Factors associated with alcohol-impaired driver crash deaths in the United States, 2018–2022

July 2025

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Contents

ABSTRACT

Objective: In the United States, the proportion of passenger vehicle drivers killed in crashes with blood alcohol concentrations (BACs) at or above 0.08% increased from 28% in 2019 to 30% in 2020 and remained elevated at 31% in 2022. This paper examines alcohol policies, mental health factors, and law enforcement employment reductions as potential explanations for the increase in alcohol-related deaths.

Method: Panel regressions were used to compare two outcomes across states and months (2018–2022): deaths of passenger vehicle drivers with high BACs (≥0.08%) and deaths of passenger vehicle drivers in single-vehicle nighttime crashes. Analyses were conducted for all ages and for ages 16–20. Predictors included state-level indicator variables for to-go and home-delivery alcohol policies, mental health indicators, and law enforcement employment. COVID-19 closures, vehicle miles traveled, and other variables were included as statistical controls.

Results: During the study period, the number of states with policies permitting to-go or home-delivery alcohol purchases approximately doubled, law enforcement employment levels declined, and mental health indicators for depression and suicidality increased. The policy indicator for home delivery of alcohol from bars or restaurants was associated with more high-BAC driver deaths; in all other analyses, alcohol policy indicators were not significant or were associated with fewer high-BAC driver deaths and single-vehicle nighttime driver deaths. In analyses of all ages, higher statewide law enforcement employment was associated with fewer high-BAC driver deaths and fewer single-vehicle nighttime driver deaths. One mental health indicator, percentage of adults reporting past-year suicide plans, was a significant predictor of driver deaths in all analyses.

Conclusions: Alcohol home delivery was associated with high-BAC driver deaths, but the mixed results and limitations of the alcohol policy analysis suggest further research is needed to understand the impact of these policies. Law enforcement employment and adult mental health were two additional independent factors associated with high-BAC driver deaths. Ongoing efforts to address alcohol-impaired driving should consider these factors.

Keywords: alcohol, COVID-19, home delivery policies, to-go drink policies, driver fatalities

INTRODUCTION

In the United States, the proportion of passenger vehicle drivers killed in crashes with blood alcohol concentrations (BACs) at or above 0.08% increased from 28% in 2019 to 30% in 2020 and remained elevated at 31% in 2022 (Insurance Institute for Highway Safety, 2024a). Although the initial stay-at-home orders of the COVID-19 pandemic were related to lower traffic volumes, these reductions were accompanied by increases in risky behaviors, such as speeding, distracted driving, and drinking and driving (Vanlaar et al., 2021). This paper examines three potential explanations for the increase in alcohol-related crash deaths: changes to alcohol policies, mental health factors, and law enforcement employment levels.

Alcohol policies

U.S. states responded to the COVID-19 pandemic with temporary closures of or restrictions on a wide range of businesses, which affected bar and restaurant operations in nearly every state (National Institute of Alcohol Abuse and Alcoholism, 2022b). Around the same time, many states changed policies to permit takeout and/or home delivery of alcoholic beverages from bars and restaurants affected by closures or restrictions. Although several states already permitted takeout or delivery of alcohol from on-premises establishments prior to the pandemic, the number of states with these policies increased substantially in 2020, and some states made the changes permanent (Lemp et al., 2024).

It is plausible that alcohol policy changes may have increased accessibility of alcohol, leading to greater levels of consumption and alcohol-related harm. Adults ages 21 and older who had alcohol delivered to their homes during the pandemic reported consuming more drinks, compared with those who bought alcohol in-person or drank alcohol they already owned prior to COVID-19 (Grossman et al., 2022). However, this study was conducted early in the pandemic and did not specifically examine the impact of policy changes. Access to alcohol by minors is also of particular concern, as restricting sales to minors has been a key factor in reducing alcohol-related crash deaths among young drivers (Hadland et al., 2017).

One study has examined changes in alcohol-impaired driving fatalities in states with varying to-go and home-delivery alcohol policies (Dieterle, 2022). Based on fatality data from 2019 and 2020, the study did not find evidence that the policies were associated with increases in impaired driving. To the contrary, states permitting to-go alcohol saw smaller increases in alcohol-impaired driving fatalities compared with other states, and alcohol home delivery was not associated with changes in alcohol-impaired driving fatalities. However, the author did not control for any additional factors that vary across states and could influence crash rates, such as vehicle miles traveled.

Alcohol consumption trends and risk factors

A systematic review based on 45 studies across multiple countries found an overall trend toward increased alcohol consumption during the COVID-19 pandemic (Roberts et al., 2021). Much of this research is based on self-report surveys of adults early in the pandemic. In the U.S., surveys of adults in May 2020 found that 60% reported increased drinking (Grossman et al., 2020). Studies based on alcohol sales data are consistent with the self-reported increase (Castaldelli-Maia et al., 2021; Morton, 2021; National Institute on Alcohol Abuse and Alcoholism, n. d.). For example, an analysis based on 13 U.S. states showed that during most months from March 2020 through August 2021, there was an increase in the total gallons of ethanol sold per capita compared with the same months in 2017–19 (National Institute on Alcohol Abuse and Alcoholism, n. d.).

Research on adolescent drinking behavior during the pandemic has been mixed. A longitudinal study reported that U.S. families were more permissive about adolescent drinking during the pandemic (Maggs et al., 2021), but data from the Monitoring the Future survey of 12th-grade students did not show an overall change in reported binge drinking, and perceived availability of alcohol among students decreased (Miech et al., 2021). Among college students, drinking patterns depended on living arrangements (White et al., 2020). Those who moved home during the pandemic reduced their drinking frequency, whereas those who remained living with peers or who were already living with parents increased their drinking frequency.

Several studies have identified risk factors associated with increases in alcohol consumption. Stress and depression and anxiety symptoms were common triggers of increased drinking (Dumas et al., 2020; Grossman et al., 2020; Stanton et al., 2020; Tran et al., 2020). Other risk factors included having more children at home and unemployment (Vanderbruggen et al., 2020). There was no particular age group consistently at higher risk for increased alcohol consumption (Roberts et al., 2021). The association between mental health symptoms and alcohol consumption suggests that pandemic-related stressors and declines in mental health could be another contributing factor to the recent increase in alcohol-related crash deaths.

Law enforcement trends

In addition to loosened alcohol policies and pandemic-related stressors, there were substantial changes to law enforcement practices in response to COVID-19 (Ewing & Eavis, 2024; Lum et al., 2022). In a large survey of U.S. police agencies, most reported fewer overall calls for service, reduced arrests for minor offenses, and restrictions on proactive enforcement in the first few months of the pandemic (Lum et al., 2022). The movement to defund police gained momentum after the murder of George Floyd, spurring some U.S. municipalities to temporarily reduce police funding (Fegley & Murtazashvili, 2023). In many U.S. cities, traffic stops declined sharply in 2020 and never returned to pre-pandemic levels (Ewing & Eavis, 2024). Given that well-publicized law enforcement has been shown to be an effective deterrent for alcohol-impaired driving in the past (Bergen et al., 2014; Erke et al., 2009; Fell et al., 2008; Richard et al., 2018), the recent decline in traffic enforcement may be an additional factor contributing to the rise in alcohol-related crash deaths.

Present study

The current study sought to investigate the association of state-level alcohol policy changes, mental health indicators, and law enforcement employment levels with alcohol-impaired driver deaths before and after the COVID-19 pandemic.

METHOD

Data

The study analyzed 2018–2022 data from the Fatality Analysis Reporting System (FARS), a census of motor-vehicle crashes on U.S. public roadways that result in at least one death of a vehicle occupant or nonoccupant within 30 days of the crash. All analyses were based on passenger-vehicle-driver fatalities. Multiple imputation results for missing BACs were used to compute monthly counts of fatally injured drivers with BACs of 0.08% or higher for each state and the District of Columbia (Subramanian, 2002). FARS data were also used to compute monthly counts of unimpaired-driver fatalities and driver fatalities in single-vehicle nighttime crashes. Nighttime was defined as 9 p.m. to 6 a.m.

Data on COVID-19 alcohol policies for 50 states and the District of Columbia were obtained from the Alcohol Policy Information System (National Institute on Alcohol Abuse and Alcoholism, 2022a). This dataset uses multiple sources of information, such as official press releases, government websites, executive orders and proclamations, and state statutes and regulations to determine the dates policies were in effect during the COVID-19 pandemic. When a law was noted in the dataset as present prior to the pandemic, it was reviewed to determine whether the effective date occurred during the study period in 2018 or 2019. The alcohol policies of primary interest pertained to whether the following alcoholic beverage sales were permitted: (a) to-go drinks from bars and/or restaurants and (b) home delivery from bars and/or restaurants. These variables were coded as 1 if permissions were in effect at any time during the month and 0 if not in effect for the month. Two additional variables representing restaurant and bar closures due to COVID-19 were coded as 0 or 1 for use as statistical controls.

Other state law changes during the study period included changes to all-offender alcohol ignition interlock laws, legalized recreational cannabis, and a change to Utah's per se law making it illegal to drive at 0.05% BAC (Insurance Institute for Highway Safety, 2024b). Laws were coded as 1 during the months they were in effect and 0 for other months.

Mental health statistics for 2018–2022 were obtained from the National Survey on Drug Use and Health (NSDUH), which includes state-level estimates based on two years of survey data (Substance Abuse and Mental Health Services Administration, 2024). Two estimates were selected for analysis: the percentage of adults reporting a past-year major depressive episode and the percentage reporting past-year suicide plans. Missing estimates for 2020 were interpolated by computing an average of the 2018–2019 and 2021–2022 estimates. Due to changes in NSDUH methodology from in-person interviews to a multi-method approach (in-person and web-based) after 2020, estimates may not be comparable across years. Therefore, additional analyses used an alternative measure—the number of days of poor mental health in the past 30 days. This information was collected in annual telephone surveys of adults in all U.S. states and the District of Columbia for 2018–2022 as part of the Behavioral Risk Factor Surveillance System (BRFSS) (National Center for Chronic Disease Prevention and Health Promotion, 2024).

Law enforcement employment data and annual population estimates were used to compute state-level annual law enforcement full-time equivalents (FTEs) per 100,000 residents, percent of state population ages 16 to 34, and population density for 2018–2022 (U.S. Census Bureau, 2010, 2021, 2023a, 2023b). Additional data obtained for each state-month from 2018–2022 included total traffic volumes (Federal Highway Administration, 2023) and monthly unemployment rates (U.S. Bureau of Labor Statistics, 2023).

Analyses

Fatality counts of passenger vehicle drivers with BACs of 0.08% or higher were compared across states and months in a panel regression (PANEL procedure in SAS) with two-way fixed effects. The analysis included 3,060 state-months from 2018–2022. The variables of primary interest included two alcohol policies (bar/restaurant to-go drinks and bar/restaurant home delivery), two mental health indicators (percent of adults reporting a past-year major depressive episode and percent of adults reporting past-year suicide plans), and law enforcement employment (FTEs per 100,000 residents). To account for the possibility that states allowing to-go drinks and home delivery had more restrictive

COVID-19 policies or other differences affecting crashes, the following variables were entered into the panel regression as statistical controls: restaurant and bar closures due to COVID-19, vehicle miles traveled, monthly fatality counts of unimpaired passenger vehicle drivers, percent of state population ages 16 to 34, population density, 0.05% BAC per se limit, legalized recreational cannabis, all-offender alcohol ignition interlock law, and monthly unemployment rate.

Because the percentage of drivers involved in fatal crashes who were tested for alcohol declined from 44% in 2018 to 36% in 2022 in the FARS data, a panel regression was conducted using driver deaths in single-vehicle nighttime crashes as a surrogate for alcohol-impaired driver fatalities. This analysis included the same predictor and control variables except for unimpaired driver fatality counts.

All analyses were conducted on passenger-vehicle drivers of all ages and then repeated using a subset of underage drivers ages 16–20. The impact of the alcohol policies on minors was of particular interest due to limited information regarding enforcement of age restrictions for online alcohol sales (Colbert et al., 2021).

Finally, all analyses were repeated using number of days of poor mental health as a substitute for the NSDUH mental health indicators. For analyses involving drivers of all ages, the mean number of poor mental health days was computed for all ages, and for analyses involving drivers ages 16–20, the mean of poor mental health days was computed for ages 18–20.

All statistical tests used $p < 0.05$ as the level of statistical significance.

RESULTS

During the first few months of the pandemic, several states changed their alcohol polices to allow to-go sales or home delivery of alcoholic beverages (Table 1). Before the pandemic, 21 states permitted to-go drinks and 21 permitted home delivery from on-premises establishments, but by May 2020, a majority had these policies in place (41 with to-go policies and 32 with home-delivery policies). During the study period, Utah lowered the BAC per se limit to 0.05%, 10 states legalized use of recreational cannabis, and a few states made changes to alcohol ignition interlock laws.

Descriptive statistics for the remaining variables are shown in Table 2. Both high-BAC (≥0.08%) and unimpaired passenger-vehicle driver deaths declined from 2018 to 2019 and then increased in 2020 and 2021. Travel volume declined substantially in 2020 and returned to pre-pandemic levels by 2022. Across the U.S., the number of law enforcement FTEs per 100,000 declined from about 111 in 2018 to 106 in 2022. U.S. adults who reported a past-year major depressive episode increased from 7.51% in 2018–19 to 8.63% in 2021–22, and the percentage who reported making a suicide plan in the past year increased from 1.36% in 2018–19 to 1.45% in 2021–22. From 2018 to 2022, the number of poor mental health days in the past 30 days increased from 4.05 to 4.94 among all adults and from 5.81 to 7.65 among ages 18–20.

Table 1

Number of states with policies and laws in effect, by selected months

	Jan 2018	Jan 2019	Jan 2020	May 2020	Dec 2020	Jan 2022
Bar and/or restaurant to-go drinks permitted	21	21	21	41	45	42
Bar and/or restaurant home delivery permitted	20	20	21	32	37	38
Restaurant closures in effect	0	0	0	9	0	0
Bar closures in effect	0	0	0	21	3	0
0.05% BAC per se limit law	0	1	1	1	1	1
Legalized recreational cannabis	9	11	12	12	13	19
All-offender alcohol ignition interlock law	28	31	32	32	33	31

Note. The District of Columbia is included in state counts.

Table 2

Descriptive statistics, by year

	2018	2019	2020	2021	2022
High-BAC (≥0.08%) driver deaths	4,957	4,791	5,540	6,191	6,042
Unimpaired driver deaths	11,631	11,384	12,017	13,304	12,680
Driver deaths in single-vehicle nighttime crashes	3,996	3,803	4,362	4,621	4,512
Vehicle miles traveled, in millions	3,225	3,258	2,829	3,157	3,244
Population density (residents/square mile)	170.64	171.54	172.33	174.04	174.31
Percent of population ages 16 to 34	12.83	12.78	12.78	12.74	12.73
Monthly unemployment rate, mean	3.9	3.7	8.1	5.4	3.6
Past-year major-depressive episode (% of adults)	7.51	7.51	8.07	8.63	8.63
Past-year suicide plans (% of adults)	1.36	1.36	1.40	1.45	1.45
Days of poor mental health in past 30 days (all adults)	4.05	4.31	4.27	4.65	4.94
Days of poor mental health in past 30 days (<21)	5.81	6.54	6.06	7.30	7.65
Law enforcement FTEs per 100,000 residents	111.21	111.01	108.51	107.07	106.34

Note. Fatalities are annual totals based on passenger-vehicle drivers. Means represent the U.S. average. FTE = full-time equivalent.

The first panel regression predicting high-BAC passenger-vehicle driver deaths (Table 3) shows the indicator for bar or restaurant to-go drinks was associated with significantly fewer deaths ($p = 0.0008$, while the home delivery indicator was associated with significantly more deaths ($p = 0.03$). Law enforcement FTEs per 100,000 residents was associated with significantly fewer deaths ($p = 0.03$). The percentage of adults reporting past-year major depressive episode and percentage reporting past-year suicide plans were associated with significantly more deaths ($p < 0.04$ and $p < 0.0001$). In an additional panel regression (not shown in table) using number of days of poor mental health in the past 30 days, instead of depressive episodes and suicide plans, each day of poor mental health was associated with 0.9539 high-BAC driver deaths ($SE = 0.3801$, $t = 2.51$, $p = 0.01$), and the estimated effects of other variables changed only slightly.

Table 4 displays the results from a panel regression with a subset of drivers ages 16–20. Among this population, indicators for alcohol policies, law enforcement employment levels, and past-year depressive episodes among adults were not statistically significant. The percentage of adults reporting

past-year suicide plans was a significant predictor of high-BAC passenger-vehicle driver deaths among ages 16–20 ($p = 0.0003$). In an alternate analysis (not shown in table), days of poor mental health among adults under age 21 was not a significant predictor of deaths among ages 16–20 with a coefficient of -0.01408 ($SE = 0.0142$, $t = -0.99$, $p = 0.32$), and the estimated effects of other variables changed only slightly.

Table 3

Panel regression predicting high-BAC (≥0.08%) passenger-vehicle driver crash deaths

Variable	Coefficient	Standard error	*t*	*p*
Bar and/or restaurant to-go drinks permitted	−0.87419	0.2610	−3.35	0.0008
Bar and/or restaurant home delivery permitted	0.640167	0.2999	2.13	0.0329
Law enforcement FTEs per 100,000 residents	−0.07194	0.0340	−2.12	0.0344
Past-year major depressive episode (percent of adults)	0.442854	0.2132	2.08	0.0379
Past-year suicide plans (percent of adults)	5.851462	1.0838	5.40	<0.0001

Note. The model included the following control variables: restaurant closures due to COVID-19, bar closures due to COVID-19, vehicle miles traveled, unimpaired passenger vehicle driver deaths, percent of state population ages 16 to 34, population density, 0.05% BAC per se limit, legalized recreational cannabis, all-offender alcohol ignition interlock law, and monthly unemployment rate. FTE = full-time equivalent.

Table 4

Panel regression predicting high-BAC (≥ 0.08%) passenger-vehicle driver crash deaths, ages 16–20

Variable	Coefficient	Standard error	*t*	*p*
Bar and/or restaurant to-go drinks permitted	−0.09338	0.0524	−1.78	0.0748
Bar and/or restaurant home delivery permitted	0.082539	0.0589	1.40	0.1611
Law enforcement FTEs per 100,000 residents	−0.01027	0.00557	−1.84	0.0653
Past-year major depressive episode (percent of adults)	0.046359	0.0417	1.11	0.2662
Past-year suicide plans (percent of adults)	0.750071	0.2090	3.59	0.0003

Note. The model included the following control variables: restaurant closures due to COVID-19, bar closures due to COVID-19, vehicle miles traveled, unimpaired passenger vehicle driver deaths, percent of state population ages 16 to 34, population density, 0.05% BAC per se limit, legalized recreational cannabis, all-offender alcohol ignition interlock law, and monthly unemployment rate. FTE = full-time equivalent.

Tables 5 and 6 display results of panel regressions using single-vehicle nighttime passenger-vehicle driver deaths for all drivers and drivers ages 16–20. The results are consistent with the results from the first two panel regressions. To-go drink policies and law enforcement FTEs were associated with fewer driver deaths in single-vehicle nighttime crashes in analyses of all ages ($p = 0.01$ and $p = 0.03$, respectively). Past-year suicide plans were associated with higher counts of single-vehicle nighttime driver deaths in analyses with all ages and ages 16–20 ($p < 0.0001$). However, past-year depressive episodes were not associated with significantly more nighttime deaths among all ages or among ages 16–20, nor were days of poor mental health in alternative analyses (not shown in table). The coefficients were 0.280502 for all ages ($SE = 0.2564$, $t = 1.09$, $p = 0.27$) and −0.00917 for ages 16–20 ($SE = 0.0153$, $t = -0.60$, $p = 0.55$). The estimates for other variables in the alternative analyses changed only slightly.

Table 5

Panel regression predicting passenger-vehicle driver deaths in single-vehicle nighttime crashes

Variable	Coefficient	Standard error	*t*	*p*
Bar and/or restaurant to-go drinks permitted	−0.63563	0.2302	−2.76	0.0058
Bar and/or restaurant home delivery permitted	0.369999	0.2663	1.39	0.1648
Law enforcement FTEs per 100,000 residents	−0.04779	0.0226	−2.12	0.0345
Past-year major depressive episode (percent of adults)	−0.01471	0.1551	−0.09	0.9244
Past-year suicide plans (percent of adults)	3.270856	0.7973	4.10	<0.0001

Note. The model included the following control variables: restaurant closures due to COVID-19, bar closures due to COVID-19, vehicle miles traveled, percent of state population ages 16 to 34, population density, 0.05% BAC per se limit, legalized recreational cannabis, all-offender alcohol ignition interlock law, and monthly unemployment rate. FTE = full-time equivalent.

Table 6

Panel regression predicting passenger-vehicle driver deaths in single-vehicle nighttime crashes, ages 16–20

Variable	Coefficient	Standard error	*t*	*p*
Bar and/or restaurant to-go drinks permitted	−0.02803	0.0616	−0.45	0.6493
Bar and/or restaurant home delivery permitted	0.037602	0.0660	0.57	0.5690
Law enforcement FTEs per 100,000 residents	−0.00066	0.00447	−0.15	0.8831
Past-year major depressive episode (percent of adults)	0.028652	0.0452	0.63	0.5260
Past-year suicide plans (percent of adults)	0.880297	0.2207	3.99	<0.0001

Note. The model included the following control variables: restaurant closures due to COVID-19, bar closures due to COVID-19, vehicle miles traveled, percent of state population ages 16 to 34, population density, 0.05% BAC per se limit, legalized recreational cannabis, all-offender alcohol ignition interlock law, and monthly unemployment rate. FTE = full-time equivalent.

DISCUSSION

The current study found mixed results for alcohol policies permitting to-go and home-delivery alcohol sales during 2018–2022. Home delivery of alcohol from bars or restaurants was associated with more high-BAC driver deaths overall, but results were inconclusive among drivers ages 16–20. The to-go alcohol policy indicator either was not associated with any change or was associated with fewer high-BAC driver deaths and single-vehicle nighttime driver deaths. This was true for analyses involving all ages of drivers and drivers ages 16–20. The findings for to-go policies are consistent with an earlier analysis that found smaller increases in alcohol-impaired driving fatalities in states with to-go policies compared with other states (Dieterle, 2022).

There are some limitations to the current alcohol policy analyses. The policy indicators did not account for variations or expansions in policies. For example, states may have had to-go policies that were limited to beer and/or wine sales and then later expanded the policies to include cocktails. These policy variations were not coded in the dataset used for the study. In addition, there is limited research on the effects of the policies on other alcohol-related outcomes (e.g., high-risk drinking at home), and there is limited information about whether the policies increase accessibility of alcohol to minors. A North Carolina study conducted in 2011 found that underage buyers were able to complete 45% of online

purchase attempts without age verification (Williams & Ribisl, 2012). More recently, a survey of Rhode Island young adults found that 12% reported completion of home delivery or to-go purchases without age verification (Noel & Rosenthal, 2023). Although home-delivery and to-go purchases were not a frequent method of obtaining alcohol in this population, the study suggested the need for stronger age verification checks.

Lack of enforcement of impaired driving laws may partially explain the pandemic-era rise in alcohol-impaired crashes. Employment levels for officers declined every year from 2020 to 2022. In analyses involving all ages of drivers, higher statewide law enforcement employment was associated with fewer high-BAC driver deaths and fewer single-vehicle nighttime driver deaths. A study limitation is that alcohol enforcement was not directly measured, as these statistics are not collected in a systematic way across the U.S. However, when the results are considered together with the observed sharp decline in traffic stops reported by Ewing and Eavis (2024) across multiple jurisdictions, it appears that post-pandemic employment levels may not allow for adequate enforcement of impaired driving laws. Enforcement efforts are most effective at deterring impaired driving when the enforcement is regular and well-publicized (Kirley et al., 2023).

Mental health is another factor that changed over the study period, as indicated by increased prevalence of reported depression and suicide plans as well as an increase in the number of days of poor mental health reported by adults. Prior research has shown mental health symptoms to be associated with increased substance use (e.g., Grossman et al., 2020) but has not examined whether the symptoms are linked to increased alcohol-impaired motor vehicle fatalities. In the current study, the percentage of adults reporting past-year suicide plans was a significant predictor in all analyses. A higher percentage was associated with higher counts of high-BAC driver deaths and single-vehicle nighttime driver deaths for drivers of all ages and for drivers ages 16–20. A higher percentage of adults reporting past-year major depressive episodes was associated with more high-BAC driver deaths for drivers of all ages. In additional analyses conducted with an alternative mental health indicator, more days of poor mental health were associated with more high-BAC driver deaths for drivers of all ages. It is important to note

that changes in the NSDUH methodology during the study period might result in overestimating or underestimating the effects of suicide plans and depressive episodes. The NSDUH was previously based on in-person interviews prior to the pandemic but has used a combination of in-person and web-based interviews since 2021. The alternative indicator, reported poor mental health days in the past 30 days, did not have this shortcoming, as BRFSS surveys were already conducted via telephone prior to the pandemic.

Given the relationship between mental health factors and substance use, prevention and treatment services could play a role in helping to reverse the alcohol-impaired driving trend. Interventions that incorporate treatment for substance use and mental health disorders may help reduce recidivism among some individuals who have been convicted of an alcohol-impaired driving offense. For example, individuals in interlock programs were less likely to reoffend after the removal of the interlocks if treatment for alcohol use disorder was required based on interlock performance (Voas et al., 2016). DWI courts are another intervention that show promise for reducing recidivism (Mitchell et al., 2012). These specialized courts provide supervision and treatment for individuals who are at high risk of reoffending and in need of substance-use and mental health treatment. However, the National Treatment Court Resource Center (2025) reports that as of 2024, there were only 295 DWI courts in the United States. Other challenges include underdiagnosis of comorbid mental health conditions among those who are referred for substance-use treatment (McMillan et al., 2008) and low availability of integrated treatment programs that address both addiction and mental health conditions (McGovern et al., 2014; Yule & Kelly, 2019). In addition, although many common mental health disorders are associated with alcohol use, the causal relationships are complex (Puddephatt et al., 2021).

Alcohol-impaired driving continues to be a major problem in the U.S. The current study found that more than 27,000 drivers died in crashes with BACs at or above 0.08% from 2018 to 2022. Although alcohol home delivery was associated with high-BAC driver deaths, the mixed results and limitations of the alcohol policy analysis suggest that further research is needed to determine the impact of these policies. Law enforcement employment and adult mental health were two additional independent factors

associated with high-BAC driver deaths. Trends showed declining law enforcement employment levels and worsening mental health indicators with no sign of improvement as of 2022. Ongoing efforts to address alcohol-impaired driving should consider these factors.

ACKNOWLEDGEMENTS

The author would like to thank Danielle Wolfe for her assistance with reviewing state alcohol policies. This work was supported by the Insurance Institute for Highway Safety.

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