Ignition Interlock Installations

2021 State Data

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2021 IGNITION INTERLOCK INSTALLATIONS: STATE DATA

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EXECUTIVE SUMMARY

- Thirty-four states and Washington, D.C. required all first and repeat alcohol-impaired driving offenders to install an interlock device as of July 1st, 2023.
- Alcohol-impaired driving fatalities increased 14.8% in 2021 (13,384) compared to 2020 (11,654) according to the National Center for Statistics and Analysis (NCSA, 2023).
- Twenty-one states and Washington, D.C. reported 2021 interlock installation data as of December 1st, 2023. This is an increase from 20 states and Washington, D.C. which reported 2020 installation data in 2022.
- Trends in interlock installations in this report are measured using three data points:
  - **Total Installs Number (TIN):** Total number of *newly* installed interlocks between January 1st through to December 31st in a given year.
  - **Total Installs Number all (TINall):** Total number of interlocks in vehicles at any time between January 1st through to December 31st in a given year, including devices that may have been installed prior to January 1st but were still in the vehicle for any period of time during that year following January 1st.
  - **Active Installs Number (AIN):** Total number of interlocks in vehicles of active participants on December 31st of a given year.
- In 2021 the TIN for 19 states and Washington, D.C. was 123,043. A comparison of TIN in 2020 for the same 9 states and Washington, D.C. which also reported this number showed a 2.4% increase in installations from 83,083 to 85,105.
- In 2021 the TINall was 374,918 among 18 states and Washington, D.C. A comparison of TINall in 2020 for the same 11 states and Washington, D.C. which reported this number showed an 80% increase in installations from 175,499 to 315,188.
- In 2021 the AIN for 16 states and Washington, D.C. was 192,386. A comparison of AIN in 2020 the same 10 states and Washington, D.C. which provided this data showed a 13% increase from 130,277 to 147,485.

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INTRODUCTION

Dramatic declines in the percent and number of alcohol-related fatalities were achieved during the 1980s. The measures continued their downward trend during the 1990s, but progress was achieved more slowly and on a smaller scale by comparison (Simpson and Robertson, 2001). With the new millennium, data collected in the Fatality Analysis Reporting System (FARS) demonstrated further decreases of 27% in alcohol-impaired driving deaths in crashes involving drivers with a blood alcohol concentration (BAC) of at least .08 \(the per se limit in the US). These deaths declined from 13,582 in 2005 to 9,943 in 2014.

However, a rising trend has become evident since 2016. In 2021, there were 13,384 alcohol-impaired driving fatalities compared to 11,654 in 2020, representing a 14.8% increase (NCSA, 2023). Moreover, alcohol impaired driving fatalities accounted for 31% of all traffic fatalities, and 9,067 of the 13,384 impaired driving fatalities occurred in crashes involving a driver with a BAC of .15 g/dL or higher (NCSA, 2023).

While a broad range of impaired driving countermeasures exist, alcohol ignition interlock programs are among the most effective and proven tools to prevent this leading factor in road crashes. Interlocks have been shown to reduce recidivism among first and repeat offenders, including those who repeatedly drive after drinking with extremely high-BACs and are resistant to changing this behavior (Willis et al., 2004; Marques et al., 2010; Elder et al., 2011; Vanlaar et al., 2017). Recent evaluations studying the impact of interlocks on crashes have also demonstrated interlock programs embedded in clear legislation can reduce alcohol-related fatalities (Marques et al., 2010; McCartt et al., 2013; Kaufman and Wiebe, 2016; Lucas et al., 2016; Vanlaar et al., 2017; McGinty et al., 2017; Teoh et al., 2018; 2021).

In 2021, Teoh et al. examined differences in three interlock laws by comparing alcohol-impaired passenger vehicle drivers involved in fatal crashes between 2001-2019 in the US. This study compared the effectiveness of laws requiring interlocks for *all* drivers convicted of driving while impaired (DWI)[1]. It revealed all-offender laws were associated with 26% fewer drivers with a BAC of .08 or higher involved in fatal crashes, compared to no law. Repeat-offender laws were associated with a 9% reduction in impaired drivers, compared to no law, and repeat and high-BAC laws were associated with a 20% reduction in impaired drivers in fatal crashes, compared to no law (Teoh et al. 2021).

A 2023 study examined the effects of compliance-based removal interlock legislation comparing interlock data from January 1, 2016 through December 31, 2019 in four states, two with compliance-based removal legislation (Tennessee and Washington) and two without (Arkansas and Iowa). The effectiveness of compliance-based removal was evaluated by examining recidivism.

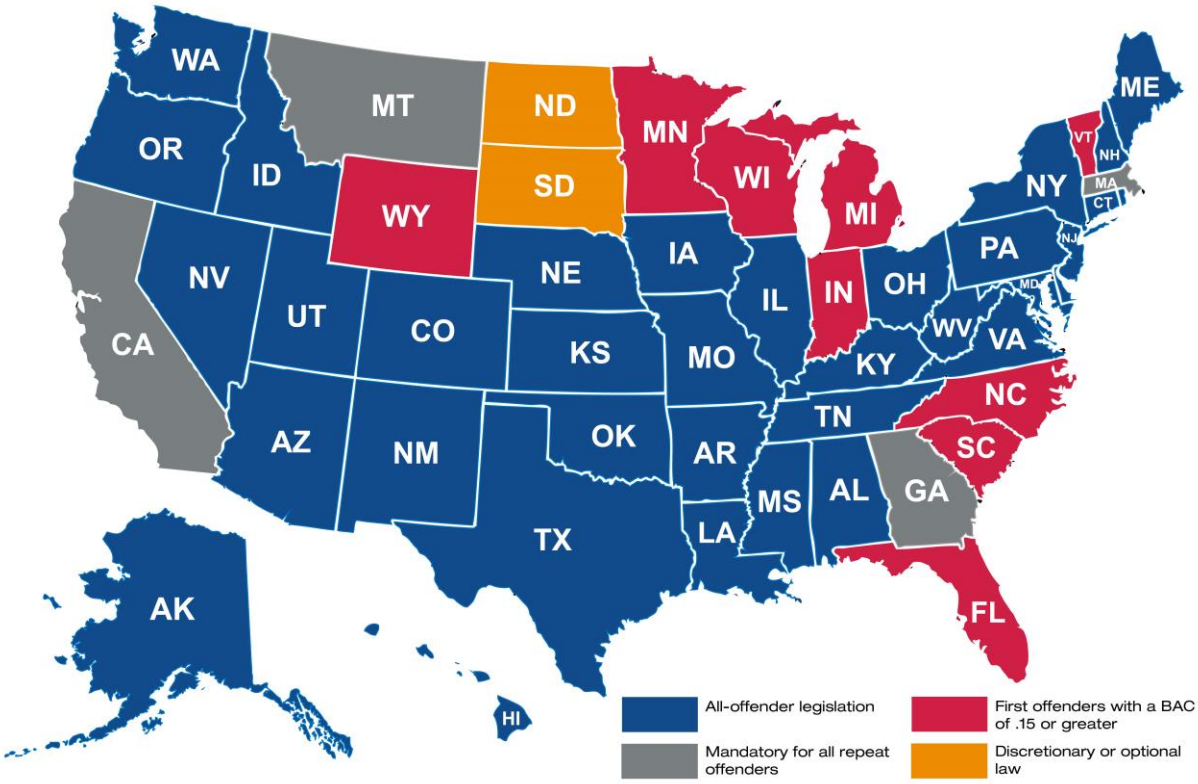
[1] The abbreviation DWI (driving while intoxicated or impaired) is used throughout this report as a convenient descriptive label, even though some states use other terms such as OUI (operating under the influence) or DUI (driving under the influence), and in some states they refer to different levels of severity of the offense. DWI is used not only to maintain consistency throughout the report but also because it is more descriptive of the offense usually associated with drunk drivers.

Results showed in the two states with compliance-based removal legislation, rates of recidivism were low, 1.7% (TN) and 3.7% (WA), compared to the states without compliance-based removal legislation, 5.6% (AR) and 6.0% (IA) (Smith & Cassanova-Powel, 2023).

This interlock installation report includes data from 2021, which was the first full year of the pandemic involving intermittent business closures, stay-at-home orders and social distancing measures throughout the entire year. Interlock data from 2020 which included the first nine months of the pandemic, also previously revealed declines in interlock installations. These occurred due to COVID-19 safety measures including fewer traffic stops, DWI arrests, and speeding citations, as well as reduced high-visibility enforcement actions. Court cases were halted or dramatically slowed. Collectively, these actions may have eroded the deterrent effect of laws (NHTSA, 2022), until jurisdictions could put in place online measures and/or it was deemed safe to resume in-person proceedings with new protective protocols (i.e., masks, social distancing). As restrictions were gradually lifted in early 2021, interlock installations experienced a sharp increase compared to 2020.

The status of laws in 2023 provides important context for the data reported here. An overview of interlock laws as of July, 2023 is summarized below. Of note, South Carolina passed a **bill** going into effect on May 19, 2024 requiring all persons who are convicted of impaired driving, driving with unlawful alcohol concentration and persons with an implied consent violation to install an alcohol ignition interlock device if the suspension is not overturned at an implied consent hearing.

Figure 1: Laws mandating alcohol ignition interlock devices (July 2023)



Source: TIRF's Alcohol Interlock Program Inventory (**aic.tirf.ca/alcohol-interlock-program-inventory**)

In light of very robust evidence that ignition interlocks reduce alcohol-impaired driving, recidivism, and alcohol-related crashes, it is essential this countermeasure is consistently implemented to increase participation rates among all eligible offenders. This will ensure this effective road safety measure is also an efficacious one. As such, monitoring installation rates is the purpose of this data collection effort.

The Traffic Injury Research Foundation USA, Inc. (TIRF USA) in partnership with the Association of Ignition Interlock Program Administrators (AIIPA), and TIRF Canada collected interlock installation data in the US in 2021. Previous installation data were collected in 2014, 2015, 2016, 2018, and 2019 (Casanova Powell et al., 2016, 2017; Robertson et al., 2018, 2020, and 2021; Barrett et al., 2023). These data provide a comprehensive picture of interlock installations across the US and are a useful benchmark for state ignition interlock program administrators and stakeholders concerned with impaired driving to measure interlock usage and growth in interlock programs on an annual

basis. This report contains results from the 2021 data collected from state agencies and compares these data to results from previous years.[2]

[2] Due to the timing of data collection, the 2017 data year is missing. Future versions of this report may include a completed time series, including the missing data year.

METHODS

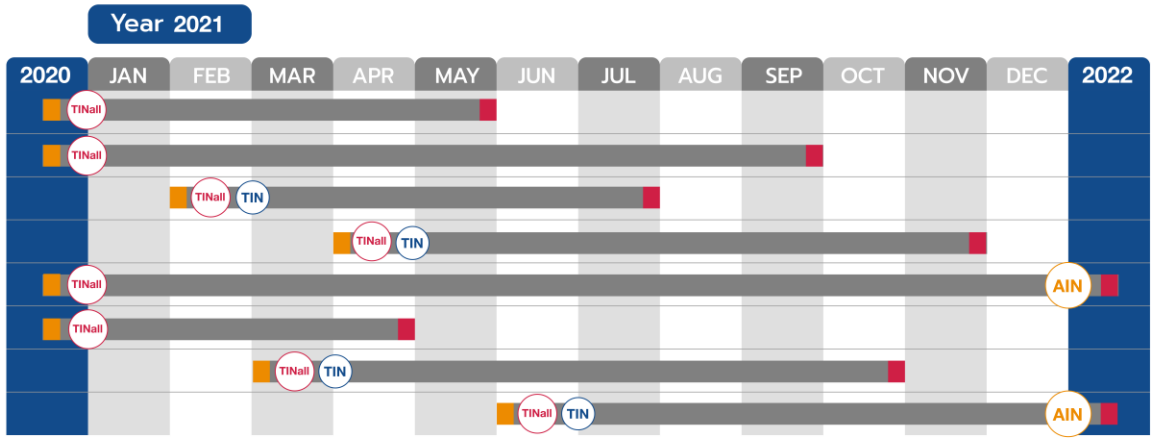
Installation counts

State alcohol ignition interlock program managers in all 50 states and Washington, D.C. were contacted by email between February and June 2023 to request 2021 ignition interlock data. Three measures of installation were requested. Each indicator is useful to measure growth as well as to gauge workload associated with administering these programs. Specific definitions of these measures are below:

- **Total Installs Number (TIN):** Total number of *newly* installed interlocks between January 1st through to December 31st in a given year.
- **Total Installs Number all (TINall):** Total number of interlocks in vehicles at any time between January 1st through to December 31st in a given year, including devices that may have been installed prior to January 1st but were still in the vehicle for any period of time during that year following January 1st.
- **Active Installs Number (AIN):** Total number of interlocks in vehicles of active participants on December 31st of a given year.

Figure 2 contains eight separate hypothetical interlock device installations to illustrate these definitions for 2021. In this example, all installs (TINall) in 2021 equal eight, whereas there are four new installs (TIN), and two installs on December 31st, 2021 (AIN).

Figure 2: Illustration of 2021 installation measures



At its core, growth in the interlock industry is the result of two key factors: first, an increased number of installations, and second, longer periods of installed devices. The former grows when installation rates among eligible offenders increase or as the definition of eligible offenders is expanded. The latter grows when devices are installed for longer periods. The first mechanism is measured by TIN (i.e., new installations in a given year). The second mechanism is measured predominantly by TINall (i.e., all installed devices in a given year, including those installed in a previous year). It is possible to have a smaller TIN in a given year (fewer new installations) but an increasing TINall (due to longer installation periods), or vice versa.

AIN is defined because of its face validity (meaning it is easy to understand given it reports 'on this day in this year, this number of devices were installed'). However, it does not capture that interlocks are not just installed but also removed, and serviced over a period of time, which varies. Consequently, AIN may be more volatile from one year to the next; nevertheless, over time, it is expected to reflect general trends also seen in TIN and TINall.

Installation rates

To place the interlock installation counts in context, and to measure installation rates, other information about legislation and program features was gathered. Rates were calculated by comparing the TIN with DWI arrest and conviction data. Where available, data were examined for trends over time.

Installation rates were calculated by dividing the TIN by different denominators and expressed as a percentage. These denominators included DWI arrests, DWI convictions, and incoming DWI cases.

To calculate denominators, information about the total number of DWI arrests and convictions for the year 2021 was gathered via TIRF's online data collection tool and state annual reports available online through state Highway Safety Offices.

Data were also collected from the National Center for State Courts (NCSC) on misdemeanor and felony impaired driving cases for the past five years in 27 states.[3] For the purpose of national reporting, the NCSC requests states report a breakdown of their data by case categories. Data are collected from state court administrator offices and include data from trial courts. The NCSC uses the following definitions:

- **Case:** Generally initiated by a complaint. In two-tiered court systems, proceedings at the second step of a felony case are usually initiated by an information request or indictment.
- **Incoming cases:** Cases added to the court's caseload during the reporting period and include New Filing, Reopened, and Reactivated cases.

Alchemer online software (formerly SurveyGizmo; **www.alchemer.com**) was used to capture the data in combination with Microsoft Excel to calculate indicators and create tables and figures.

[3] Alaska, Alabama, Arkansas, Arizona, Colorado, Connecticut, Hawaii, Idaho, Iowa, Indiana, Kansas, Kentucky, Massachusetts, Maryland, Maine, Missouri, Minnesota, North Carolina, New Hampshire, New Mexico, Nevada, Pennsylvania, Rhode Island, Utah, Vermont, Washington, Wisconsin

RESULTS

Data for 2021 were received from 21 states[4] and the District of Columbia as of December 1st, 2023. Some states did not possess complete information needed to calculate each of the three indicators (TIN, TINall, AIN) while a few others could only provide information about program features and arrest/conviction data. Of these states, 15 states[5] and the District of Columbia also provided some or all of the data requested in 2020.

Number of new, total, & active installed interlocks

The TINall in 18 states and Washington, D.C. was 374,918 in 2021. This number includes all interlocks installed in a vehicle at any time throughout the whole year, including those installed in a previous year (Table 1). A comparison with the TINall among the same 11 states and Washington, D.C. providing TINall data for both 2020 (184,418) and 2021 (374,918) showed an 80% increase.

The TIN was 123,043 according to data provided by Washington, D.C. and 19 states in 2021. A comparison of TIN among the same nine states and Washington, D.C. providing TIN data for both 2020 (83,083) and 2021 (85,105) indicated a 2.4% increase in installations.

The AIN was 192,386 on December 31st in 16 states and Washington, D.C in 2021. A comparison of AIN in the same 10 states and Washington, D.C providing AIN data for both 2020 (130,277) and 2021 (147,485) showed a 13% increase.

Table 1: State-reported installation data

State	TINall			TIN			AIN December 31st		
	2020	2021	% change	2020	2021	% change	2020	2021	% change
Arizona		14,044			18,788				
Arkansas	8,124	23,031	183%	5,518	8,033	46%	7,717	14,013	82%
Colorado	59,496	57,900	-3%	14,059	13,146	-6%	49,456	48,827	-1%
District of Columbia	19	12	-37%	2	9	350%	3	5	67%
Florida	19,618	15,873	-19%	10,600	12,314	16%	15,837	15,873	0%
Iowa	12,312	12,350	0%	5,543	6,569	19%	1,814	7,219	298%
Kansas		7,500		6,778					
Minnesota		18,810			10,480		10,547	11,990	14%
Montana					80				
Nevada		966			431			966	
New Mexico	10,192	128,156	1,157%		9,239		10,192	10,631	4%

[4] Arizona, Arkansas, Colorado, Florida, Iowa, Kansas, Minnesota, Montana, Nevada, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Tennessee, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming

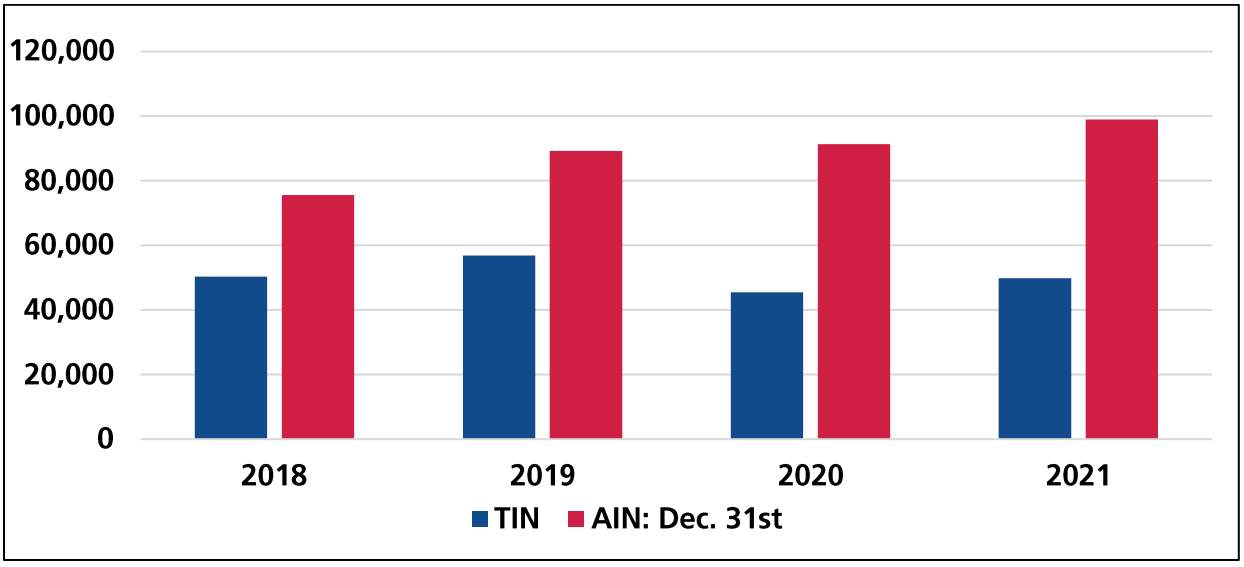
[5] Arkansas, Colorado, Florida, Iowa, Minnesota, New Mexico, North Carolina, Oregon, Pennsylvania, Tennessee, Vermont, Virginia, Washington, and Wyoming

State	TINall			TIN			AIN December 31st		
	2020	2021	% change	2020	2021	% change	2020	2021	% change
New York		8,280			4,183				
North Carolina	13,715	9,098	-34%	6,524					
Oregon	6,919			6,469	7,231	12%	6,424	6,781	6%
Pennsylvania	20,919	23,224	11%	9,701	9,742	0%	11,990	13,038	9%
Tennessee				7,546	8,618	14%	9,794	11,126	14%
Utah		3,859			1,981			2,239	
Vermont	468	101	-78%		101			105	
Virginia	8,000	11,889	49%	7,300	7,889	7%	6,503	7,982	23%
Washington	22,004	32,205	46%	16,265	11,554	-29%		20,629	
Wisconsin		20,315			10,451			19,516	
Wyoming	632	1,349	113%		992			1,466	
Totals	**189,964**	**374,918**	**N/A**	**96,385**	**123,043**	**N/A**	**130,277**	**192,386**	**N/A**
Totals based on states who reported in both 2020 and 2021									
Totals	**175,499**	**315,188**	**80%**	**83,083**	**85,105**	**2.4%**	**130,277**	**147,485**	**13%**

Growth in interlock installations was evident in most states and the District of Columbia in 2021. This may be partially due to the decline in installations in 2020 which was a result of the COVID-19 pandemic.

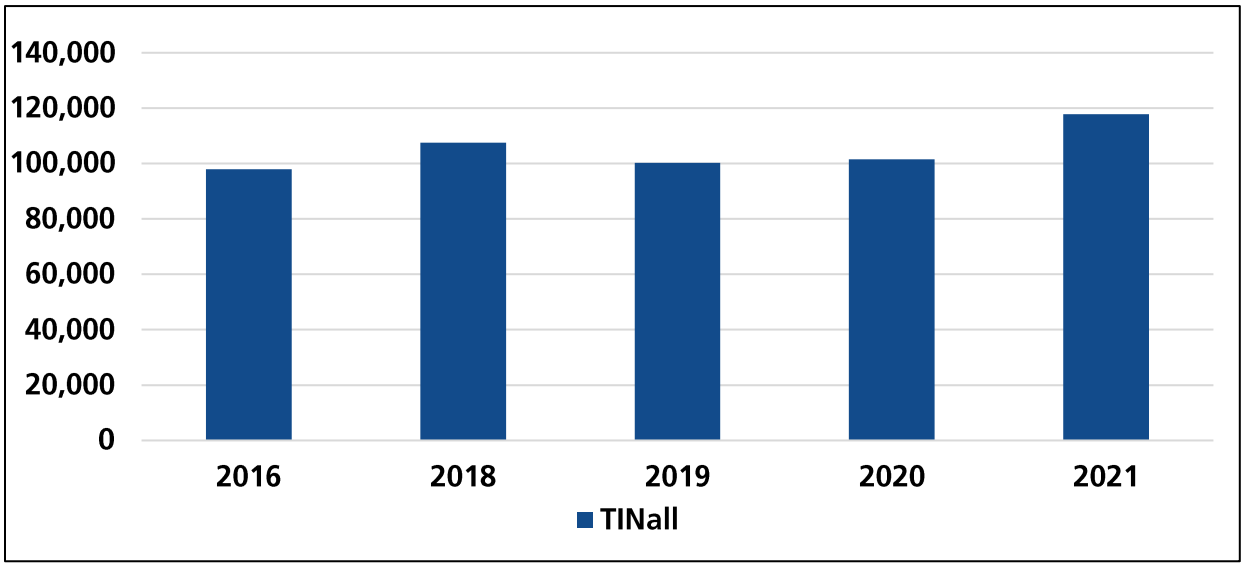
Finally, five states provided data for 2018, 2019, 2020, and 2021 (Figure 3). These five states (Arkansas, Colorado, Florida, Iowa, and Pennsylvania) were used to compare trends in TIN and AIN. Since 2018, there has been a 31% increase in AIN in these five states from 75,595 (2018) to 98,970 (2021). However, TIN decreased 1% in these jurisdictions from 50,929 (2018) to 49,804 (2021).

Figure 3: TIN and AIN reported in five states in 2018-2021



In addition, five states (Arkansas, Colorado, Iowa, Pennsylvania, and Wyoming) provided TINall data for 2016, 2018, 2019, 2020, and 2021. A trend analysis revealed that since 2016, there has been a 20% increase in TINall from 97,933 (2016) to 117,854 (2021).

Figure 4: TINall reported in five states, 2016; 2018-2021



Data were examined from 2019 and 2021 to explore trends in the absence of 2020 to eliminate a year with unprecedented conditions influencing impaired driving programs across the U.S. Thirteen states and Washington, D.C. reported data for both the 2019 and 2021 data years. Results in Table 2 show TINall increased 4% from 178,644 in 2019 to 186,400 in 2020, and AIN increased 18% from 115,836 in 2019 to 136,934 in 2020. However, the TIN decreased 5% from 75,178 (2019) to 71,206 (2021). This may be due to the fact that there were fewer new interlock laws passed in 2020 and 2021, specifically laws to expand eligibility. With fewer laws mandating installations and sanctioning drivers who do not install, less installations will occur.

Table 2: State reported installation data, 2019 & 2021

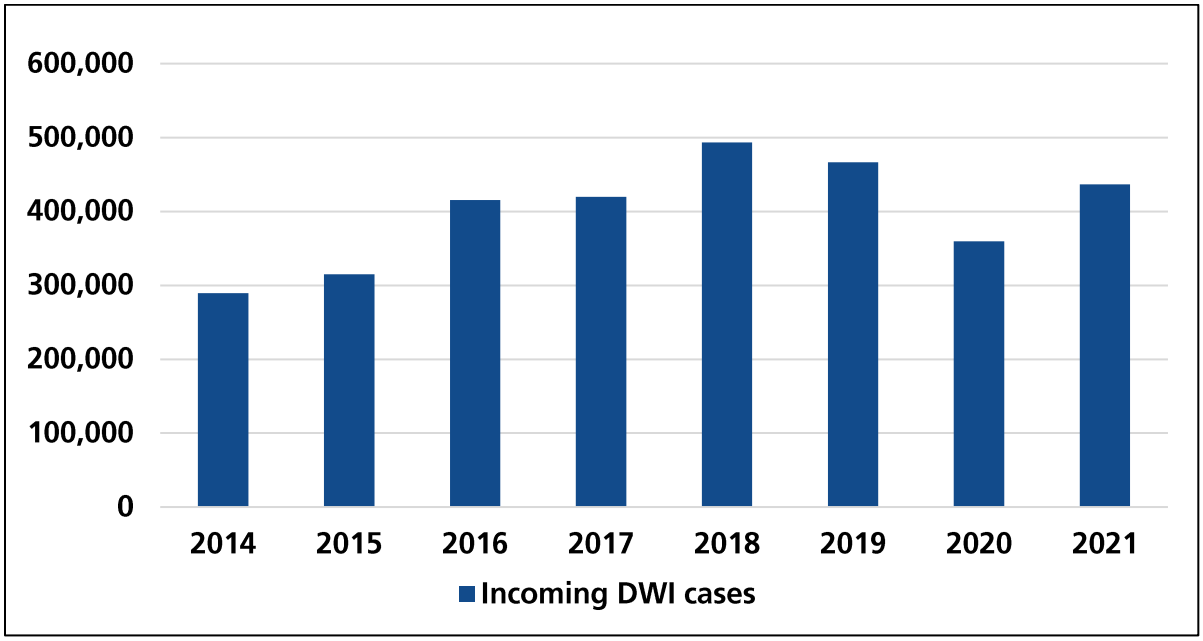
State	TINall			TIN			AIN December 31st		
	2019	2021	% change	2019	2021	% change	2019	2021	% change
Arkansas	12,503	23,031	84%	8,996	8,033	-11%	8,113	14,013	73%
Colorado	62,591	57,900	-7%	17,754	13,146	-26%	51,774	48,827	-6%
District of Columbia	65	12	-82%	17	9	-47%		5	
Florida	22,749	15,873	-30%	12,762	12,314	-4%	12,911	15,873	23%
Iowa	13,311	12,350	-7%	7,310	6,569	-10%	7,297	7,219	-1%
Kansas	9,067	7,500	-17%	7,474			10,504		
Montana				195	80	-59%			
North Carolina	10,949	9,098	-17%	10,862					

State	TINall			TIN			AIN December 31st		
	2019	2021	% change	2019	2021	% change	2019	2021	% change
Oregon					7,231		7,991	6,781	-15%
Pennsylvania	10,989	23,224	111%	9,989	9,742	-2%	9,141	13,038	43%
Utah	3,551	3,859	9%	1,693	1,981		2,052	2,239	9%
Virginia	17,757	11,889	-33%	9,987	7,889	-21%	7,725	7,982	3%
Wisconsin	14,291	20,315	42%	6,181	10,451	69%	8,096	19,516	141%
Wyoming	841	1,349	60%	294	992	237%	736	1,466	96%
Totals	**178,664**	**186,400**	**4%**	**75,178**	**71,206**	**-5%**	**115,836**	**136,934**	**18%**

Impaired driving felony and misdemeanors

Data from 27 states provided by NCSC revealed a steady increase in incoming DWI cases from 289,583 in 2014 to 436,847 in 2021 (Figure 4). This represents an overall 51% increase since 2014. There was a 22% increase from 2020 (359,524) to 2021 (436,847). There was a 23% decrease in incoming DWI cases from 466,643 in 2019 to 359,524 in 2020, likely due to shifts in traffic enforcement during the pandemic with stay-at-home orders. Since then, incoming DWI cases have not yet reached pre-pandemic levels as there remains a 6% decrease in incoming DWI cases from 2019 (466,643) to 2021 (436,847). This may also be a result of the "Defund the Police" movement in addition to mass retirement following the pandemic. Further, across the U.S., law enforcement is experiencing a drastic decrease in the number of recruits, ranging from a 27% to 60% decrease, depending on the jurisdiction (Police Executive Research Forum, 2023).

Figure 5: Incoming DWI cases, 2014-2021



Source: National Center for State Courts

Interlock installation rate among populations of eligible offenders

A valid way to measure growth (i.e., how many impaired drivers actually install the device as required) in interlock programs within a state is to estimate the percentage of offenders who installed an interlock among those who were eligible or required to do so.

The eligible population of offenders required to install an interlock may be either those offenders arrested for DWI (if an administrative license suspension or revocation requires an interlock) or those convicted of DWI, depending on legislation in each state. For the latter, this may be further dependent upon categories of offenders requiring an interlock. Furthermore, some states may include administrative per se cases. However, some offenders may be deemed ineligible because of other driving or non-driving violations resulting in license suspension; for example, outstanding child support payments unrelated to DWI.

The number of DWI convictions and TIN for 2021 were available in six states (Figure 6). Given each of these six states have all-offender interlock installation legislation, the percentage of TIN per DWI conviction would be 100% if every convicted impaired driver installed an interlock device. However, only one state, Oregon, achieved this with a 112% TIN per DWI conviction. It is possible this number exceeds 100% due to increased efforts by Oregon State Police to contact previously convicted impaired drivers who have not yet installed an interlock device with an incentive to install (i.e., reduced installation cost). Oregon State Police sent letters to all impaired drivers who had not yet installed the device in an attempt to increase compliance. Combined, these six states have installed 64% TIN per DWI convictions. This gap between installations and convictions emphasizes there is room for growth within interlock programs, specifically in terms of driver compliance.

Figure 6: DWI convictions and TIN, 2021

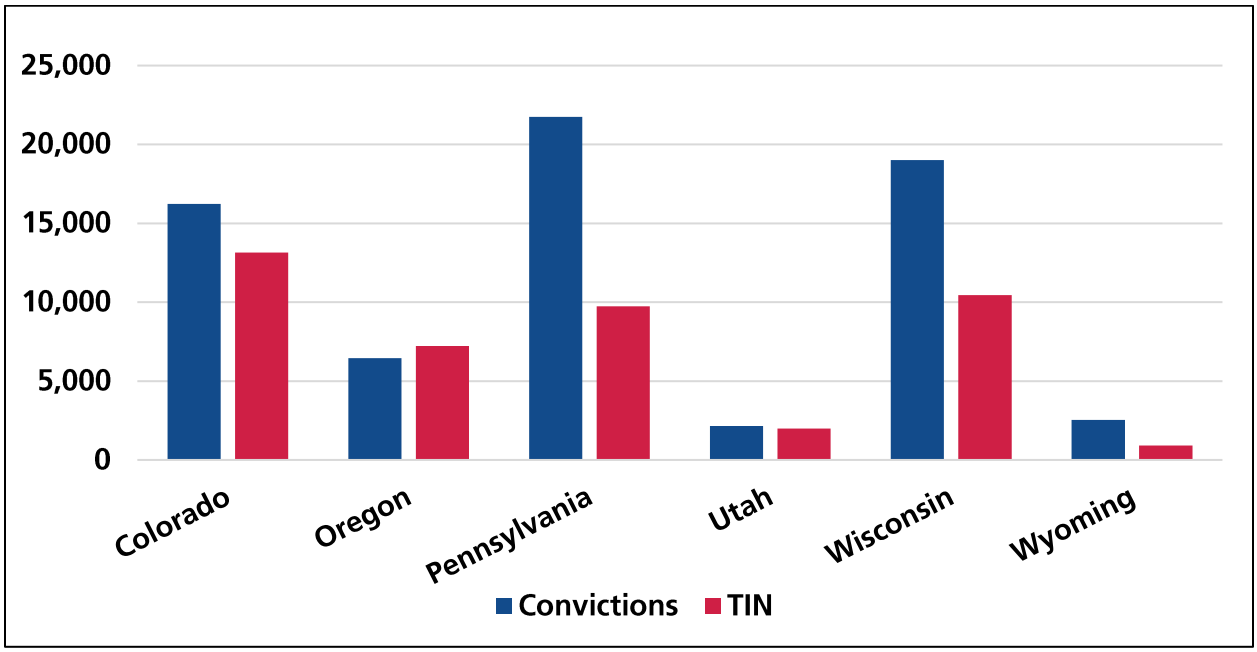


Table 3 presents percentages of TIN per DWI convictions and per incoming DWI cases in 2021.

Ideally there would be nearly a 100% installation rate. However, as presented below (Table 3), the installation rate ranges from 39% (%TIN per DWI convictions in Wyoming) to 100% (%TIN per DWI convictions in Oregon).

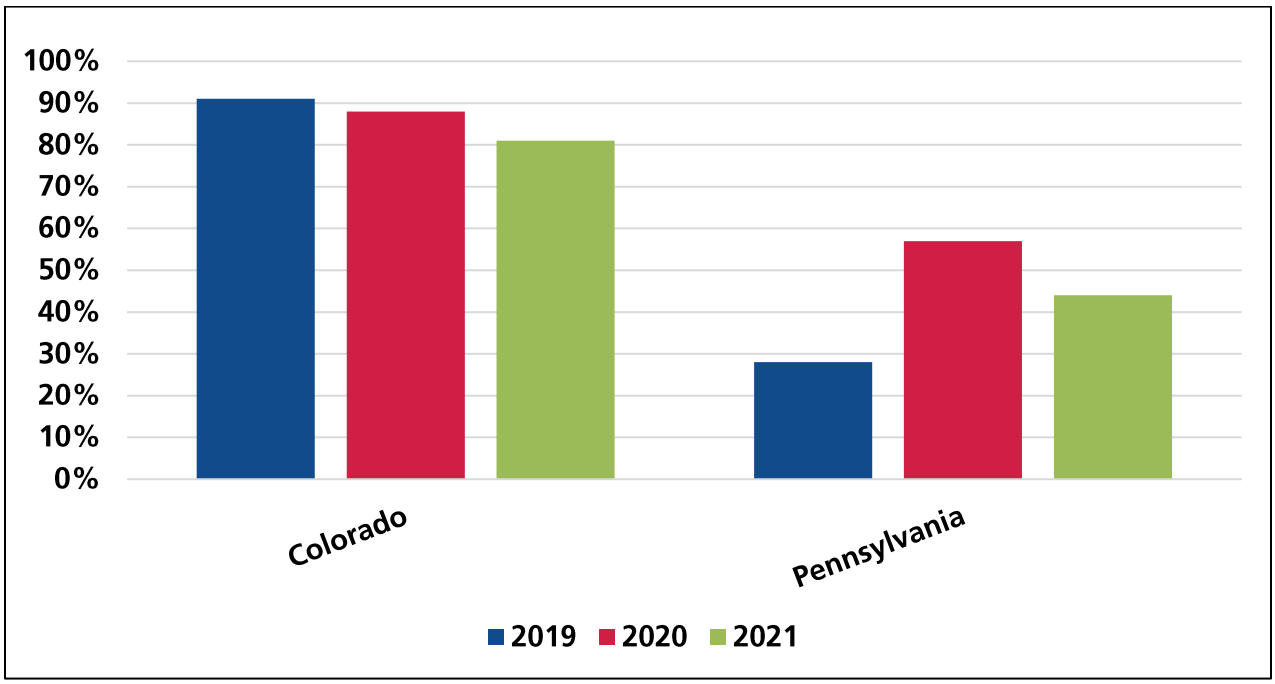
Table 3: 2021 percentage of interlocks installed (TIN) per DWI convictions & per incoming DWI cases

State	2021 Convictions	2021 Incoming DWI Cases	%TIN per DWI convictions	%TIN per incoming DWI cases
Colorado	16,234	16,444	81%	80%
Oregon	6,449	9,687	100%	74%
Pennsylvania	21,755	107,884	44%	9%
Utah	2,154	18,642	92%	10%
Wisconsin	18,999	7,490	55%	100%
Wyoming	6,449	9,687	39%	15%
Totals	68,132	166,793	**N/A**	**N/A**

[1] Calculation of total %TIN per DWI arrests, %TIN per DWI convictions and %TIN per incoming DWI cases capped the TIN value at the number of DWI convictions and incoming cases in case TIN values were higher than convictions or incoming cases (effectively reducing the % for Oregon and Wisconsin to 100%).

The TIN per DWI convictions was available in two states for the years 2019 to 2021 (Figure 7). Colorado has experienced a slow decline in new installations per DWI convictions, whereas Pennsylvania saw an increase followed by a decrease in 2021.

Figure 7: TIN per DWI convictions, 2019-2021



CONCLUSIONS

Alcohol interlock programs have been proven to reduce the number of impaired drivers, collisions, and fatalities, in addition to reducing recidivism among both first and repeat impaired drivers. A large body research is available to demonstrate these declines when devices are utilized in tandem with well-thought-out laws and structured programs. Their effectiveness as a countermeasure to make roads safer is abundantly plain. However, more market penetration is necessary for them to realize their full potential in lowering recidivism from driving while intoxicated. The goal of this yearly data collection is to track the number of installations and installation rates in relation to arrests and convictions, and to share the results which can help guide the development of interlock programs.

The 2021 state data shows growth compared to 2020:

- There was a 2.4% increase in TIN according to data from 9 states and Washington, D.C. (from 83,083 interlocks in 2020 to 85,105 interlocks in 2021).
- There was an 80% increase in TINall according to data from 11 states and Washington, D.C. (from 175,499 interlocks in 2020 to 315,188 interlocks in 2021).
- There was a 13% increase in AIN according to data from 16 states and Washington, D.C. (from 130,277 in 2020 to 147,485 in 2021).

However, there remains room to grow based on pre-pandemic data. Ultimately, despite increases in interlock installations since 2014, the data continue to confirm a relatively low installation rate among all eligible offenders, providing opportunities among states for increased driver compliance strategies.

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