

2022

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Recommended Citation

McMahon, Suzanne and Ahrens, Katherine (2022) "Trends in Cannabis-Related and Opioid-Related Hospitalization Rates in Maine, 2010-2020," *Journal of Maine Medical Center*. Vol. 4 : Iss. 2 , Article 2. Available at: <https://knowledgeconnection.mainehealth.org/jmmc/vol4/iss2/2> <https://doi.org/10.46804/2641-2225.1119>

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Trends in Cannabis-Related and Opioid-Related Hospitalization Rates in Maine, 2010-2020

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ORIGINAL RESEARCH

Trends in Cannabis-Related and Opioid-Related Hospitalization Rates in Maine, 2010-2020

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Introduction: Medical marijuana use became legal in the state of Maine in 1999, and recreational adult-use marijuana became legal in 2016. However, the rates of hospitalization related to marijuana (also known as cannabis) use have not been studied. We estimated trends in cannabis-related hospitalization rates in Maine based on rurality and descriptively compared these trends to opioid-related hospitalization rates during the past decade.

Methods: We obtained de-identified data of inpatient encounters for Maine residents between 2010 and 2020 from MaineHealth Data Organization. We then calculated age-standardized rates of cannabis-related and opioid-related hospitalizations overall and by rural-urban residence using International Classification of Diseases clinical modification (ICD-CM) diagnosis codes. We used Poisson regression models to assess linear trends over time, stratified by ICD-9-CM versus ICD-10-CM timeframes.

Results: Cannabis-related inpatient encounters accounted for 2.3% of all inpatient encounters among Maine residents between 2010 and 2020 and increased 0.3% per quarter between 2016 and 2020. Rates for urban residents were higher than rates for rural residents. Opioid-related inpatient encounters among Maine residents accounted for 3.4% of all inpatient encounters, and rates increased 0.6% per quarter between 2016 and 2020. Rates were higher among urban versus rural residents.

Discussion: We found increasing rates of cannabis-related and opioid-related inpatient encounters in Maine spanning a period that included when recreational adult-use marijuana was legalized, but largely preceded its retail sales in Maine (October 2020).

Conclusions: These trends and other public health impacts of increased access to marijuana use in Maine should continue to be monitored, especially after recreational adult-use marijuana is fully implemented.

Keywords: cannabis, marijuana, opioid, Maine

Medical marijuana use is legal in 36 states in the United States, and 18 states have approved recreational adult-use marijuana.¹ In Maine, medical marijuana use has been legal since 1999, and recreational adult-use marijuana has been legal since 2016, with retail purchase beginning in October 2020.^{2,3} Although other areas have seen increased rates of acute care encounters related to marijuana use after legalization, rates of hospitalizations related to marijuana use have not yet been examined for Maine.⁴⁻⁶

Maine was ranked fourth in the nation for state-level prevalence in past-month marijuana use between 2018 and 2019 (17.6%).⁷ Though more recent prevalence has not been measured, retail sales for recreational adult-use marijuana in Maine were \$29.2 million from October 2020 to June 2021, and for medical marijuana use were \$111.6 million in 2019. Revenue for medical marijuana now ranks third behind the state's top traditional revenue-generating products of lobster and potato.^{8,9} Further, the number of patients with medical certification to buy medical marijuana in Maine increased nearly 50% from 2019 to 2020, now standing at 96 046 patients (Maine's total population is 1.344 million).¹⁰ Although marijuana use is more prevalent in urban areas across the United States, the fastest growing

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cohort of marijuana users are those who are non-tobacco smokers living in rural areas.¹¹ Maine is the state with the largest share of rural residents in the country (61%),¹² which, together with a now robust medical and recreational adult-use marijuana market, may translate to steep increases in the prevalence of marijuana use.

Increased prevalence of marijuana use in Maine through medical use and recreational adult-use could have adverse consequences for public health.¹³ Marijuana (also known as cannabis) is still classified as a Schedule I substance under the Controlled Substances Act, indicating a potential for abuse.¹⁴ Most marijuana products are not approved by the Food and Drug Administration and have not been reviewed and studied for safety, effectiveness, and quality.¹⁵ Findings from a widely-cited report from the National Academies of Sciences, Engineering, and Medicine described the positive and negative health effects of marijuana use. The report included studies linking marijuana use to an increased risk of motor-vehicle accidents and marijuana poisoning, as well as low birth weight among infants exposed in utero.¹⁶⁻¹⁸ The report also stated that marijuana use may harm memory and learning abilities, and frequent marijuana use may lead to the development of schizophrenia and other psychoses.

Regarding the public health effects of marijuana legalization, findings are mixed. One study found legalization of recreational adult-use marijuana had no effect on the overall number of inpatient encounters, length of stay, or cost.⁴ The same study found that after recreational adult-use marijuana was legalized, inpatient encounters for cannabis abuse, motor-vehicle accidents, alcohol abuse, and overdose injury were higher, whereas chronic pain-related inpatient encounters were lower. Other studies found that cannabis-related hospitalizations doubled after recreational adult-use marijuana was legalized.^{5,19} Some evidence suggests that marijuana legalization may reduce opioid-related hospitalizations and deaths, under the hypothesis that opioid users may shift to using marijuana to address their chronic pain.²⁰⁻²² However, others found that marijuana legalization was not associated with reduced rates of death due to opioid overdose, and may have actually increased these rates over time.^{23,24}

With recreational adult-use marijuana now legal in Maine, and medical marijuana now accounting for one of the top crop sales in the state, analyses of the health impacts of increased access to marijuana are warranted. Our objectives were to (1) estimate trends in cannabis-related hospitalization rates in Maine overall and based on rurality, and (2) descriptively compare estimated trends of cannabis-related hospitalization rates to opioid-related hospitalization rates. Our findings may also be relevant to other states in the United States, as more than one-third of all states have legalized recreational adult-use marijuana.²⁵

METHODS

Data source

We used inpatient encounter data from the Maine Health Data Organization (MHDO) as reported by Maine hospitals, including private and psychiatric hospitals. The MHDO is a state agency whose primary purpose is to collect health care information and maintain health databases for public use, including research and policy.²⁶ This project was deemed non-human subjects research by the University of Southern Maine's Institutional Review Board. Per our data-use agreement with MHDO, the presentation of results based on counts of 10 or fewer were suppressed.

Study population

The study population used for this analysis included all inpatient encounters (hereafter "encounters") reported to the MHDO from 2010 to 2020. Encounters included those originating from the emergency department, excluding treat-and-release visits. Any encounters for non-Maine residents were excluded from the analysis.

Measures

To define rural vs urban areas of residence for patients in Maine, the US postal code of each encounter was linked to its corresponding rural-urban commuting area codes (RUCA). A RUCA code classifies census tracts using population density, urbanization, and daily commuting information. Census tracts have been cross-walked to zip codes.²⁷ The most current set of RUCA codes are based on data from the 2010 US decennial census. We used RUCA level 2 codes 1 and 1.1 to define urban Maine and all other RUCA level 2 codes to define rural Maine.²⁸

Diagnoses (principal, admitting, and other) were recorded for each encounter and coded by hospitals in Maine using the International Classification of Diseases, Clinical Modification (ICD-CM) codes.²⁹ On October 1, 2015, the US transitioned from ICD-9 clinical modification (ICD-9-CM) to ICD-10-CM. As encounters in our study included both revisions, ICD-9-CM and ICD-10-CM codes were used to identify encounters as cannabis-related and/or opioid-related. Cannabis-related encounters included ICD-CM codes (in any position) for cannabis use, abuse, dependence, and poisoning, consistent with a previous study of cannabis-related hospitalizations.³⁰ Opioid-related use included ICD-CM codes (in any position) for opioid use, abuse, dependence, and poisoning. These codes were consistent with a definition used by the Agency for Healthcare Research and Quality, except we excluded long-term use of opioid analgesics (Appendix A).³¹ External causes of injury and poisoning codes, which are secondary codes used to provide additional context for injury classification, were not used in this analysis.

Delivery-related hospitalizations (neonatal, maternal) were identified using codes from the Centers for Medicare and Medicaid Services Medicare Severity Diagnosis Related Groups (Appendix A).³²

Statistical analysis

Analyses were performed using SAS for Windows Version 9.4 (Cary, NC, USA). We first tabulated inpatient encounters by year, age group (< 5 years, 10-year intervals up to 84 years, and 85 ≤ years), sex, rurality of residence, and delivery-related hospitalization type. We calculated age-specific rates per 100 000 population by dividing the number of encounters for each age group by population estimates for that age group from the US Census Bureau.³³ We then weighted the age-specific rates to the age distribution of the US population in 2000 through age standardization. This approach allows the rates in Maine to be compared to other states, even if the age distributions of the populations vary.³⁴

We used Poisson regression models to calculate age-standardized rates of cannabis-related and opioid-related hospitalizations, and 95% confidence intervals by quarter. We also used these models to estimate linear trends (on the log scale) in hospitalization rates across the quarters.

We separately estimated trends before and after the switch to ICD-10-CM because of discontinuities noted in measuring opioid-related encounters across the transition.³⁵ We stratified models by rurality of residence, and we assessed differences in linear trends between rural and urban residents using cross-product terms.

COVID-19-related hospitalizations

Encounters with a diagnosis code for COVID-19 (which went into effect in quarter 2 of 2020) were included in our inpatient dataset.³⁶ As this population comprised only 1.2% of the total inpatient encounters in 2020 (n = 1474), we chose to include these hospitalizations in our analysis, even though they represented a novel diagnosis.

RESULTS

Cannabis-related and opioid-related inpatient encounters are tabulated in Table 1 by year, age, sex, rurality of residence, and delivery hospitalization type. Across all study years (2010 through 2020), 35 797 cannabis-related encounters represented 2.3% of all encounters. The number of opioid-related encounters for the same period was 52 751, which represented 3.4% of all encounters.

The highest proportion of cannabis-related encounters was found for age groups 15 to 24 years (10.9% of total encounters) and 25 to 34 years (6.6% of total encounters). The age groups with the highest proportion of opioid-related encounters were older: age groups 25-34 and 35-44, representing 11.1% and 10.1% of total encounters, respectively. The proportion of cannabis-related encounters was higher for males than females (2.9% males vs 1.8% females), as was the proportion of opioid-related encounters (3.6% males vs 3.2% females).

The proportion of cannabis-related encounters was higher among urban residents than rural residents (2.8% urban vs 2.1% rural), as was the proportion of opioid-related encounters (4.1% urban vs 3.1% rural).

The proportion of cannabis-related encounters for neonatal hospitalizations were suppressed as hospitalization counts were less than 10, and the proportion of opioid-related encounters was 0.02% (substance use, abuse, and disorders are not possible among newborns, so these reports are likely an error). For maternal delivery hospitalizations, the proportion of cannabis-related

Table 1. Cannabis-Related and Opioid-Related Inpatient Encounters

	All Encounters, No.	Cannabis-related, No. (%)	Opioid-related, No. (%)
Total	1 551 282	35 797 (2.3)	52 751 (3.4)
Year			
2010	151 743	1 960 (1.3)	4 115 (2.7)
2011	151 482	2 283 (1.5)	4 248 (2.8)
2012	147 377	2 341 (1.6)	4 402 (3.0)
2013	141 017	2 440 (1.7)	3 998 (2.8)
2014	141 366	2 593 (1.8)	3 887 (2.7)
2015	140 866	3 053 (2.2)	4 097 (2.9)
2016	140 438	4 196 (3.0)	5 457 (3.9)
2017	141 203	4 168 (3.0)	5 289 (3.7)
2018	137 355	4 024 (2.9)	5 518 (4.0)
2019	137 503	4 333 (3.2)	5 755 (4.2)
2020	120 932	4 406 (3.6)	5 985 (4.9)
Age, y*			
<5	152 727	22 (0.0)	108 (0.1)
5-14	23 857	464 (1.9)	81 (0.3)
15-24	84 319	9 158 (10.9)	5 225 (6.2)
25-34	143 953	9 457 (6.6)	15 961 (11.1)
35-44	108 238	6 183 (5.7)	10 967 (10.1)
45-54	155 273	5 624 (3.6)	8 493 (5.5)
55-64	228 576	3 619 (1.6)	6 235 (2.7)
65-74	267 560	1 142 (0.4)	3 320 (1.2)
75-84	237 772	113 (0.05)	1 537 (0.6)
85≤	149 003	15 (0.01)	824 (0.6)
Sex†			
Female	848 801	15 462 (1.8)	27 338 (3.2)
Male	702 422	20 331 (2.9)	25 411 (3.6)
Rurality of residence‡			
Urban	495 493	13 646 (2.8)	20 503 (4.1)
Rural	1 055 349	22 126 (2.1)	32 212 (3.1)
Delivery-related hospitalizations			
Neonatal	135 068	suppressed§	22 (0.02)
Maternal	126 471	3 927 (3.1)	4 375 (3.5)

*Missing data for age: all encounters (n = 4), cannabis-related (n = 0), opioid-related (n = 0).

†Missing data for sex: all encounters (n = 59), cannabis-related (n = 4), opioid-related (n = 2).

‡Missing data for rurality of residence: all encounters (n = 440), cannabis-related (n = 25), opioid-related (n = 36).

§Presentation of results based on counts of 10 or fewer were suppressed per data use agreement.

encounters was 3.1%, and the proportion of opioid-related encounters was 3.5%.

Age-standardized rates of annual hospitalization for cannabis-related encounters per 100 000 population are shown in Table 2. Over the past 5 years (after the switch from ICD-9-CM to ICD-10-CM), cannabis-related hospitalization rates in Maine were lowest in 2018 (327.2 per 100 000) and highest in 2020 (354.1 per 100 000). Age-standardized rates of cannabis-related hospitalizations were lower among rural residents. For example, in 2020, the rate among rural residents was 331.7 per 100 000 and among urban residents was 403.8 per 100 000.

Age-standardized rates of hospitalization per 100 000 population for opioid-related encounters are shown in Table 2. Since the ICD-10-CM switch, opioid-related hospitalization rates in Maine were lowest in 2017 (402.3 per 100 000) and highest in 2020 (454.8 per 100 000). In 2020, the opioid-related hospitalization rate among rural residents was lower than among urban residents (434.5 per 100 000 rural vs 503.9 per 100 000 urban).

Age-standardized rates of cannabis-related hospitalizations per 100 000 population increased from quarter 1 of 2010 through quarter 3 of 2015 (from 41.6 to 60.7 per 100 000; slope = 1.6% per quarter, $P < .001$; Figure 1A). After the transition to ICD-10-CM, we found a more attenuated increase for cannabis-related hospitalization rates (from 80.7 to 83.2 per 100 000; slope = 0.3%, $P = .004$; Figure 1A). Rates among urban residents were 46.7 in quarter 1 of 2010 and increased to 64.3 in quarter 3 of 2015 (slope = 1.2%, $P < .001$; Figure 1B). These rates continued to increase from quarter 4 of 2015 through quarter 4 of 2020 (from 81.0 to 94.7 per 100 000, slope = 0.5%, $P = .003$; Figure 1B). Among rural residents, rates increased from 39.2 in quarter 1 of 2010 to 59.2 in quarter 3 of 2015 (slope = 1.9%, $P < .001$; Figure 1C). From quarter 4 of 2015 onwards, rates among rural residents remained flat (from 81.1 to 77.7 per 100 000, slope = 0.2%, $P = .154$; Figure 1C). The slope was significantly greater among rural residents than urban residents before the ICD-10-CM transition ($P < .01$) but was not significantly different after the transition ($P = .118$).

Age-standardized rates of opioid-related hospitalizations per 100 000 population decreased from quarter 1 of 2010 through quarter 3 of 2015

(from 81.5 to 76.3 per 100 000; slope = -0.5%, $P < .001$; Figure 2A). After the transition to ICD-10-CM, rates increased (from 104.3 to 115.4 per 100 000; slope = 0.6%, $P < .001$; Figure 2A). Rates among urban residents decreased from 103.2 in quarter 1 of 2010 to 81.6 in quarter 3 of 2015 (slope = -0.8%, $P < .001$; Figure 2B). After the transition to ICD-10-CM, the opioid rates among urban residents rose from quarter 4 of 2015 through quarter 4 of 2020 (from 111.0 to 135.5 per 100 000; slope = 0.9%, $P < .001$; Figure 2B). Among rural residents, rates stayed flat from 70.2 in quarter 1 of 2010 to 73.7 in quarter 3 of 2015 (slope = -0.2%, $P = .094$; Figure 2C). From quarter 4 of 2015 onwards, rates among rural residents showed a slight increase (from 102.0 to 106.0 per 100 000; slope = 0.5%, $P < .001$; Figure 2C). Compared to rural residents, slopes were significantly lower among urban residents before the ICD-10-CM transition ($P < .01$) and higher after the transition ($P = .026$).

DISCUSSION

Cannabis-related inpatient encounters among Maine residents accounted for 2.3% of all inpatient encounters in Maine between 2010 and 2020. Age-standardized rates of hospitalization for Maine increased approximately 0.3% per quarter during the past 5 years. Whereas rates among urban residents increased approximately 0.5% per quarter during the same period, rates among rural residents showed no significant increase. Rates were higher among urban vs rural residents for all study years.

Opioid-related inpatient encounters among Maine residents were slightly more common than cannabis-related inpatient encounters, accounting for 3.4% of all inpatient encounters. During the past 5 years, opioid-related hospitalization rate increases approximately 0.6% per quarter, with greater rates among urban vs rural residents. As with cannabis-related hospitalizations, opioid-related hospitalization rates were higher among urban residents than rural residents for all study years.

The proportions of hospitalizations related to cannabis and opioid use in Maine were higher than reported for other states, before and after the ICD-CM transition. In the US National Inpatient Sample data from 1998 to 2014, the proportion of hospitalizations with ICD-9-CM diagnosis codes for cannabis abuse or dependence (excluding in-remission codes) increased from 0.4% to 1.6%

Table 2. Age-Standardized* Rates of Cannabis-Related and Opioid-Related Hospitalizations Per 100 000 Population

Year	Cannabis-related						Opioid-related					
	Maine		Maine - Rural		Maine - Urban		Maine		Maine - Rural		Maine - Urban	
	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE
2010	158.6	3.5	143.9	4.0	188.9	6.7	327.1	5.0	285.4	5.6	411.3	9.9
2011	186.5	3.7	170.5	4.3	221.6	7.3	343.5	5.1	301.7	5.8	430.2	10.1
2012	192.0	3.8	173.2	4.4	231.8	7.4	360.3	5.2	308.2	5.8	464.2	10.5
2013	198.6	3.9	180.5	4.5	236.7	7.5	329.5	5.0	288.2	5.6	411.1	9.9
2014	213.0	4.0	203.9	4.7	234.4	7.4	318.0	4.9	283.5	5.6	390.2	9.6
2015†	251.5	4.3	241.1	5.2	274.2	8.0	328.7	5.0	313.0	5.9	364.2	9.3
2016	336.8	5.0	320.1	5.9	373.3	9.4	413.6	5.6	403.2	6.7	438.1	10.2
2017	335.4	5.0	323.7	6.0	362.9	9.2	402.3	5.5	377.2	6.5	454.2	10.3
2018	327.2	5.0	328.3	6.0	330.5	8.8	421.2	5.6	392.5	6.6	482.3	10.6
2019	345.8	5.1	335.2	6.1	373.2	9.3	437.6	5.7	412.7	6.7	498.3	10.8
2020	354.1	5.1	331.7	6.0	403.8	9.7	454.8	5.8	434.5	6.9	503.9	10.9

Abbreviations: SE, standard error.

*Age-standardized to the US population in 2000.

†Quarter 1 to quarter 3 of 2015 coded with ICD-9; quarter 4 of 2015 coded with ICD-10.

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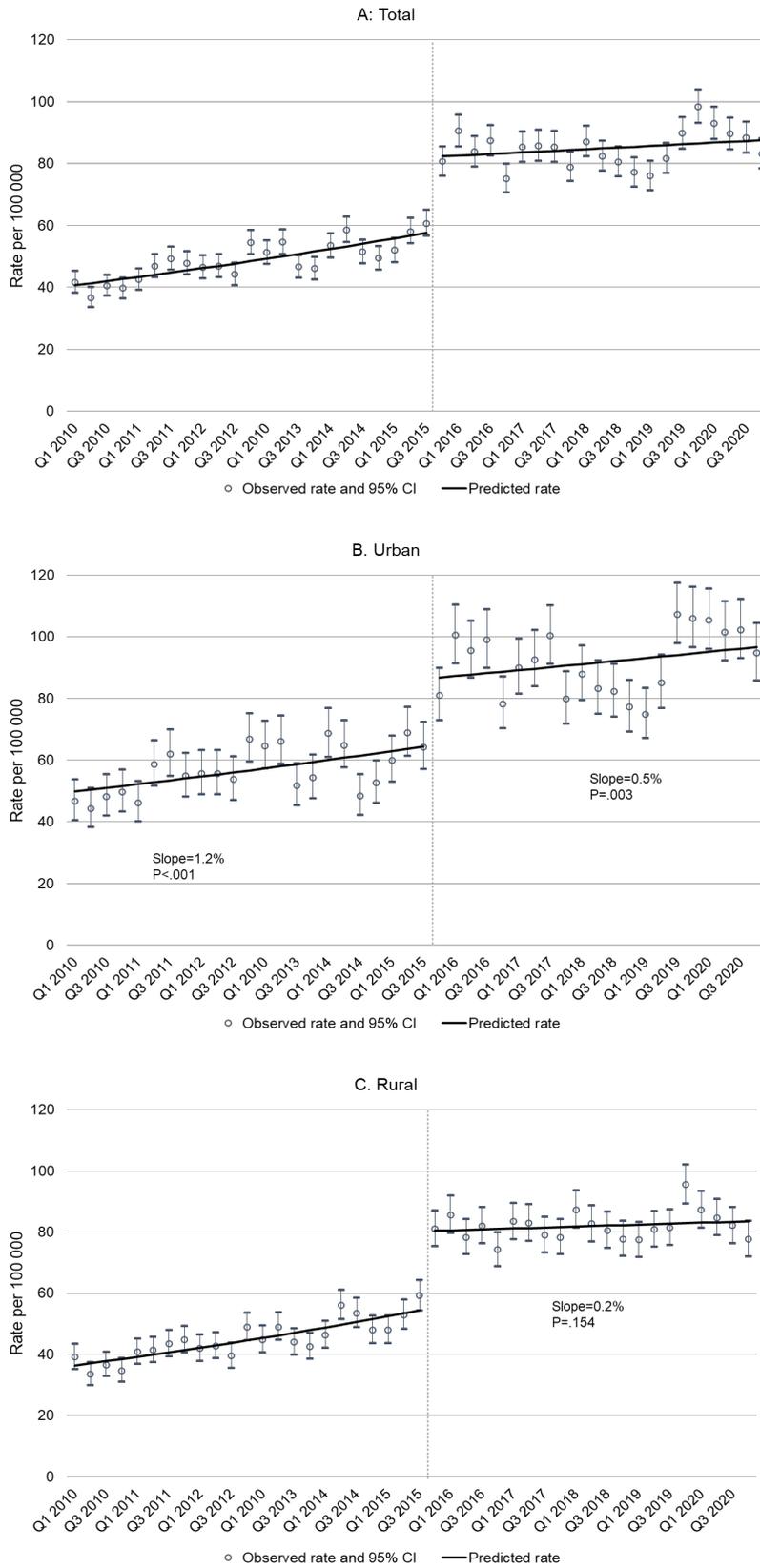


Figure 1. Age-Standardized Rates of Cannabis-Related Hospitalizations Per 100 000 Population. Slope represents the percent increase per quarter (Q).

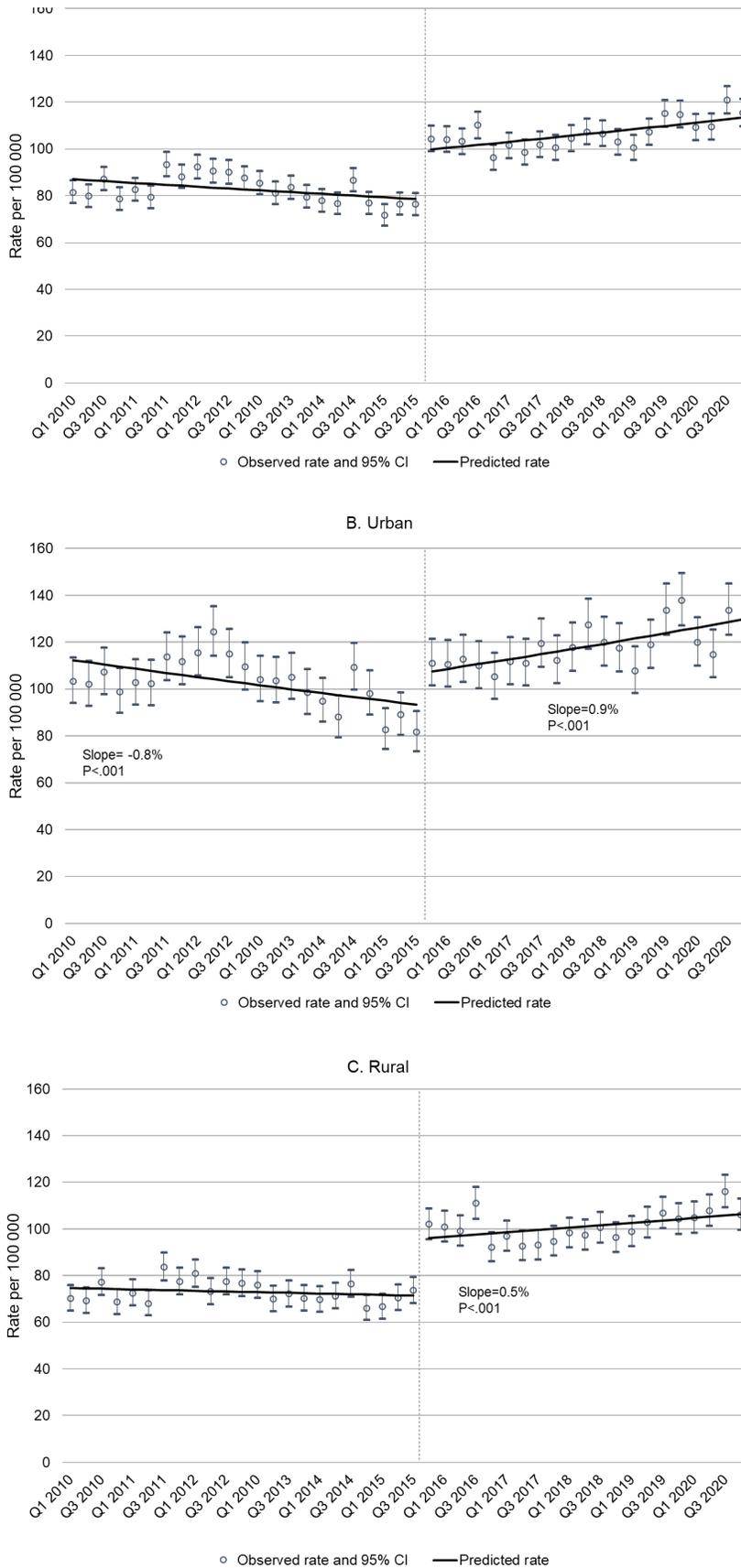


Figure 2. Age-Standardized Rates of Opioid-Related Hospitalizations Per 100 000 Population. Slope represents the percent increase per quarter (Q).

during the study period.³⁷ For comparison, we estimated 1.8% of hospitalizations were related to cannabis use in 2014. Few studies have estimated cannabis-related hospitalizations using ICD-10-CM codes. However, in Mississippi (where medical marijuana was legalized in 2020) diagnosis codes in the top 2 positions were found for 2.8% of hospitalizations in 2019.³⁸ For comparison, we found 3.2% of hospitalizations were cannabis-related (we identified these hospitalizations using codes in any position). Estimates from other states for comparison are lacking.

In our study, we found a doubling of age-standardized rates of cannabis-related hospitalizations in Maine from 158.6 in 2010 to 354.1 in 2020. Some of this increase seemed due to the transition from ICD-9-CM to ICD-10-CM. For example, rates per 100 000 population were 60.7 in quarter 3 vs 80.7 in quarter 4 of 2015. However, we found significant increases in rates before and after the ICD-CM transition. Our study period included hospitalizations after medical marijuana use was legalized (1999) and after recreational adult-use marijuana was legalized (November 2016), but largely before retail purchase of recreational adult-use marijuana began (October 2020). In contrast, previous studies primarily examined changes in hospitalization rates spanning the period recreational adult-use went into effect. For example, a study in Colorado found cannabis-related hospitalizations (identified using diagnosis codes in the top 3 positions) doubled from 274 to 593 per 100 000 hospitalizations between 2000 and 2015, after medical marijuana was legalized (2000) and spanning the period recreational adult-use went into effect (2014).⁶ These data suggest that cannabis-related hospitalization rates might increase even further in Maine as recreational adult-use marijuana takes effect after 2020.

We found increasing rates in cannabis-related hospitalizations among both urban and rural residents, though recent trends (2016 to 2020) among rural residents were flat. These findings are generally consistent with research showing that the prevalence of cannabis use is increasing in both rural and urban areas in the United States.¹¹ No previous study of cannabis-related hospitalization rates around the time of recreational adult-use legalization has reported hospitalization rates by rurality of patient residence. The higher rates of cannabis-related hospitalizations among urban vs

rural residents in Maine in recent years warrants further study.

Regarding opioid-related hospitalizations, we found increasing rates since 2016, particularly for urban residents. Although states that legalized medical marijuana have lower subsequent opioid-related hospitalizations than states that have not yet legalized medical marijuana, both types of states have seen increases in opioid-related hospitalizations over the past 2 decades.²⁰ Trends in opioid-related hospitalizations should continue to be monitored to see if rates after recreational adult-use marijuana goes into effect in Maine are lower than would be expected, as some studies suggest might happen.²⁰⁻²² As with cannabis, higher rates of opioid-related hospitalizations among urban residents deserve further scrutiny.

One of the strengths of our analysis is that we used data on all inpatient encounters in Maine from the state-wide census. We were able to accurately group the encounters into urban and rural residences based on zip code. By age-standardizing hospitalization rates to the 2000 US population, we can compare hospitalization rates in Maine to other states with different age distributions, as well as rates between urban and rural residents in Maine.

The primary limitation of our analysis is the transition from ICD-9-CM to ICD-10-CM coding, which prevented us from modeling trends in hospitalization rates smoothly over the 11-year study. Another limitation is the impact that the COVID-19 pandemic had on health care use during 2020. In the United States, hospitalization admissions unrelated to COVID-19 reached a low of roughly 64% of predicted admissions for April 2020. By the end of 2020, admissions were approximately 80% of predicted admissions.³⁹ In accordance, we observed the total number of inpatient encounters in Maine were lowest in 2020 across all study years. Therefore, the number of cannabis-related and opioid-related inpatient encounters may have been even greater had there not been a pandemic. A final limitation is that our analysis relied on administrative billing codes, which can be imperfect measures of cannabis-related and opioid-related hospitalizations.

As recreational adult-use marijuana is fully implemented in Maine, future research on public health impacts can be informed by findings

from Colorado, one of the first states to legalize recreational adult-use marijuana. A recent study from the Colorado Department of Public Safety found the number of arrests for driving under the influence of marijuana increased by 120% from 2014 to 2020, and the number of marijuana exposure calls to poison control centers increased by 573%.⁴⁰ Another study in Colorado suggests that the 29% increase in vomiting-related encounters in the emergency department from 2013 to 2018 was due to legalization of recreational adult-use marijuana in that state.⁴¹ Therefore, future research in Maine should go beyond hospitalization data to include a broader public health assessment of the potential impacts of recreational adult-use legalization.

CONCLUSIONS

In conclusion, our study showed increasing rates of cannabis-related inpatient encounters in Maine, spanning a period that includes when recreational adult-use marijuana was legalized. Opioid-related hospitalization rates also increased during this period. These trends and other public health impacts of increased access to marijuana use in Maine should continue to be monitored, especially after recreational adult-use marijuana is fully implemented.

Conflicts of interest: None

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Cannabis-related hospitalizations

ICD-9

304.30-304.33, Cannabis dependence

305.20-305.23, Cannabis abuse

ICD-10

F12, Mental and behavioral disorders due to use of cannabinoids

T40.7, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics [hallucinogens] Cannabis (derivatives)

Opioid-related hospitalizations

ICD-9

304.00-304.03, Opioid dependence

304.70-304.73, Combinations of opioid type drug with any other dependence

305.50-305.53, Opioid abuse

965.0, Poisoning by opiates and related narcotics

970.1, Poisoning by opiate antagonists

E850.0, Accidental poisoning by heroin

E850.1, Accidental poisoning by methadone

E850.2, Accidental poisoning by other opiates and related narcotics

E935.0, Heroin causing adverse effects in therapeutic use

E935.1, Methadone causing adverse effects in therapeutic use

E935.2, Other opiates and related narcotics causing adverse effects in therapeutic use

E940.1, Opiate antagonists causing adverse effects in therapeutic use

ICD-10

F11, Mental and behavioral disorders due to use of opioids

T40.0, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics: Opium

T40.1, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics: Heroin

T40.2, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics: Other opioids

T40.3, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics: Methadone

T40.4, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics: Other synthetic narcotics

T40.6, Poisoning by, adverse effect of and underdosing by narcotics and psychodysleptics: Other and unspecified narcotics

COVID-19 hospitalizations

ICD-10

U07.1, 2019-nCoV acute respiratory disease

Z11.52, Encounter for screening for COVID-19

Z20.822, Contact with and (suspected) exposure to COVID-19

Z86.16, Personal history of COVID-19

M35.81, Multisystem inflammatory syndrome (MIC)

M35.89, Other specified systemic involvement of connective tissue

J12.82, Pneumonia due to coronavirus disease

Neonatal hospitalizations

Version 26, 27, 28,29,30,31,32,33,34,35,36,37,37.1,37.2,38

MS-DRG 789,790,791,792,793,794,795

Maternal hospitalizations

Vaginal Delivery

Version 26,27,28,29,30,31,32,33,34,35

MS-DRG 767,768,774,775

Version 36,37,37.1,37.2,38

MS-DRG 768,796,797,798,805,806,807

C-Section

Version 26,27,28,29,30,31,32,33,34,35

MS-DRG 765,766

Version 36,37,37.1,37.2,38

MS-DRG 783,784,785,786,787,788