-square test comparing the distributions of mechanisms of injury between veterans and non-veterans indicate that veterans were more likely than non-veterans to use a firearm (Chi-square value = 52.1, p-value < 0.0001) (Table 3). About a third (30%) of non-veteran suicides were due to suffocation compared to 9% of veterans, which is statistically significantly different (Chi-square value = 29.4, p-value <0.0001). And non-veterans were more likely to use poisoning or overdose (Chi-square value = 8.3, p-value = 0.004).

Table 3. Veteran and Non-veteran Suicides by Mechanism of Injury, Kansas, 2019-2020

Mechanism of Injury	Veteran	Non-Veteran	Chi-square value (p-value)
	N (column %)	N (column %)	
Firearm	133 (83.1%)	422 (52.2%)	52.1 (<0.0001)*
Suffocation or Hanging	14 (8.8%)	237 (29.3%)	29.4 (<0.0001)*
Poisoning or Overdose	7 (4.4%)	98 (12.1%)	8.3 (0.004)*
Other†	6 (3.7%)	51 (6.3%)	1.6 (0.208)

*Statistically significant

†Cut/pierce, drowning, fall, fire, transportation, or others

Data source: 2019-2020 Kansas Violent Death Reporting System

Circumstances

KS-VDRS, unlike many other data sources, collects detailed information on circumstances surrounding a violent death provided by the various reports collected for abstraction. These circumstances can provide insight into potentially contributing factors to an individual’s suicide and thus can inform prevention efforts. Table 4 compares the reported circumstances between veterans and non-veterans. About 40% of both veterans and non-veterans had a reported current depressed mood around the time of their death, but the difference between the two was not statistically significant (Chi-square value = 0.5, p-value = 0.457). Circumstances that were statistically significantly more common in non-veterans include current mental health problem (Chi-square value = 0.5, p-value = 0.0032), intimate partner problem (Chi-square value = 7.7, p-value = 0.005), argument or conflict (Chi-square value = 9.3, p-value = 0.0002), and a non-alcohol substance abuse problem (Chi-square value = 19.4, p-value = <0.0001). Only a physical health problem was statistically significantly more common in veterans than non-veterans (Chi-square value = 46.8, p-value = <0.0001).

Table 4. Veteran and Non-veteran Suicides by Top Reported Circumstances, Kansas, 2019-2020

Circumstance	Non-Veteran	Veteran	Chi-square value (p-value)
	N (%)	N (%)	
Current depressed mood	313 (38.3%)	67 (41.9%)	0.5 (0.457)
Current mental health problem	398 (49.3%)	64 (40.0%)	4.6 (0.032)*
Physical health problem	129 (15.9%)	62 (38.8%)	43.8 (<0.0001)*
History of suicidal thought	328 (40.6%)	58 (36.2%)	1.1 (0.305)
Left a suicide note	196 (24.3%)	44 (27.5%)	0.8 (0.385)
Intimate partner problem	305 (37.8%)	42 (26.3%)	7.7 (0.005)*
Alcohol problem	219 (27.1%)	40 (25.0%)	0.3 (0.582)
Argument or conflict	207 (25.6%)	23 (14.4%)	9.3 (0.002)*
Substance abuse (non-alcohol)	218 (27.0%)	17 (10.6%)	19.4 (<0.0001)*

*Statistically significant

Note: Percentages were calculated from the total number of suicide deaths for each group. Circumstances are not mutually exclusive and there can be multiple circumstances surrounding each incident.

Data source: 2019-2020 Kansas Violent Death Reporting System

Discussion

Kansas veterans died by suicide at nearly three times the rate of their civilian counterparts. In addition, these veterans represented a disproportionately high percentage of suicides across the older population—those ages 65 and older. Veterans in this age group would have primarily served in the Vietnam War (1954-1975), making it the last group of military veterans to experience a draft [5].

The use of a firearm as a suicide method was a distinguishing feature of veteran suicide. Over four in five (83%) suicides among veterans are by firearm, compared to non-veteran adults where half of all suicides (52%) are with a firearm. Reduction in access to lethal means through the promotion of safe firearm storage practices is critical in preventing suicides, especially in the veteran population [6]. Kansas veterans were more likely than the general population to have a physical health problem as a contributing factor of their death. Veteran-serving health organizations should be considered as vital partners in suicide prevention work. Access to mental health and crisis resources, such as the Veterans Crisis Line (dial 988 then press 1), could be promoted in health organizations [7].

While Veteran Affairs (VA) and Department of Defense (DOD) national data on veteran suicides is limited, data collected by the Kansas Violent Death Reporting System (KS-VDRS) allows for a comparison of how suicide affects the military population versus the general population.

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Changes in Emergency Department Visit Trends for Influenza and Respiratory Syncytial Virus Following the COVID-19 Pandemic in Kansas

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Introduction

Prior to the COVID-19 pandemic, there was a consistent pattern in the burden of respiratory viruses like influenza and respiratory syncytial virus (RSV), with seasonality occurring from October through May [1,2]. Recognizing the onset and offset of seasonal respiratory viruses like influenza and RSV ensures that prevention strategies, such as monoclonal antibodies to prevent RSV, are deployed in a timely manner. Since influenza and RSV are not reportable conditions in Kansas, meaning KDHE does not receive reports of every diagnosed case or positive lab result, it is necessary to strengthen other surveillance strategies that help monitor the burden of different respiratory viruses.

Historically, the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) has monitored influenza trends, while the National Respiratory and Enteric Virus Surveillance System (NREVSS) has tracked RSV trends. In Kansas, ILINet captures data from family practices, emergency departments,

student health centers, and pediatric offices whose participation is voluntary. Each influenza season in Kansas, ILINet enrolls approximately 30-32 sites that provide data weekly on the proportion of outpatient visits with influenza-like-illness (ILI) symptoms. ILI is defined as fever ($\geq 100^{\circ}\text{F}$ [37.8°C]) with cough or sore throat. As for NREVSS, only three laboratories in Kansas voluntarily provide the Centers for Disease Control and Prevention (CDC) with aggregate numbers of positive test results for RSV. While these surveillance programs were sufficient in the past, changes in the expected circulation of these respiratory viruses have occurred since the COVID-19 pandemic [3]. These changes make it more important for public health officials to incorporate supplemental data sources which are more geographically representative and can provide diagnostic information about which virus is causing symptoms.

One way to examine the burden of specific respiratory viruses in near real-time is by using emergency department (ED) data from the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE). These data are collected by the Kansas Syndromic Surveillance Program (KSSP) which is currently capturing over 98% of ED visits. In this report, we depict patterns of ED visits for influenza and RSV in Kansas during seasons prior to the COVID-19 pandemic (2018-2019 and 2019-2020) compared to seasons during the COVID-19 public health emergency (2020-2021, 2021-2022, and 2022-2023) to better understand the impact of the pandemic on ED burden for these diseases. We also highlight new strategies being implemented by the Kansas Department of Health and Environment (KDHE) that will allow us to better identify trends in COVID-19, influenza and RSV.

Methods

Influenza and RSV-related ED visits from October 2018 through May 2023 were queried in ESSENCE to display temporal patterns in the burden of disease. ED visits were categorized by discharge diagnosis using ICD-10-CM diagnosis codes for influenza (J09-J11) and RSV (B97.4, J12.1, J20.5, and J21.0). Out of state resident visits were excluded. Trends are examined to assess whether there have been changes in ED visits for influenza and RSV during the COVID-19 pandemic.

Results

During the 2018-2019 influenza season, Kansas influenza-related ED visits peaked in February 2019 at around 4.4% of total ED visits (Figure 1). During the 2019-2020 season, there was a peak in influenza-related ED visits in January 2020, measuring at around 5.5%. Subsequently, influenza-related ED visits continued to increase, reaching a second peak at 6.5% of all ED visits in early March 2020. RSV-related ED visits during the 2018-2019 and 2019-2020 seasons exhibited similar trends to influenza, with increased ED visits beginning in January 2019 and 2020, and remaining highest in February of 2019 and 2020, at 0.8% and 1.0% of total ED visits, respectively (Figure 2).

During the 2020-2021 respiratory virus season, ED visits remained low for both influenza and RSV (< 0.4% of total ED visits combined). RSV-related ED visits increased in June 2021, reaching a peak at 1.1% of total ED visits in late September 2021. Influenza-related ED visits increased starting November 2021; however, visits peaked at less than 1.8% of total ED visits. In the most recent 2022-2023 season, RSV-related ED visits increased in late August 2022 and peaking in November 2022, reaching around 1.6% of total ED visits. Influenza-related ED visits increased rapidly at the beginning of October 2022, reaching a peak in December 2022 at 7.7% of total ED visits, before rapidly declining.

Discussion

In Kansas, ED visits associated with influenza and RSV appeared atypical during the timeframe of the COVID-19 pandemic compared to previous seasons. The extent, timing, and duration of this impact differed between viruses. Prior to the COVID-19 pandemic, the trends of ED visits for both influenza and RSV exhibited historically similar patterns, peaking in January and February of 2019 and 2020. These seasonal trends resembled the patterns seen across the country [3,5]. When comparing these

Figure 1:

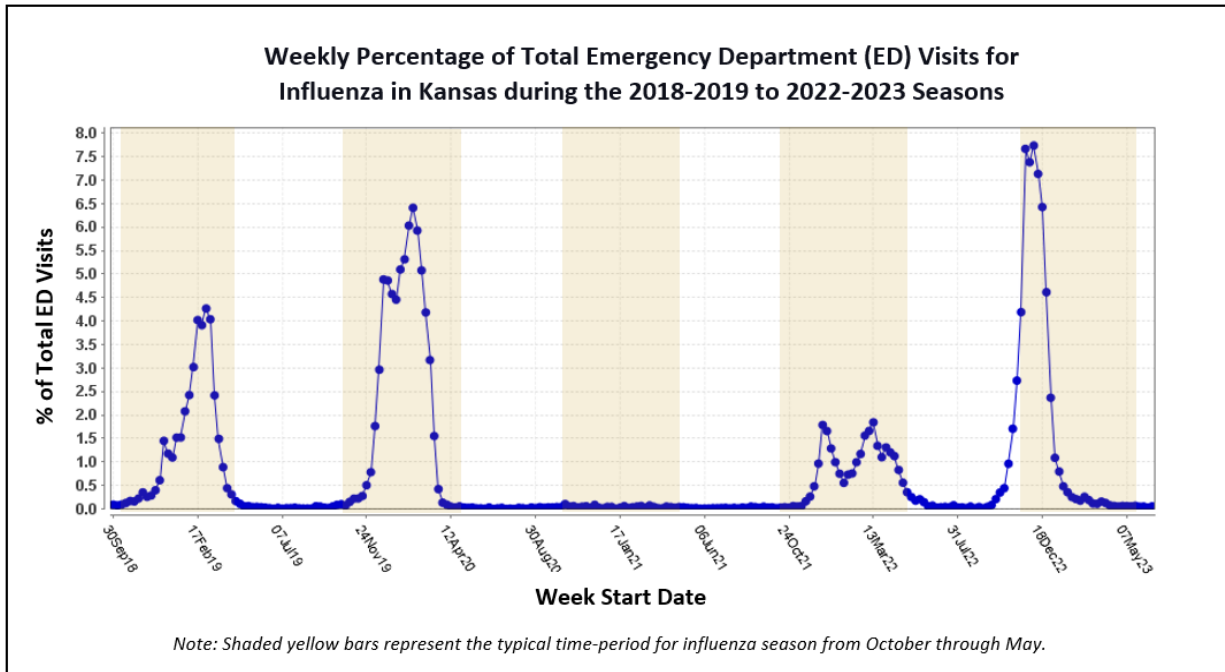
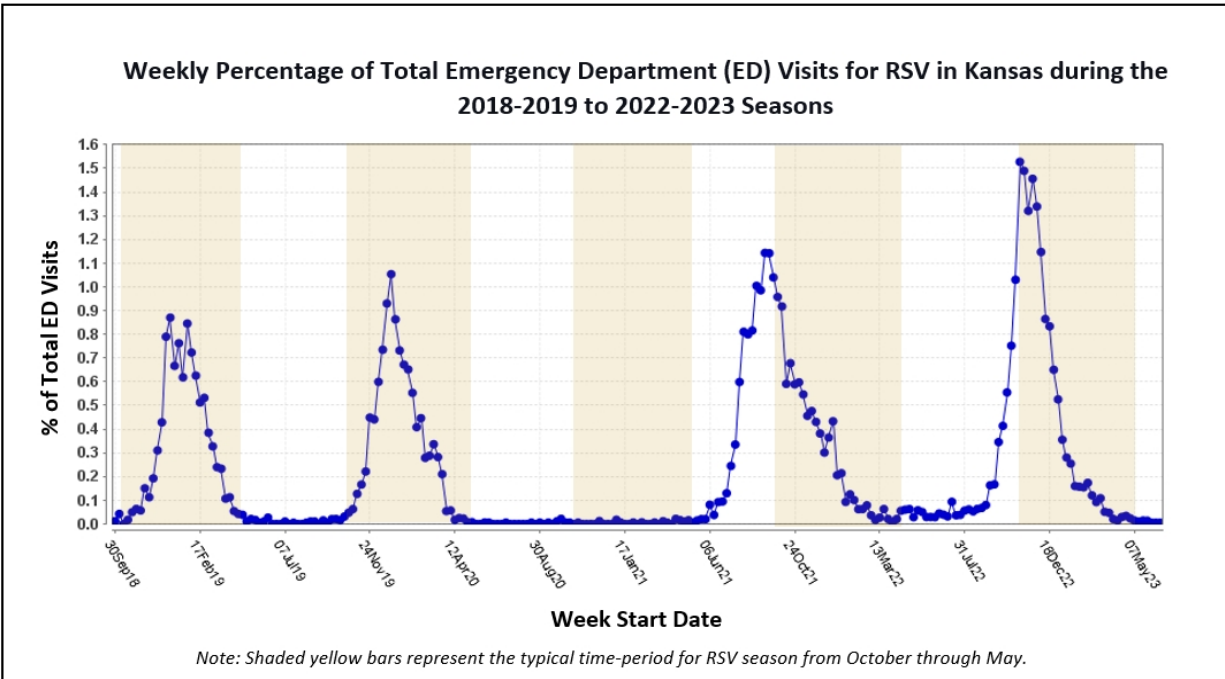


Figure 2:



trends to the 2020-2021 season during public health emergency, ED visits associated with influenza and RSV were low. Nationally, the occurrence of viral respiratory illnesses other than COVID-19 was diminished during the public health emergency, a possible positive impact of the adoption of non-pharmaceutical interventions, including halting international travel, mask usage, social distancing and stay-at-home orders [7].

RSV-related ED visit began to increase in June 2021, showing an unusual early surge in the disease. During this same time period, influenza related ED visits increased only slightly and remained low throughout 2021 compared to pre-pandemic seasons of 2018-2019 and 2019-2020. These trends were similar to trends noted nationally [3]. During the 2022-2023 season, there was a similar early resurgence of RSV-related visits. The number of ED-related visits increased late August 2022 and reached its highest point in November 2022. This early increase in RSV activity was observed nationwide [6]. Additionally, in the 2022-2023 season, there was also a steep increase in influenza-related ED visits during October 2022, peaking in early December. These trends were similarly observed nationally [6]. When compared to pre-pandemic seasons (2018-2019 and 2019-2020), there was a more rapid increase and decrease in influenza-related ED visits.

Unusual circulation patterns for influenza and RSV may impact the ability of healthcare systems to prepare for and respond to an unexpected, unseasonal increase in disease [8]. Given that these diseases are not reportable, there is a need to develop alternative surveillance strategies to monitor disease activity over time and more quickly detect abnormal viral circulation patterns. As a result, KDHE has created new surveillance tools to augment existing surveillance strategies. Trends in ED visits for Influenza, RSV, and COVID-19 at the state and county level are now available year-round on the KSSP [dashboard](#). The Kansas Respiratory Illness Surveillance and Epidemiology Network (RISENet) is another novel program scheduled for deployment during the upcoming 2023-2024 respiratory season. As a part of RISENet, the Kansas Health and Environmental Laboratories (KHEL) will receive laboratory specimens collected from individuals in outpatient settings with suspected respiratory illnesses and test for COVID-19, influenza, and RSV to better understand regional circulation. Additionally, KHEL will perform additional characterizations of the specimens such as influenza subtyping or COVID-19 genomic sequencing.

Conclusion

The need for timely respiratory virus surveillance has been demonstrated with the observed changes in seasonal viral activity. KSSP and RISENet are tools that will strengthen this capacity. These new tools will assist public health and medical professionals in preparing for upcoming respiratory virus seasons by providing them with the necessary data to understand the impact of different respiratory viruses in near real-time. This awareness of changes in disease activity will allow for valuable insights to be provided quickly and better guide early prevention strategies. For example, awareness of these trends can help determine optimal influenza vaccination schedules or guide reimbursement of monoclonal antibodies, like Synagis® or the new drug Beyfortus™, to prevent RSV. Finally, it's important for medical practitioners to recognize that respiratory viruses might not follow their usual seasonal patterns of spread. The recent demonstration of an altered re-emergence of respiratory viruses underscores the need for a heightened level of suspicion and increased testing to differentiate respiratory pathogens.

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