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## How Healthy Are You? General Health Perceptions Among Cigarette Smokers in Kansas

### Introduction

The number one cause of preventable death in the United States is cigarette smoking [1], and the U.S. Surgeon General has long encouraged smokers to take steps to quit for a healthier life [2]. Cigarette smoking is known to cause a host of health issues that negatively impact the body. Immediate damage is caused to the body from even just one puff [3], [4]. Thousands of toxic chemicals penetrate the blood stream and reach every organ in the body. These carcinogens damage cells and inhibit normal immune responses from the body increasing the risk of cancer. Additionally, the body’s heart rate, blood pressure, and blood cholesterol increase due to smoking. This puts the body at more risk for blood clots which increases the risk of heart attack and stroke. Damage to the respiratory system is another consequence of smoking [3]. Not only is smoking the leading risk factor of lung cancer, [5] but smokers also deal with labored breathing, smoker’s cough, and many other conditions that negatively impact the respiratory system. Smoking can also lead to fertility issues – including miscarriage [3].

Given that smoking has immediate and long-term health effects, the question was raised of how healthy adult smokers perceive themselves to be – especially in relation to nonsmokers. While it is widespread knowledge that smoking damages the body in a multitude of ways, and many studies have looked at the perceived risks of smoking from smokers’ viewpoints, it is not well-known how healthy smokers feel they are. Thus, this was the focus of the analysis conducted.

### Methods

The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone-based survey conducted annually in all states, the District of Columbia, and three U.S. territories [6]. Kansas residents ages 18 and older may be randomly selected and telephoned to complete the survey concerning health-related questions. Of all the questions asked, this study focused on two questions: general health and current smoking status.

Individuals were asked in general if their health was “Excellent,” “Very Good,” “Good,” “Fair,” or “Poor.” Current smoking status was also asked. Descriptive statistics [see Table 1] and Chi-square tests of 2020 BRFSS data were used for analysis in SAS of these two variables [see Table 1].

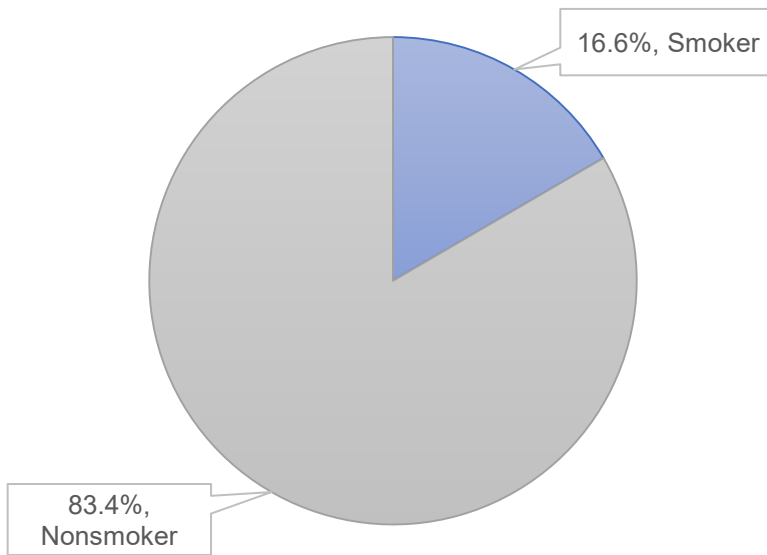
Table 1. General Health Perceptions: Smokers vs. Nonsmokers (N=9,851)

Cigarette Smoker	General Health Perception	Frequency	Row Percent	Standard Error	95% CI Lower Limit	95% CI Upper Limit
No (Nonsmoker)	Excellent	1,657	21.3	0.6	20.2	22.4
	Very Good	3,189	37.6	0.7	36.3	39.0
	Good	2,565	29.8	0.6	28.5	31.1
	Fair	795	8.9	0.4	8.1	9.7
	Poor	228	2.3	0.2	1.9	2.8
	Total	8,434	100.0			
Yes (Smoker)	Excellent	175	13.8	1.2	11.4	16.1
	Very Good	392	27.5	1.5	24.6	30.4
	Good	497	34.1	1.6	30.9	37.2
	Fair	253	17.7	1.3	15.2	20.3
	Poor	100	6.9	0.8	5.3	8.6
	Total	1,417	100.0			

**Results**

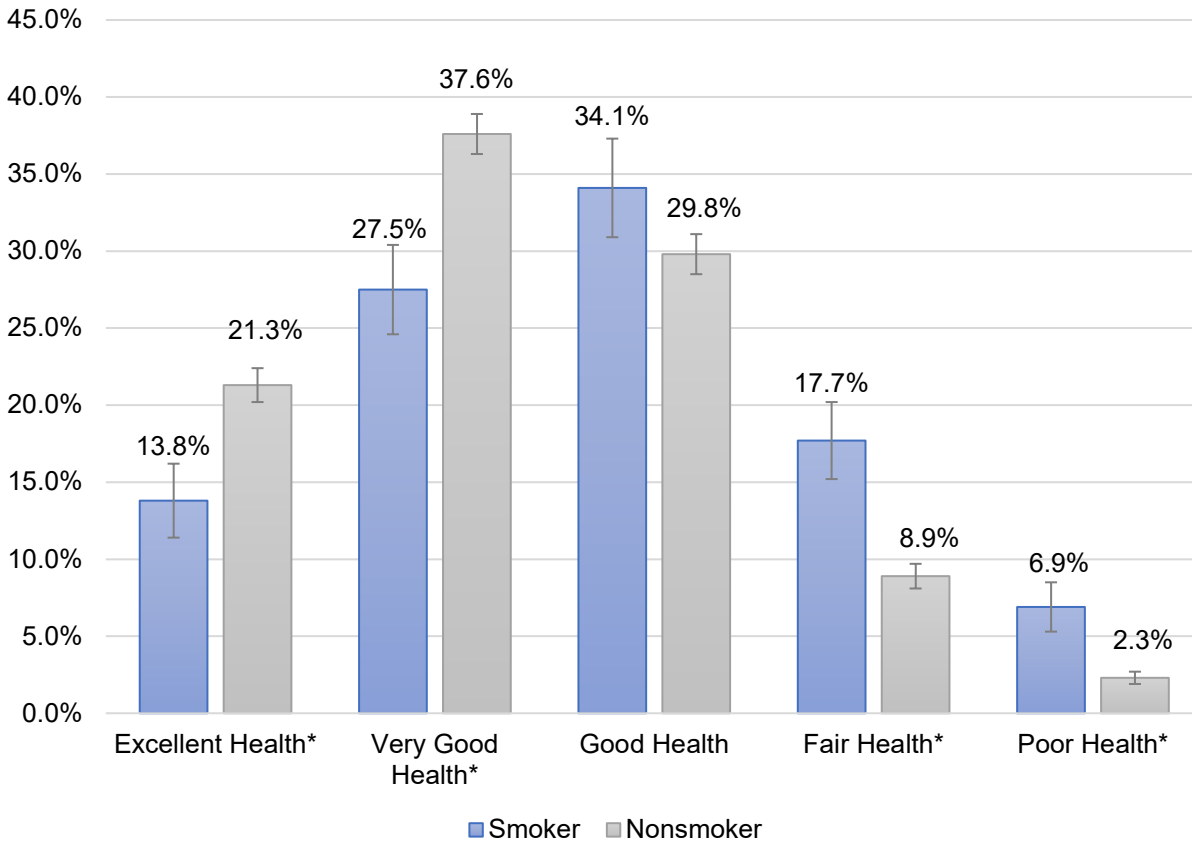
Of all survey respondents, 16.6% smoked cigarettes<sup>†</sup> [see Figure 1]. Statistically significant results showed that more nonsmokers rated their health as excellent or very good compared to smokers while more smokers rated their health as fair or poor than nonsmokers.

Figure 1. Prevalence of Cigarette Smoking in Kansas, BRFSS 2020 (N=9,866)



The largest gaps between smokers and nonsmokers included very good health [27.5% for smokers and 37.6% for nonsmokers] and fair health [17.7% for smokers and 8.9% for nonsmokers]. Among smokers, only 13.8% perceived their health to be excellent compared to 21.3% of nonsmokers [see Figure 2]. The largest percentage of smokers surveyed perceived their health to be good while the largest percentage of nonsmokers surveyed perceived their health to be very good. More smokers considered their health to be fair than excellent while the reverse is true for nonsmokers.

Figure 2. General Health Perceptions of Smokers vs. Nonsmokers, BRFSS 2020 (N=9,851)



\*statistically significant

**Conclusion**

Overall, cigarette smokers perceive themselves as less healthy than do nonsmokers. More individuals who were nonsmokers reported excellent and very good health while more smokers reported good, fair, and poor health. Because smoking has an immensely negative impact on the body, smokers may suffer from a myriad of health conditions causing them to perceive themselves as less healthy. This does not negate the fact that nonsmokers can also suffer from some of the same conditions, but smokers are more at risk than nonsmokers for conditions such as lung cancer and chronic obstructive pulmonary disease (COPD). Perhaps increased education on the health benefits of cessation and further promoting cessation services, such as the Kansas Tobacco Quitline, is needed in order to increase how healthy Kansans feel – and actually are.

Limitations include 1) BRFSS data is self-reported, so individual biases may impact the perception of respondents’ own health and 2) Among the nonsmokers are those who use electronic nicotine delivery systems (ENDS), such as e-cigarettes or vape pens, those who use smokeless tobacco, and/or those who use other tobacco products. The health of the individuals in these subsets was not analyzed specifically as the focus was only on cigarette smokers, who comprise the largest subset of tobacco users.

†Cigarette smoking does not include traditional tobacco used for sacred and religious purposes.

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## Rabies-related Visits Kansas Emergency Departments in 2020

### Introduction

Human rabies is preventable by early recognition and receipt of post-exposure prophylaxis (PEP) [1]. It is a fatal disease of the central nervous system following an exposure to one of the variants of the rabies virus [2]. Between 1992 to present, no human rabies has been reported in Kansas [3]. In fact, it is reported that the last case of human rabies dated from 1968. However, exposure to reservoir animals (mainly dogs, bats, and skunks) of the rabies virus is relatively common in the state, leading to numerous emergency departments (ED) visits for wound treatments, post-exposure prophylaxis, and persons seeking care due to concerns about rabies. During the 2020 calendar year, Kansas EDs received 441 rabies-related visits. The following is an analysis that describes the demographic characteristics of the patients who visited the ED, as well as the temporal, and geographic distributions of rabies-related ED visits in Kansas.

### Methods

To conduct this analysis, we queried the Centers for Disease Control and Prevention (CDC)'s National Syndromic Surveillance Program (NSSP) data using a custom query of the chief complaint and discharge diagnostic fields of the syndromic surveillance data in the ESSENCE portal version 1.22. The NSSP data is used to improve nationwide situational awareness and enhance responsiveness to hazardous events and disease outbreaks [3]. On June 3, 2021, the query retrieved 449 records for the whole 2020 calendar year. This represents less than 0.1% of the 893,415 ED visits reported for the year. It is estimated that about 96% of all Kansas ED visits were submitted to the NSSP in 2020. The data was exported to Microsoft Excel and analyzed with RStudio Version 1.4.1106 and R version 4.0.5. Each record was manually reviewed to determine: a) if the visit was related to rabies, b) which animal was identified as the source of the exposure, c) which patient's body part(s) was/were involved in the exposure, and d) what kind of medical procedure was performed during the visit as well as other relevant details. After reviewing the records, we identified 8 records, or 1.8%, that were not related at all to rabies (false positive). Those records were excluded from the rest of the analysis. Frequencies and percentages were calculated for each variable analyzed. One should note that this analysis is about the number of visits and not the number of individual patients. Patients may visit the ED several times for the same exposure. Therefore, patient characteristics may be counted more than once. Our goal was to estimate the burden of rabies-related visits on emergency departments in Kansas.

### Results

#### Age

Based on these data, persons aged 18 to 44 years old had a significantly higher percentage of rabies-related ED visits (41.5%) than the other age groups (Table 1). Persons in the 5 to 17 and 45 to 64 age groups were tied for the second highest percentage of visits for rabies (21.8%). Persons aged 65 and

over accounted for 10.9% of all of the visits. The group with the smallest percentage of visits was children less than 4 years old (4.1%).

Table 1. Count and percent of rabies-related ED visits by age group, Kansas 2020

Age Groups	Count	Percent	LCL	UCL
00-04	18	4.1	0.0	9.1
05-17	96	21.8	17.0	26.8
18-44	183	41.5	36.7	46.5
45-64	96	21.8	17.0	26.8
65+	48	10.9	6.1	15.9
Total	441	100.0		

(LCL = Percent Lower Confidence Limit, UCL = Percent Upper Confidence Limit  
Data source: Kansas Syndromic Surveillance Program)

**Sex**

When stratified by sex, the data show that women (50.8%) and men (49.2%) were equally likely to visit the ED for rabies-related care in 2020 (Table 2).

Table 2. Count and percent of rabies-related ED Visits by sex, Kansas 2020.

Sex	Count	Percent	LCL	UCL
Male	217	49.2	44.4	54.0
Female	224	50.8	46.0	55.6
Total	441	100.0		

(LCL = Percent Lower Confidence Limit, UCL = Percent Upper Confidence Limit  
Data source: Kansas Syndromic Surveillance Program)

**Reasons for visiting the ED**

A large number of patients (392 or 88.9%) visited the ED seeking treatment or prophylaxis against rabies (Table 3). It is important to note that several patients (9 or 2.0%) reported that they were referred by their primary physician or their health department. This outlines the important role Kansas EDs play in dispensing care for rabies.

Table 3. Count and percent of rabies ED visits related to rabies shots, Kansas 2020

Visit Reason	Count	Percent	LCL	UCL
Not rabies shot-related	49	11.1	8.3	14.4
Rabies shot-related	392	88.9	85.6	91.7
Total	441	100.0		

(LCL = Percent Lower Confidence Limit, UCL = Percent Upper Confidence Limit  
Data source: Kansas Syndromic Surveillance Program)

**Sources of exposure**

Out of the 441 rabies visits, contact with bats represented the most important source of exposure 127 (28.8%) (Table 4). Seventy-three visits (16.6%) were related to a dog bite. Encounters with a cat accounted for (8.4%) of the reported exposure sources. Rats (0.5%), and raccoons (9.3%) represented the remaining reported sources of exposure. One should note that often patients seek rabies-related care after a contact with animals such as squirrels or rats despite the fact that those animals are almost never found to be infected with rabies and have not been known to transmit rabies to humans [5].

Table 4. Count and percent of rabies-related ED visits by source of exposure, Kansas 2020

Exposure Sources	Count	Percent	LCL	UCL
Bat	127	28.8	24.0	33.8
Cat	37	8.4	3.6	13.4
Dog	73	16.6	11.8	21.6
Raccoon	41	9.3	4.5	14.3
Rat	2	0.5	0.0	5.5
Unknown	161	36.5	31.7	41.5
Total	441	100.0		

(LCL = Percent Lower Confidence Limit, UCL = Percent Upper Confidence Limit  
Data source: Kansas Syndromic Surveillance Program)

**Sites of exposure**

There were 453 sites of exposure to rabies reported. As indicated above, many were bites or scratches that involved the upper limb (95 or 21.0%), lower limb (27 or 6.0%), head and neck (27 or 6.0%), torso (5 or 1.1%), and unknown sites (293 or 64.7%). Six rabies-related visits (1.3%) involved more than one site (Table 5).

Table 5. Count and percent of rabies-related ED visits by site of exposure, Kansas 2020

Sites	Count	Percent	LCL	UCL
Unknown	293	64.7	60.5	69.2
Upper Limb	95	21.0	16.8	25.5
Lower Limb	27	6.0	1.8	10.5
Head and Neck	27	6.0	1.8	10.5
Multiple Sites	6	1.3	0.0	5.9
Torso	5	1.1	0.0	5.6
Total	453	100.0		

(LCL = Percent Lower Confidence Limit, UCL = Percent Upper Confidence Limit  
Data source: Kansas Syndromic Surveillance Program)

**Patient’s county of residence**

In these data it was not always clear where the exposure occurred. Therefore, for this analysis, we are using the county of residence of the patient to estimate the burden of rabies by geographic area in Kansas. In 2020, Sedgwick county had the highest number of residents visiting the ED for rabies-related reasons (126 or 28.6%). Johnson county residents came second and accounted for 26.1% of the rabies-related ED visits for the year.

**ZIP Codes in Sedgwick County**

A stratification of the ED rabies-related visits by Sedgwick county residents showed that some zip codes had a higher percentage of visits than others. The top 4 zip codes were 67217 (13 visits or 10.32%), 67213 (11 visits or 8.73%), 67216 (11 visits or 8.73%), 67204 (9 visits or 7.14%). A closer examination of the reasons why a greater proportion of rabies-related visits in Sedgwick county came from those 4 top ZIP codes would probably be beneficial to public health.

**Month of visits**

Based on these data, it seems that there is a seasonal trend in the for rabies-related ED visits. However, it is not clear. June through September had the highest percentage of visits (>= 10.0%) (Table 6) while October through May had the lowest percentages (<10.0%). Decreased human activities outdoors may be an explanation of these findings. Analysis of several years of data may provide a better insight this trend if it exists The Bureau of Epidemiology and Public Health Informatics conducts epidemiological surveillance for rabies during the summer months. The syndromic

surveillance data is a great addition to this surveillance activities and may increase our understanding of the rabies-related issues in the state of Kansas.

Table 6. Count and percent of rabies-related monthly visits, Kansas 2020.

Months	Count	Percent	LCL	UCL
Jan	17	3.9	0.0	8.0
Feb	24	5.4	1.6	9.6
Mar	27	6.1	2.3	10.3
Apr	27	6.1	2.3	10.3
May	27	6.1	2.3	10.3
Jun	66	15.0	11.1	19.1
.0Jul	67	15.2	11.3	19.4
Aug	65	14.7	10.9	18.9
Sep	44	10.0	6.1	14.2
Oct	28	6.3	2.5	10.5
Nov	24	5.4	1.6	9.6
Dec	25	5.7	1.8	9.9
Total	441	100		

(LCL = Percent Lower Confidence Limit, UCL = Percent Upper Confidence Limit  
Data source: Kansas Syndromic Surveillance Program)

**Limitations**

The data used for this analysis was produced by a customized query from the ESSENCE portal. To our knowledge the accuracy of the query has not been evaluated. Therefore, we cannot estimate how many records were missed by the query. In addition, we found that some large counties such as Shawnee, Lyon, and Reno were under or not at all represented in the data. There may be a systematic reporting issue or a coverage gap that has not been identified by this study. It is possible that specific issues such as accessibility to vaccines and immunoglobulins from other point of care in those counties may have influenced the number of visits as well. Therefore, the reader needs to exercise caution in interpreting the findings of this analysis.

**Conclusion**

In summary, rabies is a deadly disease if not treated in a timely manner. The proximity with wildlife and domesticated animal facilitates exposure to the rabies virus. In many cases, the emergency departments constitute the main point of care for human rabies. The analysis of the syndromic surveillance data for 2020 showed men and women were equally likely to visit the ED for rabies. June through September were the months with the largest number of visits. Most of exposures were related to bites or scratches. Contacts with bats and dogs were the most frequently cited exposure source of exposure. Upper limbs were the most common reported site of exposure. In 2020, residents of Sedgwick county had the largest number of ED visits for rabies care followed by Johnson county. In Sedgwick county, 35% of those visits were made by residents of 4 ZIP codes. Despite its limitations, this analysis indicated several factors that may influence the number of ED visits for rabies-related care. Surveillance of rabies-related visits over time may provide a better insight on the burden that the disease on Kansas emergency departments.

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**References**

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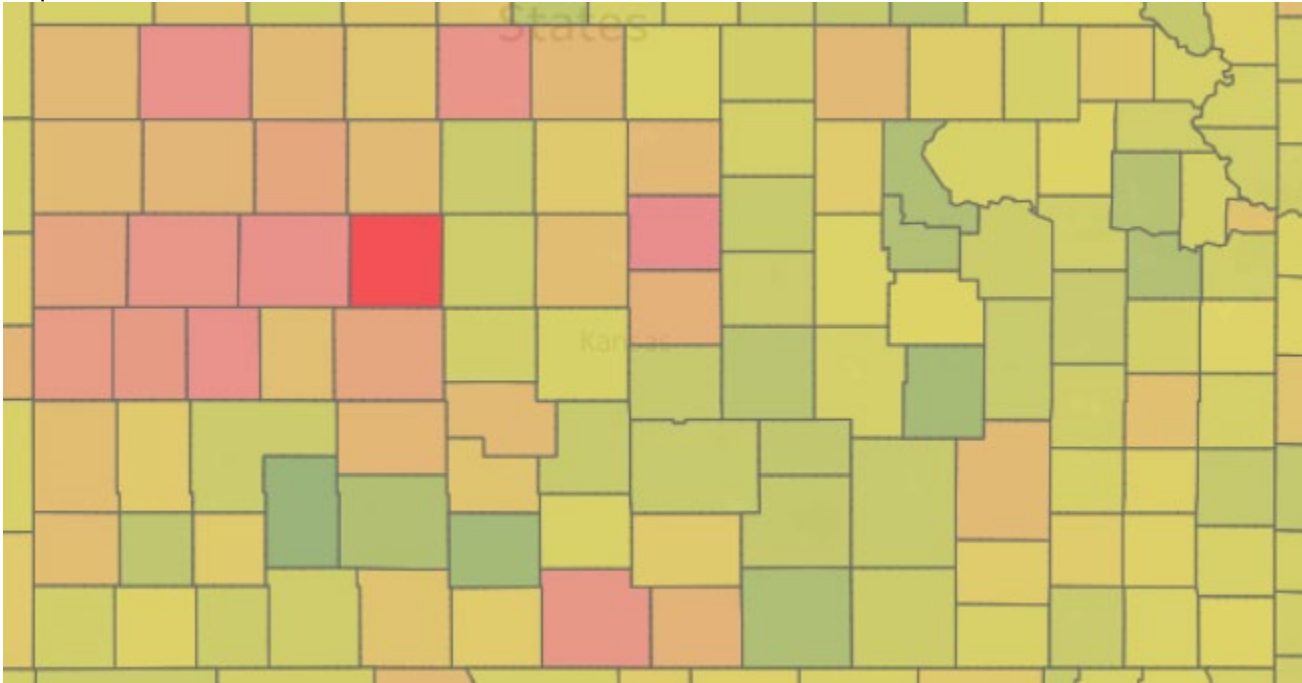
## Announcements

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### Health Atlas Notes Variability Among Kansas Counties for Medicare Reimbursement

The Dartmouth University Health Atlas has released its 2018 Report on Medicare reimbursement rates. The report concludes: “Medicare spending varies more than twofold among hospital referral regions. Spending also varies from state to state, and from one hospital to another, even among hospitals within the same region. Most of this variation is not due to differences in the price of care in different parts of the country, but rather to differences in the volume, or the amount of inpatient care delivered per patient.”

Price Adjusted Total Medicare Reimbursements per Enrollee (Parts A & B) by County, Kansas, 2018  
Map of Kansas



Source Dartmouth Health Atlas

The price adjusted total Medicare Reimbursement per Enrollee by county in Kansas ranged from \$7,875 in Gray County to \$18,812 in Trego County. The dashboard is available at: <https://www.dartmouthatlas.org/interactive-apps/medicare-reimbursements/>.



## Overdose Death Statistics Updated

The Bureau of Health Promotion and Epidemiology and Public Health Informatics, in conjunction with the Board of Pharmacy have updated mortality statistic for Kansas resident drug overdose deaths.

Kansas Drug Overdose Death Rates by County

Kansas Drug Overdose Death Rates and Counts by Year

Kansas Drug Overdose Deaths by Age Group

Kansas Drug Overdose Deaths by Sex

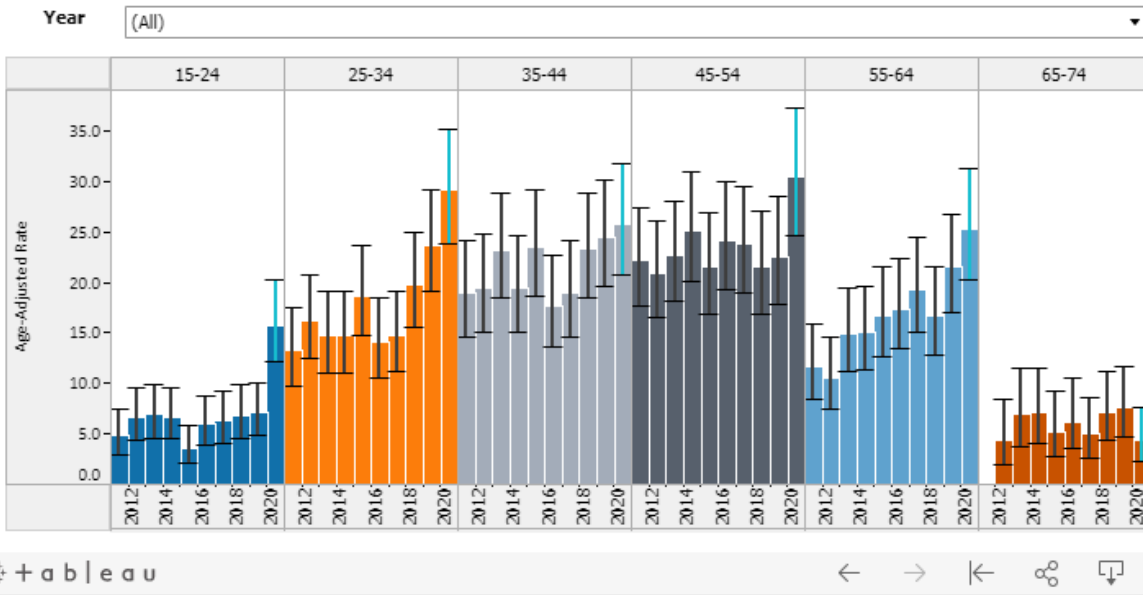
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Total Number of Statewide Fatal Overdoses among Kansas Residents By Drug Category, Age Group and Year

Category: All Drug

		Age Group	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Category	All Drug	15-24	20	29	29	30	16	26	27	29	30	63
		25-34	50	62	56	57	72	54	56	76	90	106
		35-44	65	67	80	67	81	62	66	83	88	92
		45-54	88	81	88	91	78	85	83	71	74	98
		55-64	40	37	53	54	60	64	70	61	80	90
		65-74		9	15	17	13	15	13	19	21	13

Note: If the value in the table is blank, the number of deaths is suppressed per KDHE guidelines.



Nationwide, between 2019 and 2020 there was a 30% increase in drug overdose fatalities with over 90,000 reported. Drug overdose fatalities increased in Kansas by 24%, from 393 to 477.

Of the 477 overdoses in 2020, the KDHE said 183 involved psychostimulants like methamphetamine, 161 involved synthetic opioids like fentanyl and 71 involved prescription opioids. Overdose deaths that involved any prescription or illicit opioid accounted for 52% of all fatal overdoses in 2020. It should be noted that more than one drug can be involved in a fatal overdose, so these numbers are not mutually exclusive.

Fatal drug overdoses were significantly higher in the male population. Males accounted for 63.9% of overdoses and 36.1% were female. Additionally, fatal overdoses were highest among those 25-54 and made up 296 of the overdose deaths or 62%.

Kansas is following similar overdose death trends nationally during the COVID-19 pandemic. Synthetic opioid overdoses, primarily caused by fentanyl, have driven this surge in overdose deaths. This is largely due to increased availability, accessibility and use of illegally manufactured fentanyl.

Fentanyl is a powerful synthetic opioid that is mixed with other drugs, like heroin and cocaine, or used as a standalone drug. Due to its potency, fentanyl-involved overdoses happen fast and can be difficult to reverse. In Kansas, synthetic opioid overdose deaths, mostly caused by fentanyl, increased by 130% from 2019 to 2020.

The data are available at [preventoverdoseks.gov](http://www.preventoverdoseks.gov) site along with several other data dashboards. The mortality dashboard can be accessed at: [http://www.preventoverdoseks.org/mortality\\_data.htm](http://www.preventoverdoseks.org/mortality_data.htm).

*The Public Health Informatics Unit (PHI) of the Kansas Department of Health and Environment's Bureau of Epidemiology and Public Health Informatics produces Kansas Health Statistics Report to inform the public about availability and uses of public health data. Material in this publication may be reproduced without permission; citation as to source, however, is appreciated. Send comments, questions, address changes, and proposed articles to: PHI, 1000 SW Jackson, Suite 130 Topeka, KS, 66612-1354, KDHE.HealthStatistics@ks.gov, or 785-296-1531. Dr. Lee A Norman, Secretary KDHE; BEPHI; Kay Haug, State Registrar, Director, BEPHI; Farah Ahmed, MPH, State Epidemiologist; Greg Crawford, BEPHI, Editor.*