

NFLIS

NATIONAL FORENSIC LABORATORY INFORMATION SYSTEM

NFLIS-DRUG 2018 ANNUAL REPORT

DRUG



U.S. DEPARTMENT OF JUSTICE
DRUG ENFORCEMENT ADMINISTRATION
DIVERSION CONTROL DIVISION

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Cover photograph:
Glass vials for liquid samples.

Highlights

- From January 1, 2018, through December 31, 2018, an estimated 933,390 distinct drug cases were submitted to State and local laboratories in the United States and analyzed by March 31, 2019. From these cases, an estimated 1,599,428 drug reports were identified.
- Methamphetamine was the most frequently identified drug (386,272 reports) in 2018, followed by cannabis/THC (344,489 reports), cocaine (228,924 reports), and heroin (140,818 reports).
- Nationally, fentanyl reports increased noticeably in 2006, then remained steady until dramatic increases occurred from 2014 through 2018 ($p < .05$).^{*} Alprazolam reports showed an overall increase from 2003 to 2010, followed by a decrease in reports from 2011 to 2013; reports significantly increased from 2014 to 2016, followed by decreases through 2018. Oxycodone reports showed steady increases from 2001 to 2004 and more dramatic increases from 2006 to 2010, then a steady decline through 2018. Buprenorphine reports showed an S-shaped trend, with a steady increase from 2006 through 2010, then a more significant increase from 2013 to 2018. Hydrocodone reports had dramatic increases from 2001 to 2010, followed by steady decreases through 2018. Amphetamine reports were steady from 2001 through 2004, followed by a decrease in 2005, then steadily increased from 2007 through 2018.
- Between 2017 and 2018, reports of fentanyl and buprenorphine increased significantly ($p < .05$), while reports of alprazolam, oxycodone, and hydrocodone decreased significantly.
- Regionally for fentanyl, the West region showed a gradual increase from 2001 to 2014, followed by considerable increases from 2015 through 2018, while reports in the Midwest, Northeast, and South regions showed significant increases beginning in 2014. For alprazolam, the West region showed a linear-increasing trend, while the Midwest, Northeast, and South regions had increasing curved trend lines, with increases in reports from 2003 to 2010 and from 2014 through 2016. For oxycodone, all four regions showed similar trend lines, with the highest number of reports occurring in either 2010 or 2011. For buprenorphine, all regions except the Northeast region had S-shaped trends similar to the national trend; the increase in reports slowed for all regions from 2011 to 2013, then continued to increase through 2018, except in the South region. For hydrocodone, all regions showed significant increases from 2001 through at least 2009, followed by steady decreases through 2018. For amphetamine, the Midwest, Northeast, and South regions showed a steady increase in reports from 2007 through 2015 and 2016, while the West region showed more variability in reports from 2001 through 2006, followed by a flatter trend line through 2018.
- In 2018, fentanyl accounted for 45% of narcotic analgesic reports. Alprazolam accounted for 58% of the reports of identified tranquilizers and depressants. Among identified synthetic cannabinoids, 5F-ADB and FUB-AMB accounted for 69% of reports.
- Nationwide, methamphetamine reports increased from 2001 through 2005, decreased from 2005 through 2010, and increased steadily after 2011. Cannabis/THC reports decreased from 2001 to 2004, slightly increased from 2005 to 2009, and decreased from 2009 through 2017. Cocaine reports gradually increased from 2001 to 2006, significantly decreased through 2014, slightly increased through 2017, then decreased in 2018. Heroin reports decreased from 2001 through 2006, then increased through 2015, followed by decreases in reports through 2018. MDMA reports decreased from 2001 to 2003, then increased through 2007. MDMA reports decreased from 2010 to 2013, then gradually increased through 2018.

^{*} Curved trends are sometimes described as U-shaped (i.e., decreasing in earlier years and increasing in recent years) and S-shaped (i.e., two turns in the trend, roughly either increasing-decreasing-increasing or decreasing-increasing-decreasing). See Appendix A for a more detailed methodology discussion.

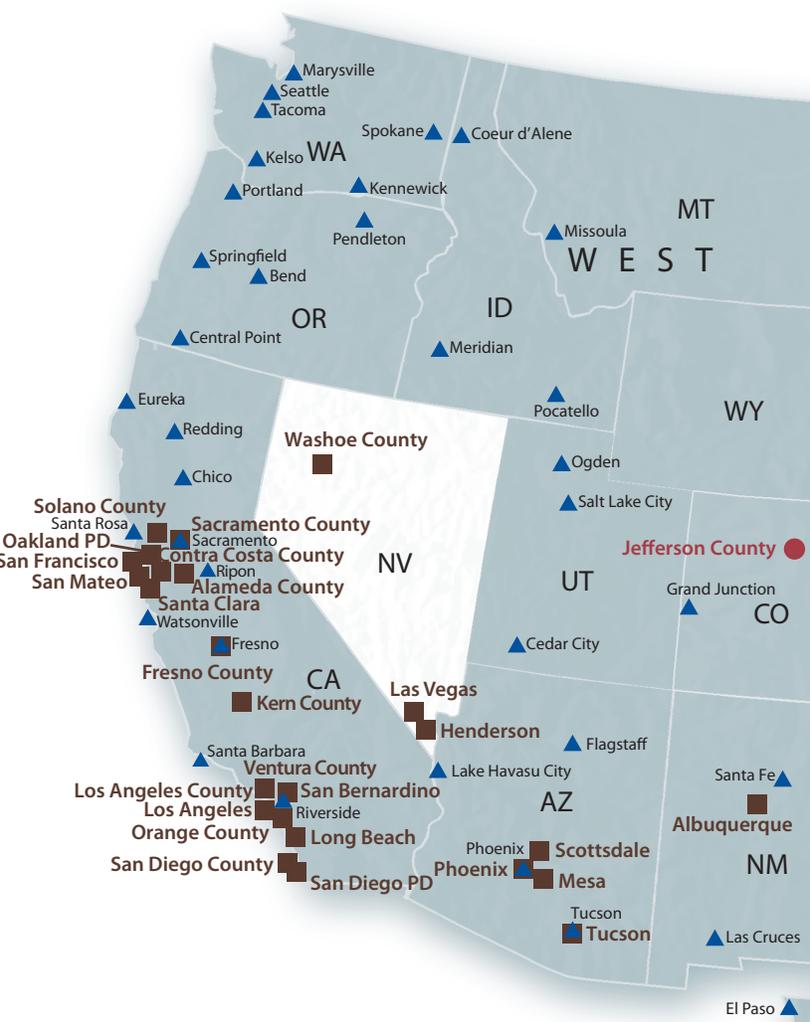
INTRODUCTION

The National Forensic Laboratory Information System (NFLIS) is a program of the Drug Enforcement Administration (DEA), Diversion Control Division. NFLIS-Drug systematically collects drug identification results and associated information from drug cases submitted to and analyzed by Federal, State, and local forensic laboratories. These laboratories analyze controlled and noncontrolled substances secured in law enforcement operations across the country, making NFLIS-Drug an important resource in monitoring illicit drug use and trafficking, including the diversion of legally manufactured pharmaceuticals into illegal markets. NFLIS-Drug includes information on the specific substance and the characteristics of drug evidence, such as purity, quantity, and drug combinations. These data are used to support drug scheduling decisions and to inform drug policy and drug enforcement initiatives nationally and in local communities around the country.

NFLIS-Drug is a comprehensive information system that includes data from forensic laboratories that handle the Nation's drug analysis cases. The NFLIS-Drug participation rate, defined as the percentage of the national drug caseload represented by laboratories that have joined NFLIS, is currently 98.5%. NFLIS-Drug includes 50 State systems and 104 local or municipal laboratories/laboratory systems, representing a total of 282 individual laboratories. The NFLIS-Drug database also includes Federal data from DEA and U.S. Customs and Border Protection (CBP) laboratories.

This publication presents the results of drug cases *submitted* to State and local laboratories from January 1, 2018, through December 31, 2018, that were *analyzed* by March 31, 2019. Data from Federal laboratories are also included in this publication. The data presented in this publication include *all* drugs mentioned in the laboratories' reported drug items.

Section 1 of this publication presents national and regional estimates for the 25 most frequently identified drugs, as well as national and regional trends from January 2001 through December 2018. Section 2 presents estimates of specific drugs by drug category. All estimates are based on the NEAR approach (National Estimates Based on All Reports).



Sections 3 and 4 present actual reported data rather than national and regional estimates; all data reported by NFLIS-Drug State and local laboratories are included. Section 3 presents a geographic information system (GIS) analysis on buprenorphine and N-ethylpentylone reports by State and by county for selected States. Section 4 presents data on drugs reported by selected laboratories in cities across the country.

See Appendix A for details on the NEAR approach and Appendix B for a list of NFLIS-Drug participating and reporting laboratories. The benefits and limitations of NFLIS-Drug are presented in Appendix C. Appendix D summarizes the resources available on the NFLIS website, including the NFLIS-Drug Data Query System (DQS).



- Reporting State Laboratory System
- Participating State Laboratory System
(Not Yet Reporting)
- No State Laboratory System
- Individual State Laboratory
- Reporting Local Laboratory
- Participating Local Laboratory
(Not Yet Reporting)

NATIONAL AND REGIONAL ESTIMATES

This section presents national and regional estimates of drugs *submitted* to State and local laboratories from January through December 2018 that were *analyzed* by March 31, 2019. Trends are presented for selected drugs from 2001 through 2018.

National and regional drug estimates presented in the following section include *all* drug reports mentioned in laboratories' reported drug items. The NEAR approach was used to produce estimates for the Nation and for the U.S. census regions. The NEAR approach uses all NFLIS-Drug reporting laboratories. Appendix A provides a detailed description of the methods used in preparing these estimates.

1.1 DRUG REPORTS

In 2018, a total of 1,599,428 drug reports were identified by State and local forensic laboratories in the United States. This estimate is an increase of about 1% from the 1,581,426 drug reports identified during 2017. [Table 1.1](#) presents the 25 most frequently identified drugs for the Nation and for each of the U.S. census regions.

The top 25 drugs accounted for 87% of all drugs analyzed in 2018. The majority of all drugs reported in NFLIS-Drug were identified as the top four drugs, with methamphetamine, cannabis/THC, cocaine, and heroin representing 69% of all drug reports. Nationally, 386,272 drug reports were identified as methamphetamine (24%), 344,489 as cannabis/THC (22%), 228,924 as cocaine (14%), and 140,818 as heroin (9%).

In addition, eight narcotic analgesics were among the top 25 drugs: fentanyl (83,765 reports), oxycodone (27,062 reports), buprenorphine (19,621 reports), hydrocodone (16,452 reports), tramadol (8,850 reports), acetyl fentanyl (7,148 reports), morphine (4,011 reports), and codeine (2,654 reports). Four tranquilizers and depressants were included: alprazolam (40,195 reports), clonazepam (9,551 reports), phencyclidine (PCP) (4,425 reports), and diazepam (3,345 reports). There were also three phenethylamines: amphetamine (12,887 reports), N-ethylpentylone (10,380 reports), and MDMA (6,616 reports). In addition, there were two synthetic cannabinoids: 5F-ADB (10,052 reports) and FUB-AMB (5,085 reports). Psilocin/psilocibin (4,444 reports), naloxone (4,408 reports), lysergic acid diethylamide (LSD) (4,176 reports), and gabapentin (2,906 reports), all controlled drugs, were also included in the list of the 25 most frequently identified drugs.

Table 1.1

NATIONAL AND REGIONAL ESTIMATES FOR THE 25 MOST FREQUENTLY IDENTIFIED DRUGS¹

Estimated number and percentage of total drug reports submitted to laboratories from January 1, 2018, through December 31, 2018, and analyzed by March 31, 2019

Drug	National		West		Midwest		Northeast		South	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Methamphetamine	386,272	24.15%	112,507	46.62%	91,432	22.67%	9,265	3.32%	173,068	25.61%
Cannabis/THC	344,489	21.54%	33,189	13.75%	94,595	23.45%	70,729	25.36%	145,976	21.60%
Cocaine	228,924	14.31%	16,797	6.96%	53,587	13.28%	59,814	21.44%	98,725	14.61%
Heroin	140,818	8.80%	31,378	13.00%	34,520	8.56%	39,514	14.17%	35,406	5.24%
Fentanyl	83,765	5.24%	2,635	1.09%	27,639	6.85%	33,515	12.02%	19,976	2.96%
Alprazolam	40,195	2.51%	4,844	2.01%	9,180	2.28%	5,148	1.85%	21,024	3.11%
Oxycodone	27,062	1.69%	2,227	0.92%	6,087	1.51%	5,727	2.05%	13,021	1.93%
Buprenorphine	19,621	1.23%	1,655	0.69%	4,231	1.05%	4,957	1.78%	8,778	1.30%
Hydrocodone	16,452	1.03%	1,934	0.80%	4,370	1.08%	730	0.26%	9,417	1.39%
Amphetamine	12,887	0.81%	1,006	0.42%	3,711	0.92%	1,921	0.69%	6,248	0.92%
N-Ethylpentylone	10,380	0.65%	52	0.02%	1,297	0.32%	836	0.30%	8,194	1.21%
5F-ADB	10,052	0.63%	125	0.05%	1,333	0.33%	1,517	0.54%	7,076	1.05%
Clonazepam	9,551	0.60%	619	0.26%	2,429	0.60%	1,709	0.61%	4,792	0.71%
Tramadol	8,850	0.55%	548	0.23%	3,151	0.78%	1,741	0.62%	3,411	0.50%
Acetyl fentanyl	7,148	0.45%	95	0.04%	2,831	0.70%	3,173	1.14%	1,050	0.16%
MDMA	6,616	0.41%	2,012	0.83%	2,356	0.58%	562	0.20%	1,686	0.25%
FUB-AMB	5,085	0.32%	354	0.15%	1,016	0.25%	1,097	0.39%	2,617	0.39%
Psilocin/psilocibin	4,444	0.28%	1,310	0.54%	1,390	0.34%	436	0.16%	1,308	0.19%
Phencyclidine (PCP)	4,425	0.28%	327	0.14%	953	0.24%	1,130	0.40%	2,016	0.30%
Naloxone	4,408	0.28%	202	0.08%	749	0.19%	1,313	0.47%	2,143	0.32%
Lysergic acid diethylamide (LSD)	4,176	0.26%	709	0.29%	1,724	0.43%	467	0.17%	1,276	0.19%
Morphine	4,011	0.25%	530	0.22%	1,023	0.25%	371	0.13%	2,087	0.31%
Diazepam	3,345	0.21%	323	0.13%	1,000	0.25%	349	0.12%	1,673	0.25%
Gabapentin	2,906	0.18%	231	0.10%	628	0.16%	739	0.26%	1,309	0.19%
Codeine	2,654	0.17%	325	0.13%	652	0.16%	322	0.12%	1,355	0.20%
<i>Top 25 Total</i>	1,388,535	86.81%	215,936	89.47%	351,885	87.23%	247,082	88.58%	573,632	84.89%
<i>All Other Drug Reports</i>	210,893	13.19%	25,408	10.53%	51,495	12.77%	31,852	11.42%	102,138	15.11%
<i>Total Drug Reports</i> ²	1,599,428	100.00%	241,344	100.00%	403,380	100.00%	278,934	100.00%	675,769	100.00%

5F-ADB=methyl 2-(1-(5-fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

MDMA=3,4-methylenedioxymethamphetamine

FUB-AMB=methyl 2-(1-(4-fluorobenzyl)-1H-indazole-3-carboxamido)-3-methylbutanoate

¹ Sample n's and 95% confidence intervals for all estimates are available on request.

² Numbers and percentages may not sum to totals because of rounding.

1.2 DRUG CASES ANALYZED

Drug analysis results are also reported to NFLIS-Drug at the case level. These case-level data typically describe all drugs identified within a drug-related incident, although a small proportion of laboratories may assign a single case number to all drug submissions related to an entire investigation. [Table 1.2](#) presents national estimates of the top 25 drug-specific cases. This table illustrates the number of cases that contained one or more reports of the specified drug. In 2018, there were 1,246,559 drug-specific cases submitted to and analyzed by State and local forensic laboratories, representing a 2% increase from the 1,222,676 drug-specific cases in 2017.

Among all drug cases, methamphetamine was the most common drug reported during 2018. Nationally, 33% of drug cases contained one or more reports of methamphetamine, followed by cannabis/THC, which was identified in 26% of all drug cases. About 20% of drug cases contained cocaine, and 12% contained heroin. Fentanyl was reported in 7% of cases, and alprazolam was reported in 4% of cases.



Edible marijuana

Table 1.2

NATIONAL CASE ESTIMATES

Top 25 estimated number of drug-specific cases and their percentage of distinct cases, January 1, 2018, through December 31, 2018

Drug	Number	Percent
Methamphetamine	306,730	32.86%
Cannabis/THC	244,831	26.23%
Cocaine	182,172	19.52%
Heroin	111,584	11.95%
Fentanyl	64,928	6.96%
Alprazolam	34,122	3.66%
Oxycodone	21,780	2.33%
Buprenorphine	17,579	1.88%
Hydrocodone	14,271	1.53%
Amphetamine	11,059	1.18%
5F-ADB	8,560	0.92%
Clonazepam	8,424	0.90%
Tramadol	7,732	0.83%
N-Ethylpentylone	7,096	0.76%
Acetyl fentanyl	5,715	0.61%
MDMA	4,962	0.53%
Psilocin/psilocibin	4,114	0.44%
FUB-AMB	4,000	0.43%
Naloxone	3,958	0.42%
Phencyclidine (PCP)	3,952	0.42%
Lysergic acid diethylamide (LSD)	3,634	0.39%
Morphine	3,560	0.38%
Diazepam	3,067	0.33%
Gabapentin	2,507	0.27%
Codeine	2,400	0.26%
Top 25 Total	1,082,738	116.00%
All Other Drugs	163,821	17.55%
Total All Drugs¹	1,246,559	133.55%²

5F-ADB=methyl 2-(1-(5-fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

MDMA=3,4-methylenedioxymethamphetamine

FUB-AMB=methyl 2-(1-(4-fluorobenzyl)-1H-indazole-3-carboxamido)-3-methylbutanoate

¹ Numbers and percentages may not sum to totals because of rounding.

² Multiple drugs can be reported within a single case, so the cumulative percentage exceeds 100%. The estimated national total of distinct case percentages is based on 933,390 distinct cases submitted to State and local laboratories from January 1, 2018, through December 31, 2018, and analyzed by March 31, 2019.

Drugs Reported by Federal Laboratories

The majority of drug reports presented in this section are from the eight U.S. Drug Enforcement Administration (DEA) laboratories. The data reflect results of substance evidence from drug seizures, undercover drug buys, and other evidence analyzed at DEA laboratories across the country. DEA data include results for drug cases submitted by DEA agents, other Federal law enforcement agencies, and selected local police agencies. Although DEA data capture both domestic and international drug cases, the results presented in this section describe only those drugs obtained within the United States. In addition to drug reports from the DEA, reports from seven U.S. Customs and Border Protection (CBP) laboratories are included.

A total of 59,395 drugs were submitted to DEA and CBP laboratories in 2018 and analyzed by March 31, 2019, or about 4% of the estimated 1.6 million drugs reported by NFLIS-Drug State and local laboratories during this period. In 2018, approximately half of the drugs reported by DEA and CBP laboratories were identified as methamphetamine (21%), cocaine (13%), heroin (11%), fentanyl (6%), or cannabis/THC (4%).

MOST FREQUENTLY REPORTED DRUGS BY FEDERAL LABORATORIES¹

Number and percentage of drugs submitted to laboratories from January 1, 2018, through December 31, 2018, and analyzed by March 31, 2019

Drug	Number	Percent
Methamphetamine	12,529	21.09%
Cocaine	7,666	12.91%
Heroin	6,376	10.73%
Fentanyl	3,678	6.19%
Cannabis/THC	2,352	3.96%
Tramadol	656	1.10%
Oxycodone	610	1.03%
Alprazolam	492	0.83%
N-Ethylpentylone	480	0.81%
MDMA	424	0.71%
All Other Drug Reports	24,132	40.63%
Total Drug Reports	59,395	100.00%²

MDMA=3,4-methylenedioxymethamphetamine

¹ Federal drug reports in this table include 53,781 reports from Drug Enforcement Administration laboratories and 5,614 reports from U.S. Customs and Border Protection laboratories.

² Numbers and percentages may not sum to totals because of rounding.

1.3 NATIONAL AND REGIONAL DRUG TRENDS

The remainder of this section presents annual national and regional trends of selected drugs submitted to State and local laboratories during each annual data reference period and analyzed within three months of the end of each period. The trend analyses test the data for the presence of both linear and curved trends using statistical methods described in more detail in Appendix A. Curved trends are sometimes described as U-shaped (i.e., decreasing in earlier years and increasing in recent years) and S-shaped (i.e., two turns in the trend, roughly either increasing-decreasing-increasing or decreasing-increasing-decreasing). Because the trends are determined through regression modeling, the descriptions of the trends detailed in this section may differ slightly from the plotted lines of estimates featured in [Figures 1.1](#) through [1.15](#). Estimates include all drug reports identified among the NFLIS laboratories' reported drug items.

National prescription drug trends

[Figures 1.1](#) and [1.2](#) present national trends for the estimated number of prescription drug reports that were identified as fentanyl, alprazolam, oxycodone, buprenorphine, hydrocodone, and amphetamine. Note that laboratories do not identify whether reports are for prescription drugs that are licitly or illicitly manufactured. Significant ($p < .05$) results include the following:

- Fentanyl reports remained steady from 2001 to 2005, followed by a noticeable increase in 2006. Fentanyl reports continued to remain steady until dramatic increases occurred from 2014 through 2018.
- Alprazolam reports showed an overall increase from 2003 to 2010, followed by a decrease in reports from 2011 to 2013. Reports greatly increased from 2014 to 2016, with a reduced number of reports through 2018.

Figure 1.1 National trend estimates for fentanyl, alprazolam, and oxycodone, January 2001–December 2018

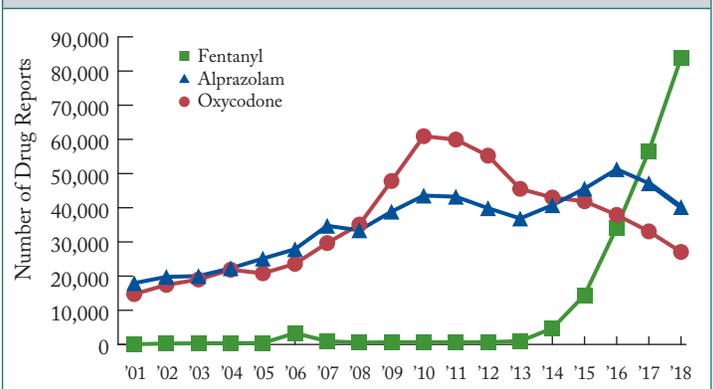
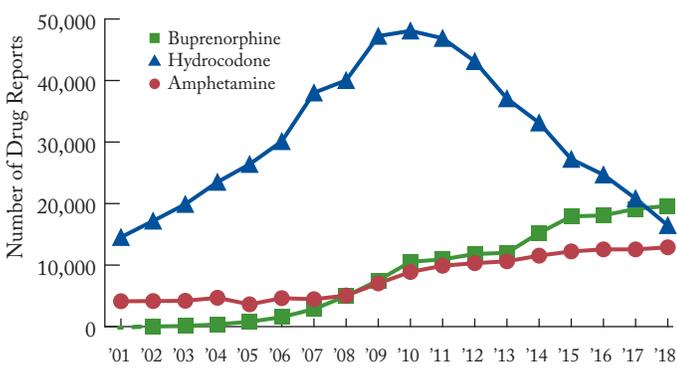


Figure 1.2 National trend estimates for buprenorphine, hydrocodone, and amphetamine, January 2001–December 2018¹



¹ A dashed trend line indicates that estimates did not meet the criteria for precision or reliability. See Appendix A for a more detailed methodology discussion.

- Oxycodone reports showed steady increases from 2001 to 2004, followed by a decrease in 2005. Reports dramatically increased from 2006 to 2010, then showed a steady decline through 2018.
- Buprenorphine reports showed an S-shaped trend. Reports steadily increased from 2006 through 2010, followed by another increase from 2013 to 2018.
- Hydrocodone reports had dramatic increases from 2001 to 2010, followed by steady decreases through 2018.
- Amphetamine reports were steady from 2001 through 2004, followed by a decrease in 2005. Reports then steadily increased from 2007 through 2018.

Significance tests were also performed on differences between 2017 and 2018 to identify more recent changes. Across these two periods, reports of fentanyl (from 56,530 to 83,765 reports) and buprenorphine (from 19,137 to 19,621 reports) increased significantly ($p < .05$). Reports of alprazolam (from 47,160 to 40,195 reports), oxycodone (from 33,076 to 27,062 reports), and hydrocodone (from 20,812 to 16,452 reports) decreased significantly. The increase in amphetamine (from 12,551 to 12,887 reports) was not statistically significant.

Other national drug trends

Figures 1.3 and 1.4 present national trends for reports of methamphetamine, cannabis/THC, cocaine, heroin, and MDMA. Significant ($p < .05$) results include the following:

- Methamphetamine reports increased from 2001 through 2005, decreased from 2005 through 2010, and increased steadily after 2011.

- Cannabis/THC reports decreased from 2001 to 2004, slightly increased from 2005 to 2009, and decreased from 2009 through 2017. Reports then increased from 2017 to 2018, although the change was not significant.
- Cocaine reports gradually increased from 2001 to 2006, then substantially decreased through 2014, followed by slight increases in reports through 2017. From 2017 to 2018, reports decreased, although the change was not significant.
- Heroin reports decreased from 2001 through 2006, then increased through 2015, followed by decreases in reports through 2018.
- MDMA reports decreased from 2001 to 2003, then increased through 2007. A decrease in reports occurred from 2010 to 2013, followed by a gradual increase through 2018.

More recently, between 2017 and 2018, reports of methamphetamine (from 347,807 to 386,272 reports) and MDMA (from 5,773 to 6,616 reports) increased significantly ($p < .05$), while reports of heroin (from 157,055 to 140,818 reports) decreased significantly. The increase in cannabis/THC (from 344,167 to 344,489 reports) and decrease in cocaine (from 230,436 to 228,924 reports) were not statistically significant.

Figure 1.3 National trend estimates for methamphetamine and cannabis/THC, January 2001–December 2018

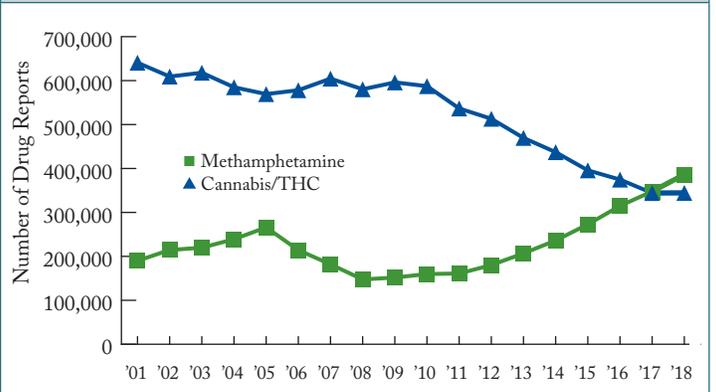
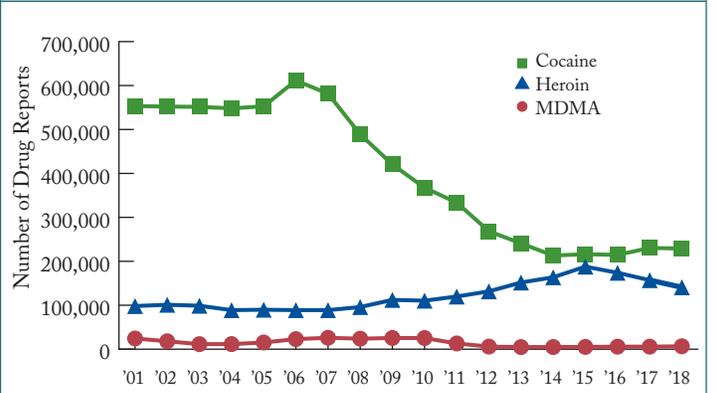


Figure 1.4 National trend estimates for cocaine, heroin, and MDMA, January 2001–December 2018



Regional prescription drug trends

Figures 1.5 through 1.10 show regional trends per 100,000 persons aged 15 or older for reports of fentanyl, alprazolam, oxycodone, buprenorphine, hydrocodone, and amphetamine from 2001 to 2018. These figures illustrate changes in prescription drugs reported over time, accounting for the population aged 15 years or older in each U.S. census region. Significant ($p < .05$) trend results include the following:

- For fentanyl, the West region showed a gradual increase from 2001 to 2014, followed by significant increases from 2015 through 2018. Reports remained fairly steady from 2001 through 2013 for the Midwest, Northeast, and South regions until significant increases began in 2014. The Midwest and Northeast regions had noticeable increases in 2006 as reflected in the national trend.
- For alprazolam, the West region showed a linear-increasing trend through 2018, although reports decreased significantly from 2017 to 2018. The Midwest, Northeast, and South regions had increasing curved trend lines, with increases from roughly 2003 to 2010, followed by slight decreases through 2013. Increases in reports occurred through 2016, followed by decreases in 2017 and 2018.
- For oxycodone, all four regions showed similar trend lines, with the highest number of reports occurring in either 2010 or 2011. The number of reports per 100,000 for the Northeast and South regions continued to decrease, falling in line with the Midwest region.
- For buprenorphine, all regions except the Northeast region had S-shaped trends similar to the national trend. The increase in reports slowed for all regions from 2011 to 2013, then continued to increase through 2018, except in the South region.
- For hydrocodone, all regions showed significant increases from 2001 through at least 2009, followed by steady decreases through 2018.
- For amphetamine, reports in the Midwest, Northeast, and South regions increased steadily from 2007 through 2015 and 2016, with the number of reports per 100,000 remaining steady in 2017 and 2018. Reports in the West region were more variable than in other regions from 2001 through 2006, followed by a flatter trend line through 2018.

More recently, between 2017 and 2018, fentanyl reports increased significantly ($p < .05$) in all regions, while alprazolam and oxycodone reports decreased significantly in all regions. Buprenorphine reports increased significantly in the Midwest and West regions, while decreasing significantly in the South region. Hydrocodone reports decreased significantly in all regions, except in the Northeast region. There were no significant differences in amphetamine reports across all regions.

Figure 1.5 Regional trends in fentanyl reported per 100,000 persons aged 15 or older, January 2001–December 2018¹

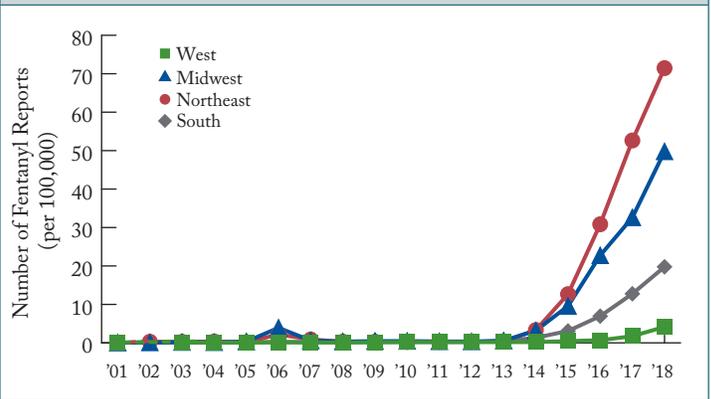


Figure 1.6 Regional trends in alprazolam reported per 100,000 persons aged 15 or older, January 2001–December 2018¹

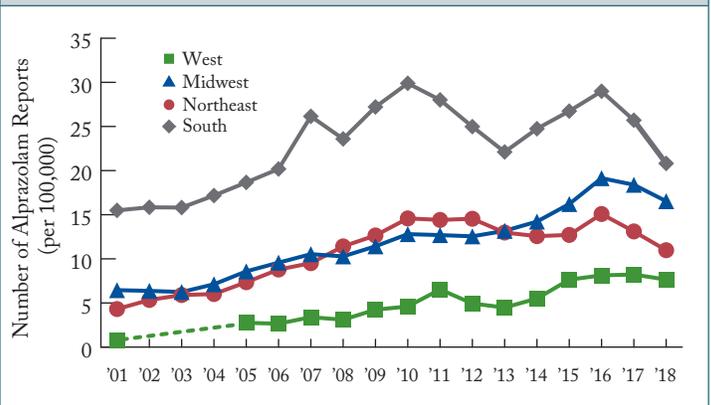
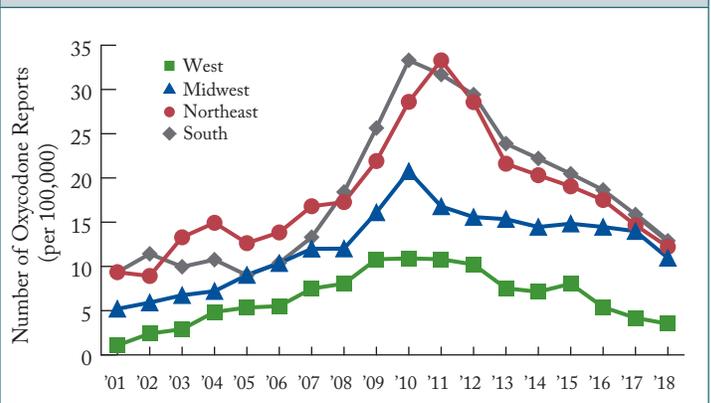


Figure 1.7 Regional trends in oxycodone reported per 100,000 persons aged 15 or older, January 2001–December 2018



Note: U.S. Census 2018 population data by age were not available for this publication. Population data for 2018 were imputed.

¹ A dashed trend line indicates that estimates did not meet the criteria for precision or reliability. See Appendix A for a more detailed methodology discussion.

Figure 1.8 Regional trends in buprenorphine reported per 100,000 persons aged 15 or older, January 2001–December 2018¹

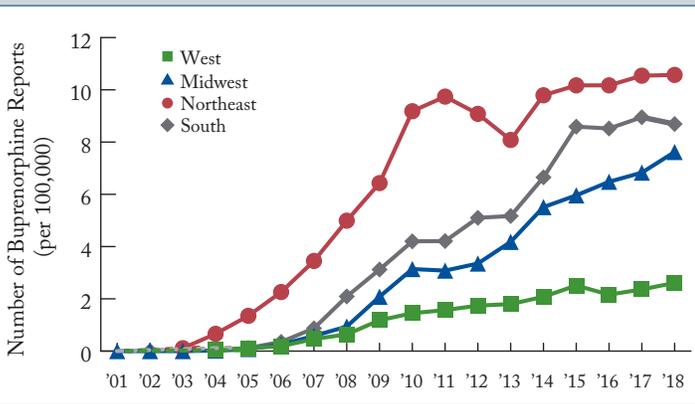


Figure 1.9 Regional trends in hydrocodone reported per 100,000 persons aged 15 or older, January 2001–December 2018

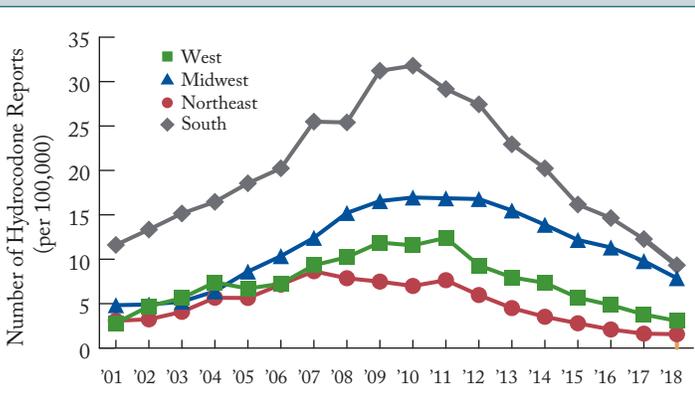
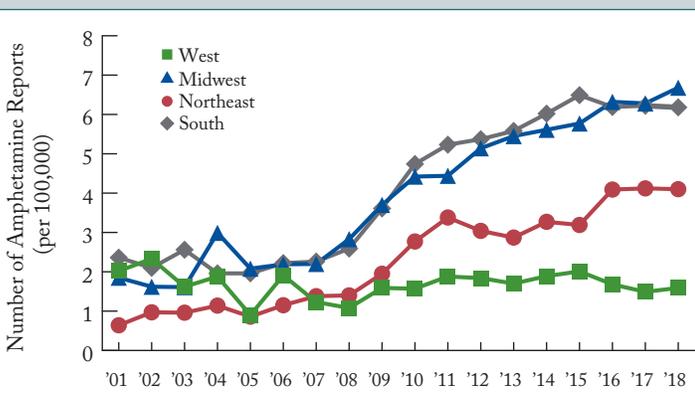


Figure 1.10 Regional trends in amphetamine reported per 100,000 persons aged 15 or older, January 2001–December 2018



Note: U.S. Census 2018 population data by age were not available for this publication. Population data for 2018 were imputed.

¹ A dashed trend line indicates that estimates did not meet the criteria for precision and reliability. See Appendix A for a more detailed methodology discussion.

Other regional drug trends

Figures 1.11 through 1.15 present regional trends per 100,000 persons aged 15 or older for methamphetamine, cannabis/THC, cocaine, heroin, and MDMA reports from 2001 through 2018. Significant ($p < .05$) trends include the following:

- For methamphetamine, the trend for the Northeast region was S-shaped, with higher rates of increase in 2017 and 2018. From 2005 to 2018, the annual number of reports per 100,000 for the West region decreased, while reports per 100,000 for the Midwest and South regions increased. In 2018, the numbers of methamphetamine reports were similar in the West, Midwest, and South regions, ranging from 165 to 178 reports per 100,000.
- For cannabis/THC, the Northeast region had the most significant periods of increase (2003 to 2008) and decrease (2009 through 2015). The other three regions had more rolling decreasing trend lines from 2001 through 2018.
- For cocaine, all four regions had rolling decreasing trend lines. The Midwest and Northeast regions had increases from 2001 through 2008, followed by more substantial decreases in reports, until increases in reports occurred from 2015 through 2017 in the Midwest region and through 2018 in the Northeast region.
- For heroin, the South and Northeast regions had steady increases in reports from 2011 through 2015, while the West and Midwest regions had similar increases in reports from 2008 through 2015. All four regions except the West region had decreases in reports from 2015 through 2018. The West region had an increase in reports between 2017 and 2018.
- For MDMA, the trend lines for all four regions showed a decrease from 2001 through 2004, followed by an increase through 2009. The West and Midwest regions had much steeper increases during this time. The regional trend lines remained flat after 2013, with recent increases through 2018 in the Midwest region.

Between 2017 and 2018, methamphetamine reports increased significantly ($p < .05$) in all regions. Cannabis/THC reports decreased significantly in the Northeast and West regions, while increasing significantly in the South region. Cocaine reports increased significantly in the Northeast region and decreased significantly in the South region. Heroin reports decreased significantly in all regions except the West region where reports increased significantly. MDMA reports increased significantly in the Midwest and West regions and decreased significantly in the South and Northeast regions.

Figure 1.11 Regional trends in methamphetamine reported per 100,000 persons aged 15 or older, January 2001–December 2018¹

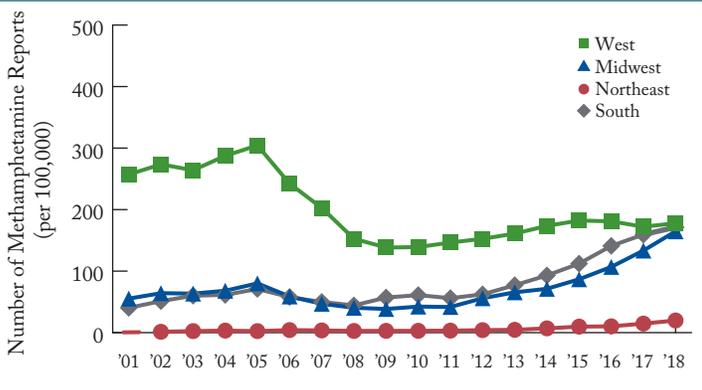


Figure 1.14 Regional trends in heroin reported per 100,000 persons aged 15 or older, January 2001–December 2018

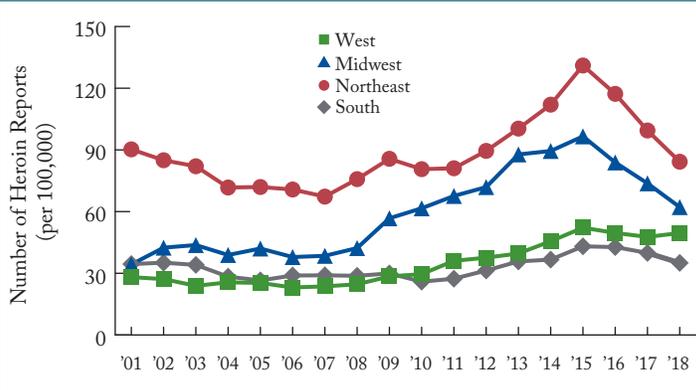


Figure 1.12 Regional trends in cannabis/THC reported per 100,000 persons aged 15 or older, January 2001–December 2018

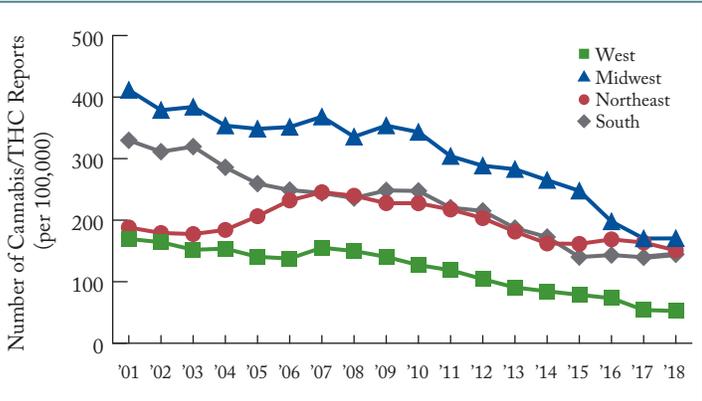


Figure 1.15 Regional trends in MDMA reported per 100,000 persons aged 15 or older, January 2001–December 2018

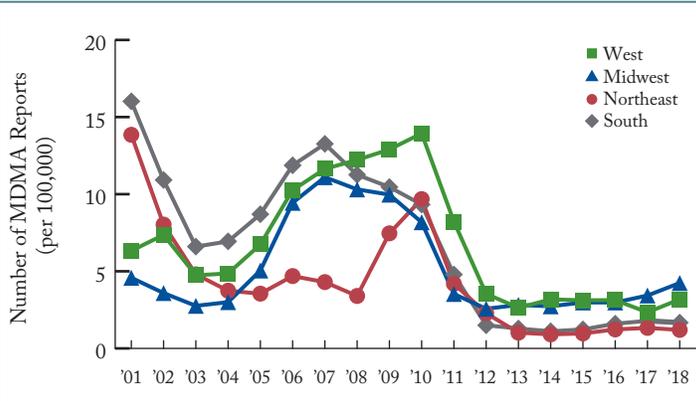
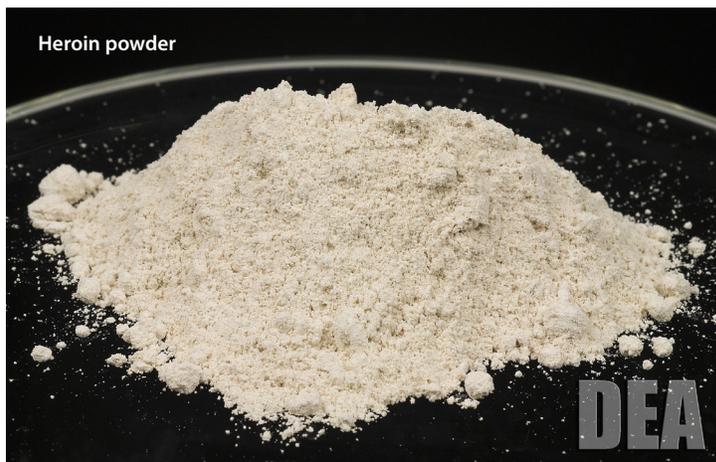
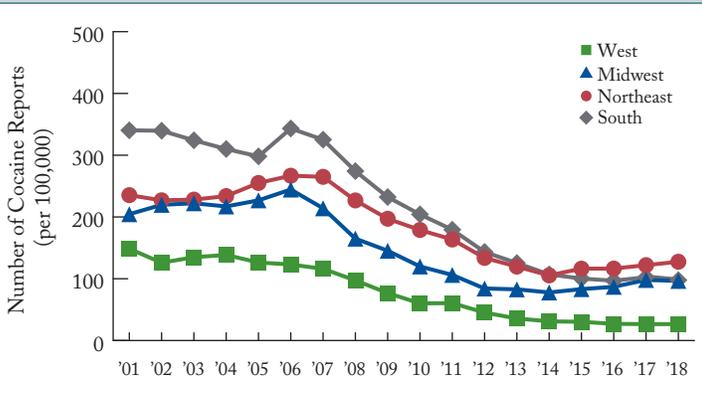


Figure 1.13 Regional trends in cocaine reported per 100,000 persons aged 15 or older, January 2001–December 2018



Note: U.S. Census 2018 population data by age were not available for this publication. Population data for 2018 were imputed.

¹ A dashed trend line indicates that estimates did not meet the criteria for precision or reliability. See Appendix A for a more detailed methodology discussion.

MAJOR DRUG CATEGORIES

Section 2 presents national and regional estimates of specific drugs by drug category using the NEAR approach (see Appendix A for a description of the methodology). All drugs mentioned in laboratories' drug items are included. An estimated 1,599,428 drugs were submitted to State and local laboratories during 2018 and were analyzed by March 31, 2019.

2.1 NARCOTIC ANALGESICS

Nationally, 70,237 drug overdose deaths occurred in 2017, with 68%, or 47,600, involving opioids. From 2016 to 2017, the sharpest increase in overdose deaths occurred among deaths related to fentanyl and fentanyl analogs, which increased from 19,413 to 28,466 deaths. During this same time, the number of deaths involving prescription opioids remained unchanged (from 17,087 to 17,029 deaths), while the number of deaths involving prescription opioids without synthetic opioids decreased (from 13,032 to 11,585 deaths).¹

A total of 188,042 narcotic analgesic reports were identified by NFLIS-Drug laboratories in 2018, representing 12% of all drug reports (Table 2.1). Fentanyl (45%) accounted for almost one-half of narcotic analgesic reports, while oxycodone (14%), buprenorphine (10%), and hydrocodone (9%) together accounted for one-third of the reports. Other narcotic analgesics reported included tramadol (5%), acetyl fentanyl (4%), and morphine (2%). The narcotic analgesics reported varied considerably by region (Figure 2.1). In comparison with reports from other regions in the country, the Northeast and Midwest regions reported the highest percentage of fentanyl (61% and 49%, respectively). The West and South regions reported the highest percentages of oxycodone (21% and 20%, respectively), buprenorphine (15% and 13%), and hydrocodone (18% and 14%).

¹ National Institute on Drug Abuse. (2019, January). *Overdose death rates*. Retrieved from <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>

Table 2.1

NARCOTIC ANALGESICS

Number and percentage of narcotic analgesic reports in the United States, 2018¹

Narcotic Analgesic Reports	Number	Percent
Fentanyl	83,765	44.55%
Oxycodone	27,062	14.39%
Buprenorphine	19,621	10.43%
Hydrocodone	16,452	8.75%
Tramadol	8,850	4.71%
Acetyl fentanyl	7,148	3.80%
Morphine	4,011	2.13%
Codeine	2,654	1.41%
Methadone	2,430	1.29%
Hydromorphone	2,273	1.21%
ANPP	2,139	1.14%
Fluorisoobutyryl fentanyl	1,643	0.87%
Oxymorphone	1,125	0.60%
Methoxyacetyl fentanyl	1,057	0.56%
Cyclopropyl fentanyl	1,011	0.54%
Other narcotic analgesics	6,802	3.62%
<i>Total Narcotic Analgesic Reports²</i>	188,042	100.00%
<i>Total Drug Reports</i>	1,599,428	

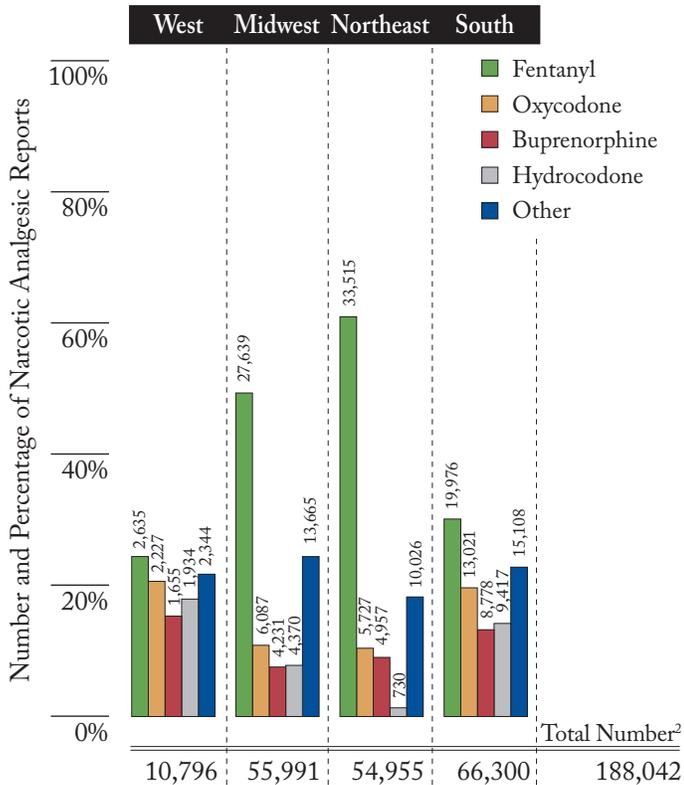
Table 2.1 Notes:

ANPP=4-anilino-N-phenethyl-4-piperidine

¹ Includes drug reports submitted to laboratories from January 1, 2018, through December 31, 2018, that were analyzed by March 31, 2019.

² Numbers and percentages may not sum to totals because of rounding.

Figure 2.1 Distribution of narcotic analgesic reports within region, 2018¹



2.2 TRANQUILIZERS AND DEPRESSANTS

Tranquilizers and depressants are used to treat sleep problems, anxiety, muscle spasms, and seizures. They are generally legitimate pharmaceuticals that are diverted to the illicit market.ⁱⁱ Substance abuse treatment admissions in which tranquilizers were the primary substance of abuse increased 22% from 2015 to 2017, from 16,318 to 19,894 admissions.ⁱⁱⁱ

Approximately 4% of all drug reports in 2018, or 69,297 reports, were identified by NFLIS-Drug laboratories as tranquilizers and depressants (Table 2.2). Alprazolam accounted for 58% of reported tranquilizers and depressants. Approximately 14% of tranquilizers and depressants were identified as clonazepam. Alprazolam was identified in more than one-half of the tranquilizers and depressants reported in the West (62%), South (61%), and Midwest (56%) regions and in almost one-half of these substances reported in the Northeast region (48%) (Figure 2.2). Clonazepam accounted for 16% of the tranquilizers and depressants identified in the Northeast region and for 15% of these substances identified in the Midwest region. The Northeast region reported the highest percentage of PCP (11%), while the Midwest region reported the highest percentage of diazepam (6%).

ⁱⁱ U.S. Department of Justice. (2017, June 15). *Drugs of abuse: A DEA resource guide, 2017 edition*. Retrieved from https://www.dea.gov/pr/multimedia-library/publications/drug_of_abuse.pdf

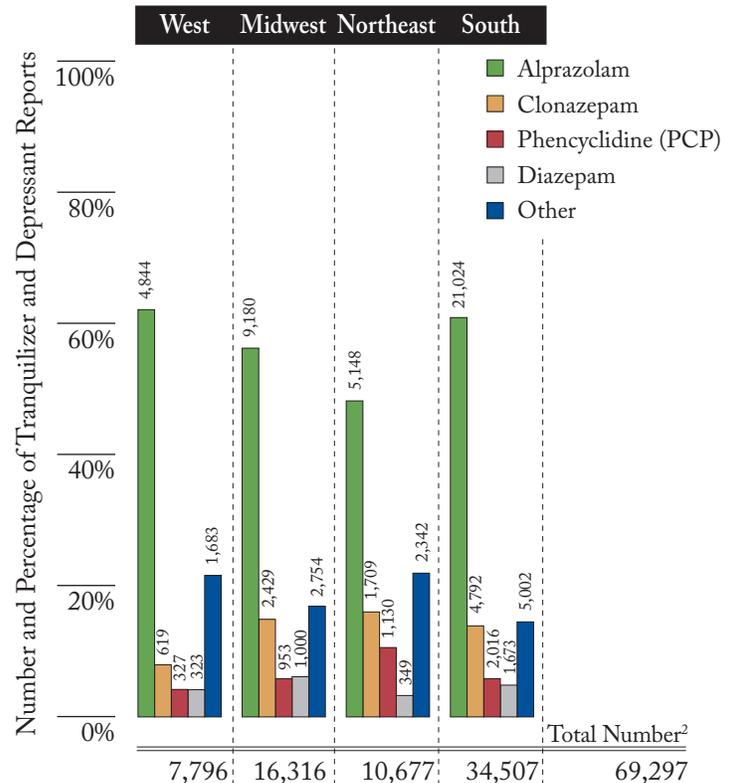
ⁱⁱⁱ Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2019). *Treatment Episode Data Set (TEDS): 2017 admissions to and discharges from publicly-funded substance use treatment*. Retrieved from <https://www.samhsa.gov/data/report/treatment-episode-data-set-teds-2017-admissions-and-discharges-publicly-funded-substance-use>

Table 2.2

TRANQUILIZERS AND DEPRESSANTS
Number and percentage of tranquilizer and depressant reports in the United States, 2018¹

Tranquilizer and Depressant Reports	Number	Percent
Alprazolam	40,195	58.00%
Clonazepam	9,551	13.78%
Phencyclidine (PCP)	4,425	6.39%
Diazepam	3,345	4.83%
Ketamine	1,944	2.81%
Lorazepam	1,855	2.68%
Etizolam	1,506	2.17%
Carisoprodol	1,328	1.92%
Zolpidem	1,001	1.44%
Cyclobenzaprine	891	1.29%
Clonazepam	531	0.77%
Pregabalin	378	0.55%
Hydroxyzine	366	0.53%
Flubromazolam	354	0.51%
Temazepam	200	0.29%
Other tranquilizers and depressants	1,426	2.06%
Total Tranquilizer and Depressant Reports²	69,297	100.00%
Total Drug Reports	1,599,428	

Figure 2.2 Distribution of tranquilizer and depressant reports within region, 2018¹



¹ Includes drug reports submitted to laboratories from January 1, 2018, through December 31, 2018, that were analyzed by March 31, 2019.

² Numbers and percentages may not sum to totals because of rounding.

2.3 ANABOLIC STEROIDS

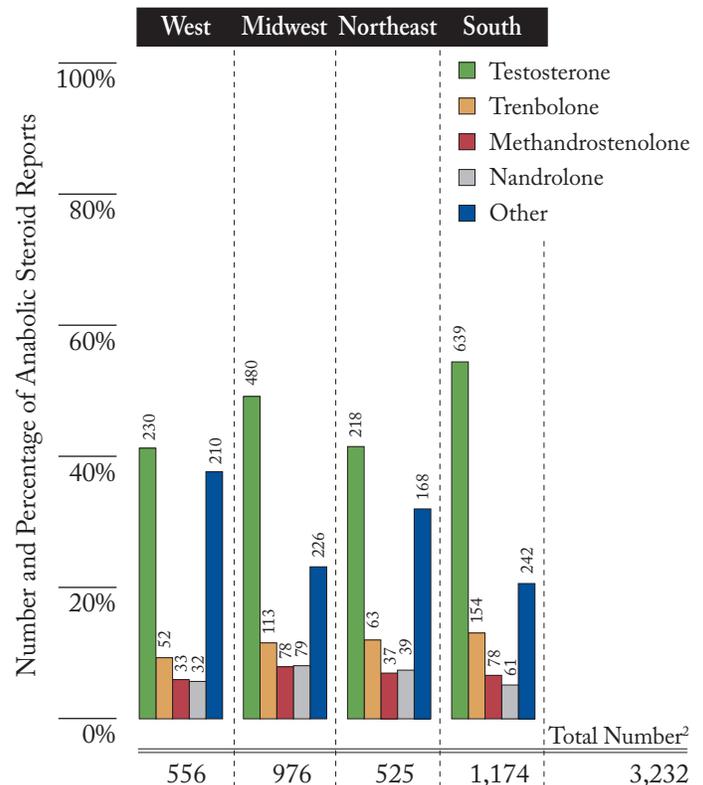
Anabolic steroids are prescribed to treat testosterone deficiency, low red blood cell count, breast cancer, and tissue wasting related to the acquired immunodeficiency syndrome (AIDS). However, they are often illicitly used to enhance muscle growth, physical performance, and physical appearance. Steroids are available in a variety of forms, including tablets and capsules, liquid drops, gels, creams, transdermal patches, implants, and injectable solutions. Anabolic steroid use can cause serious health problems and may cause psychological dependence and addiction.^{iv}

During 2018, a total of 3,232 drug reports were identified by NFLIS-Drug laboratories as anabolic steroids (Table 2.3), representing less than 1% of all drug reports. The most commonly identified anabolic steroid was testosterone (49%), followed by trenbolone (12%), methandrostenolone (7%), nandrolone (7%), and stanozolol (6%). Testosterone accounted for 54% of anabolic steroids reported in the South region, 49% in the Midwest region, 42% in the Northeast region, and 41% in the West region (Figure 2.3). The South region (13%) and the Midwest and Northeast regions (12% each) reported the highest percentages of trenbolone, and the Midwest region reported the highest percentage of methandrostenolone (8%) and nandrolone (8%).



Figure 2.3 Distribution of anabolic steroid reports within region, 2018¹

Table 2.3 ANABOLIC STEROIDS		
<i>Number and percentage of anabolic steroid reports in the United States, 2018¹</i>		
Anabolic Steroid Reports	Number	Percent
Testosterone	1,567	48.50%
Trenbolone	382	11.82%
Methandrostenolone	225	6.97%
Nandrolone	210	6.51%
Stanozolol	182	5.64%
Oxandrolone	146	4.51%
Oxymetholone	105	3.26%
Drostanolone	105	3.26%
Boldenone	97	3.00%
Mesterolone	31	0.95%
Mestanolone	21	0.65%
Methenolone	13	0.40%
Methyltestosterone	13	0.39%
Dehydrochloromethyltestosterone	15	0.47%
Fluoxymesterone	5	0.15%
Other steroids	114	3.53%
Total Anabolic Steroid Reports²	3,232	100.00%
Total Drug Reports	1,599,428	



¹ Includes drug reports submitted to laboratories from January 1, 2018, through December 31, 2018, that were analyzed by March 31, 2019

² Numbers and percentages may not sum to totals because of rounding.

2.4 PHENETHYLAMINES

Phenethylamines, also known by the street names “N-bomb” and “Smiles,” are synthetic drugs that cause stimulant- and/or hallucinogen-like effects. They are typically available in pill form but are sometimes sold as powder or as oral doses administered on blotter paper. Ingestion of even extremely small amounts of phenethylamines can cause seizures, cardiac and respiratory arrest, and death.¹

NFLIS-Drug laboratories identified 424,493 phenethylamine reports in 2018, representing 27% of all drug reports (Table 2.4). Of these, 91% were identified as methamphetamine. Among the other phenethylamine reports, 3% were identified as amphetamine, 2% as N-ethylpentylone, and 2% as MDMA. Methamphetamine accounted for 96% of phenethylamine reports in the West region, 91% in the Midwest region, 90% in the South region, and 66% in the Northeast region (Figure 2.4). Approximately 14% of the phenethylamines reported in the Northeast region were amphetamine. The Northeast region also reported the highest percentages of N-ethylpentylone (6%) and MDMA (4%).



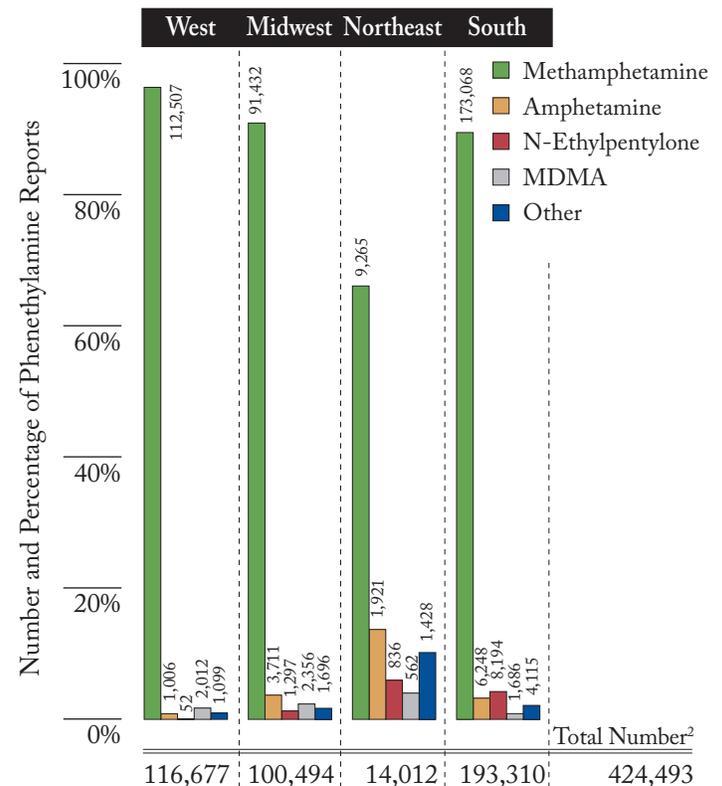
Table 2.4 PHENETHYLAMINES
Number and percentage of phenethylamine reports in the United States, 2018¹

Phenethylamine Reports	Number	Percent
Methamphetamine	386,272	91.00%
Amphetamine	12,887	3.04%
N-Ethylpentylone	10,380	2.45%
MDMA	6,616	1.56%
Lisdexamfetamine	1,450	0.34%
MDA	1,137	0.27%
Benzphetamine	746	0.18%
Phentermine	488	0.12%
Dibutylone	350	0.08%
Eutylone	260	0.06%
alpha-PVP	244	0.06%
alpha-Ethylaminohexanophenone	240	0.06%
4-CEC	146	0.03%
alpha-PHP	145	0.03%
Pentylone	144	0.03%
Other phenethylamines	2,989	0.70%
Total Phenethylamine Reports²	424,493	100.00%
Total Drug Reports	1,599,428	

MDMA=3,4-methylenedioxyamphetamine
MDA=3,4-methylenedioxyamphetamine
alpha-PVP=alpha-pyrrolidinopentiofenone
4-CEC=4-chloro-N-ethylcathinone
alpha-PHP=alpha-pyrrolidinohexanophenone

¹ U.S. Department of Justice, Drug Enforcement Administration. (2018, July). *About synthetic drugs*. Retrieved from https://www.deadiversion.usdoj.gov/synthetic_drugs/about_sd.html

Figure 2.4 Distribution of phenethylamine reports within region, 2018¹



¹ Includes drug reports submitted to laboratories from January 1, 2018, through December 31, 2018, that were analyzed by March 31, 2019.

² Numbers and percentages may not sum to totals because of rounding.

2.5 SYNTHETIC CANNABINOIDS

Synthetic cannabinoids are man-made chemicals that are popular because users often believe they are legal and relatively safe. However, there are no standards for making or selling synthetic cannabinoids, the potency can vary between brands and even between or within batches, and the products can contain other drugs or dangerous chemicals, such as synthetic cathinones. Available in convenience stores and online, synthetic cannabinoids are marketed with brand names such as “K2,” “Spice,” “Mr. Happy,” and “Kush.” The side effects associated with the use of synthetic cannabinoids include agitation, anxiety, hallucinations, seizures, nausea, vomiting, tachycardia, heart attack, kidney failure, and death.^{vi}

A total of 21,925 synthetic cannabinoid reports were identified during 2018, accounting for about 1% of all drugs reported (Table 2.5). The most commonly identified synthetic cannabinoids were 5F-ADB (46%) and FUB-AMB (23%). Specifically, 5F-ADB accounted for 48% of synthetic cannabinoid reports in the South region, 44% in the Northeast region, and 44% in the Midwest region (Figure 2.5). FUB-AMB accounted for 47% of all synthetic cannabinoids reported in the West region and approximately one-third in the Midwest (33%) and Northeast (32%) regions. The Northeast region reported the highest percentage of 5F-MDMB-PICA (7%), and the Midwest region reported the highest percentage of ADB-FUBINACA (5%).

Table 2.5

SYNTHETIC CANNABINOIDS

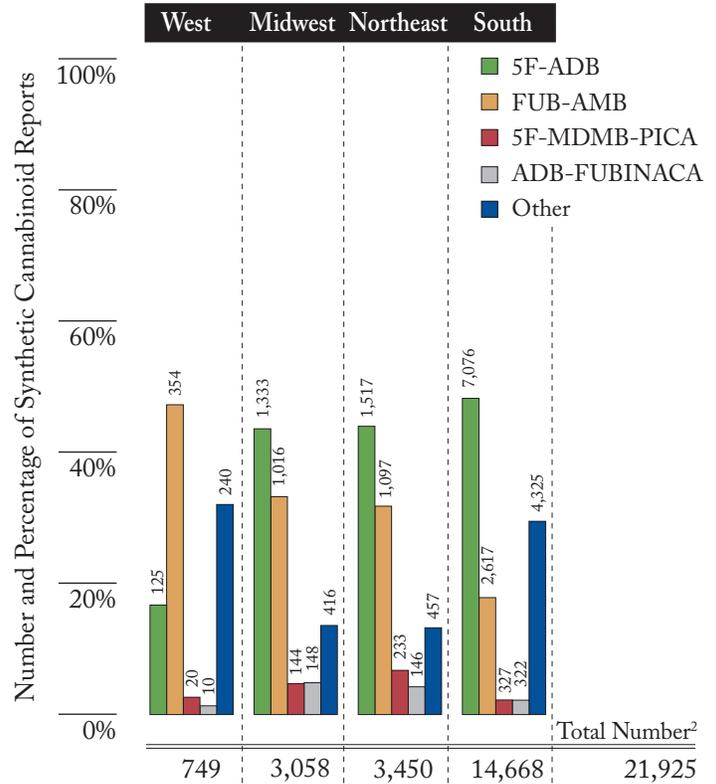
Number and percentage of synthetic cannabinoid reports in the United States, 2018¹

Synthetic Cannabinoid Reports	Number	Percent
5F-ADB	10,052	45.85%
FUB-AMB	5,085	23.19%
5F-MDMB-PICA	723	3.30%
ADB-FUBINACA	627	2.86%
5F-EDMB-PINACA	423	1.93%
4-cyano CUMYL-BUTINACA	252	1.15%
Fluoro-ADB	192	0.88%
Fluoro-MDMB-PICA	184	0.84%
5F-AEB	149	0.68%
XLR11	137	0.63%
FUB-144	123	0.56%
Fluoro-EDMB-PINACA	112	0.51%
4F-MDMB-BINACA	78	0.36%
NM-2201	73	0.33%
AB-FUBINACA	67	0.31%
Other synthetic cannabinoids	3,647	16.63%
Total Synthetic Cannabinoid Reports²	21,925	100.00%
Total Drug Reports	1,599,428	

¹ Includes drug reports submitted to laboratories from January 1, 2018, through December 31, 2018, that were analyzed by March 31, 2019.

² Numbers and percentages may not sum to totals because of rounding.

Figure 2.5 Distribution of synthetic cannabinoid reports within region, 2018¹



5F-ADB=methyl 2-(1-(5-fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

FUB-AMB=methyl 2-(1-(4-fluorobenzyl)-1H-indazole-3-carboxamido)-3-methylbutanoate

5F-MDMB-PICA=methyl 2-(1-(5-fluoropentyl)-1H-indole-3-carboxamido)-3,3-dimethylbutanoate

ADB-FUBINACA=N-(1-amino-3,3-dimethyl-1-oxobutan-2-yl)-1-(4-fluorobenzyl)-1H-indazole-3-carboxamide

5F-EDMB-PINACA=ethyl 2-(1-(5-fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

4-cyano CUMYL-BUTINACA=1-(4-cyanobutyl)-N-(2-phenylpropan-2-yl)-1H-indazole-3-carboxamide

5F-AEB=ethyl 2-(1-(5-fluoropentyl)-1H-indazole)-3-carboxamido)-3-methylbutanoate

XLR11=[1-(5-fluoropentyl)1H-indol-3-yl](2,2,3,3-tetramethylcyclopropyl)methanone

FUB-144=(1-(4-fluorobenzyl)-1H-indol-3-yl)(2,2,3,3-tetramethylcyclopropyl)methanone

4F-MDMB-BINACA=methyl 2-(1-(4-fluorobutyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

NM-2201=naphthalen-1-yl 1-(5-fluoropentyl)-1H-indole-3-carboxylate

AB-FUBINACA=N-(1-amino-3-methyl-1-oxobutan-2-yl)-1-(4-fluorobenzyl)-1H-indazole-3-carboxamide

^{vi} Centers for Disease Control and Prevention. (2017, August 21).

Synthetic cannabinoids: What are they? What are their effects?

Retrieved from <https://www.cdc.gov/nceh/hsb/chemicals/sc/default.html>

GIS ANALYSIS: BUPRENORPHINE AND N-ETHYLPENTY- LONE COMPARISONS, BY LOCATION, 2016 AND 2018

One of the unique features of NFLIS-Drug is the ability to analyze and monitor, by the county of origin, variation in drugs reported by laboratories. By using geographic information system (GIS) analyses, NFLIS-Drug can provide information on drug seizure locations.

This section presents data at the State and county levels for the percentage of drug reports identified as buprenorphine and N-ethylpentylone at two points in time—2016 and 2018. In 2018, both drugs appeared in the NFLIS-Drug list of the top 25 most frequently identified drugs. Buprenorphine was the 3rd highest reported narcotic analgesic and the 8th most frequently reported drug. N-ethylpentylone was the 3rd highest reported phenethylamine and the 11th most frequently reported drug.

The GIS data presented here are based on information provided to NFLIS-Drug forensic laboratories by the submitting law enforcement agencies ([Figures 3.1](#) to [3.8](#)). The information submitted by law enforcement includes the ZIP Code or county of origin associated with the drug seizure incident or the name of the submitting law enforcement agency. When a ZIP Code or county of origin is unavailable, the drug seizure or incident is assigned to the same county as the submitting law enforcement agency. If the submitting agency is unknown, the seizure or incident is assigned to the county in which the laboratory completing the analyses is located.

It is important to note that these data may not include all drug items seized at the State and county levels. Instead, these data represent only those drugs that were submitted to and analyzed by NFLIS-Drug forensic laboratories. In addition, some laboratories within several States are not currently reporting data to NFLIS-Drug, and their absence may affect the relative distribution of drugs seized and analyzed. Nevertheless, these data can serve as an important source for identifying abuse and trafficking trends and patterns across and within States.

Figure 3.1 Percentage of total drug reports identified as buprenorphine, by State, 2016¹

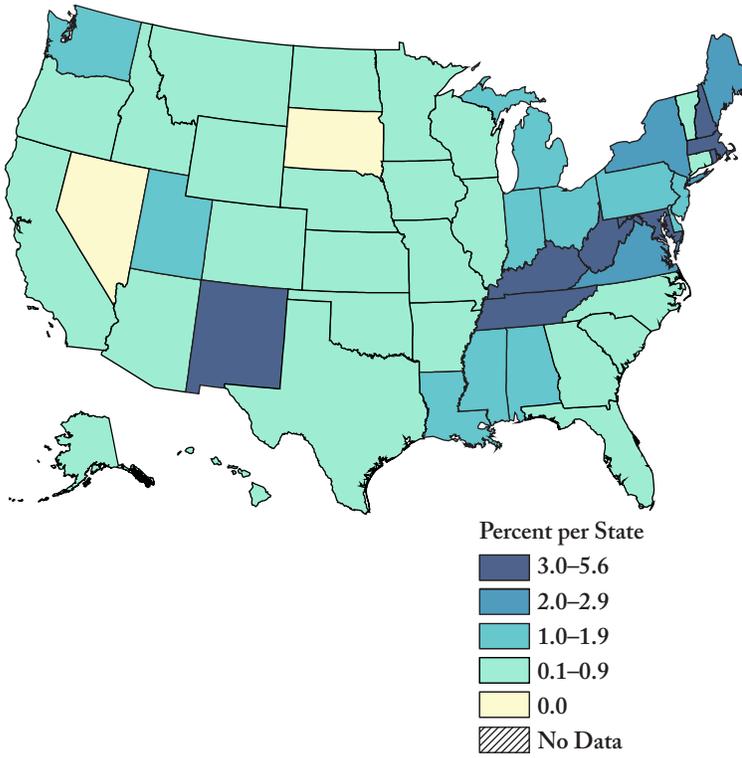


Figure 3.2 Percentage of total drug reports identified as buprenorphine, by State, 2018¹

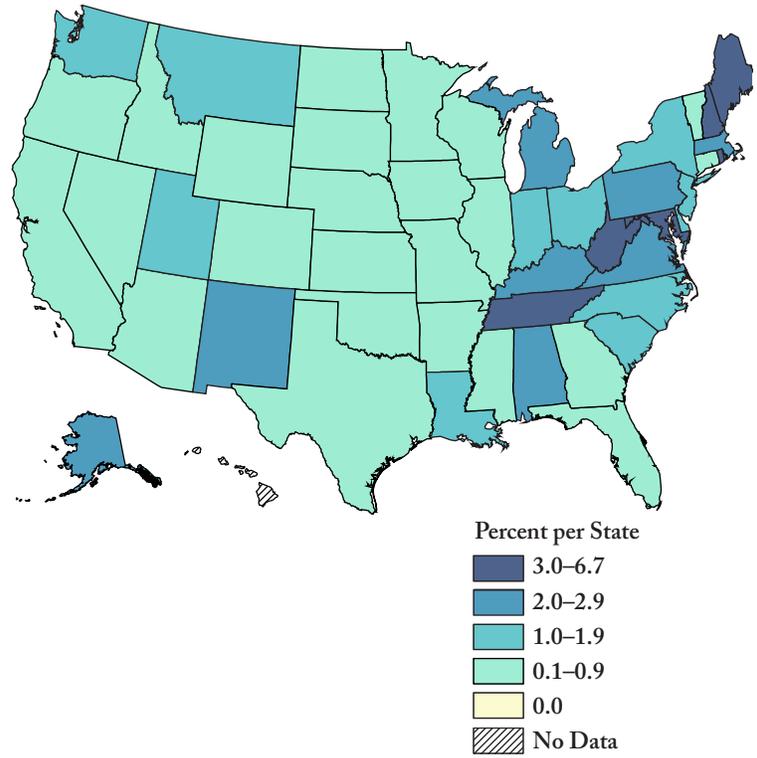


Figure 3.3 Percentage of total drug reports identified as N-ethylpentylone, by State, 2016¹

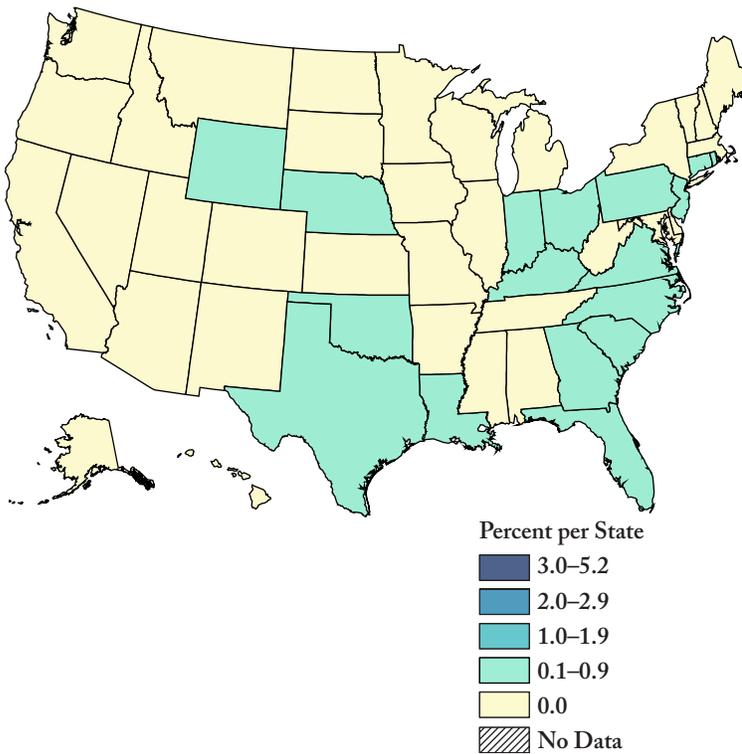
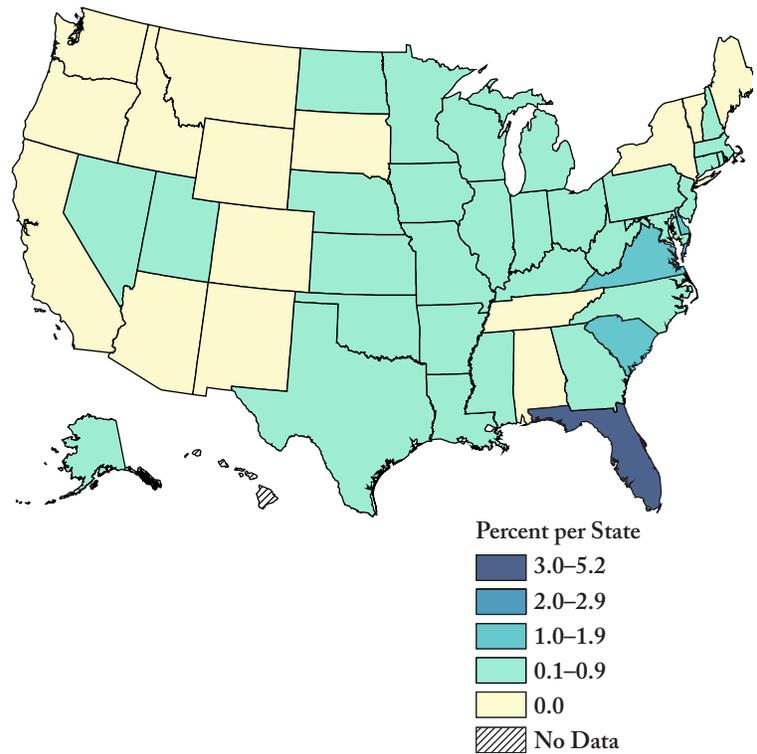


Figure 3.4 Percentage of total drug reports identified as N-ethylpentylone, by State, 2018¹



¹ Includes drugs submitted to State and local laboratories during the calendar year that were analyzed within three months of the reporting period.

Figure 3.5 Percentage of total drug reports identified as buprenorphine in Alabama, by county, 2016¹

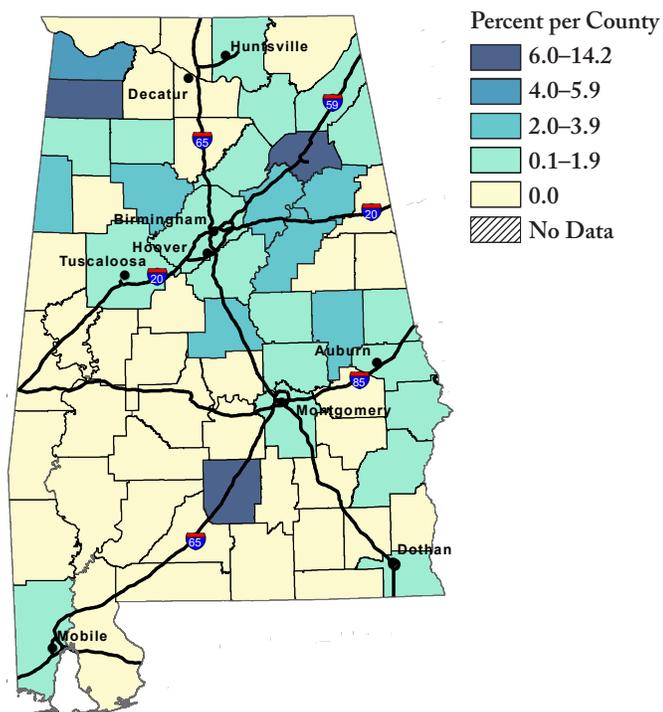


Figure 3.6 Percentage of total drug reports identified as buprenorphine in Alabama, by county, 2018¹

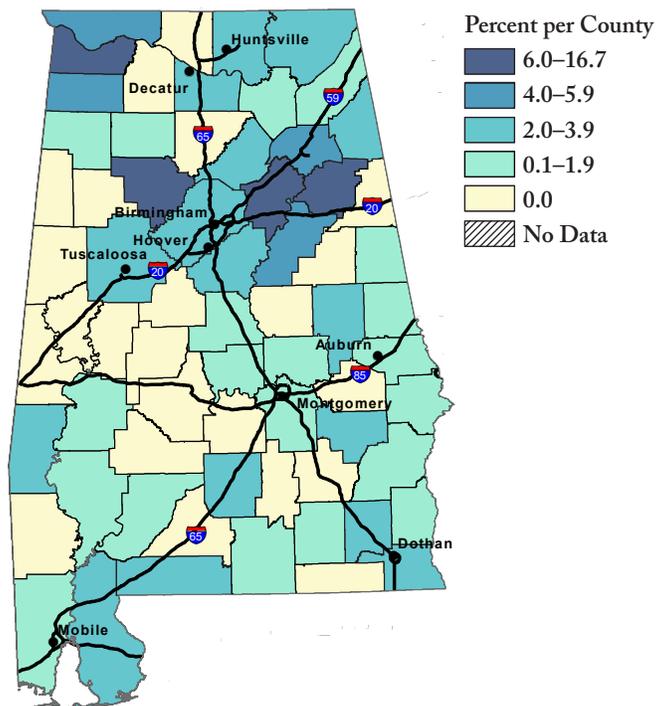


Figure 3.7 Percentage of total drug reports identified as N-ethylpentylone in Illinois, by county, 2016¹

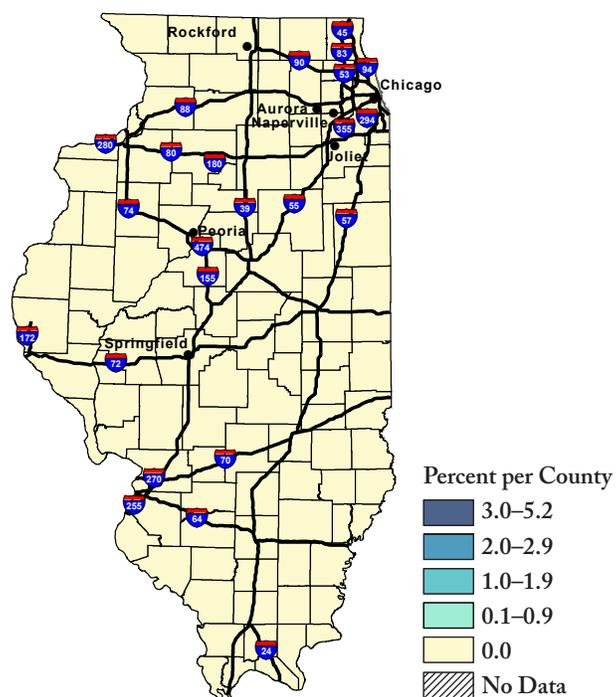
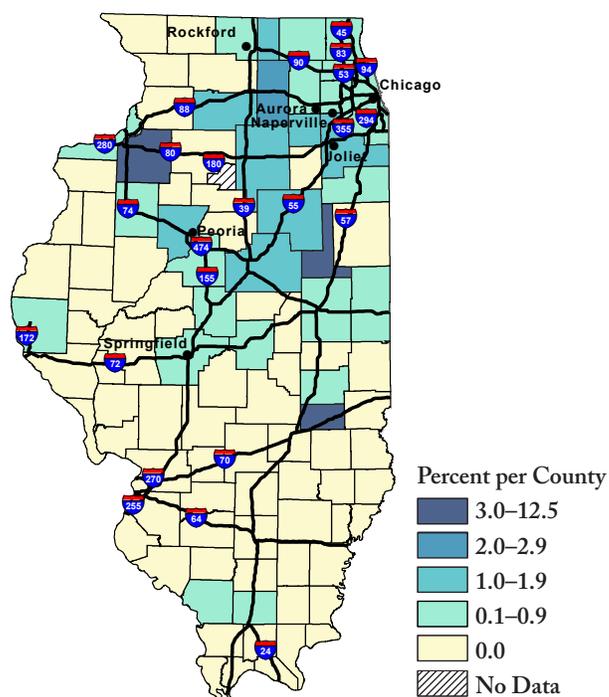


Figure 3.8 Percentage of total drug reports identified as N-ethylpentylone in Illinois, by county, 2018¹



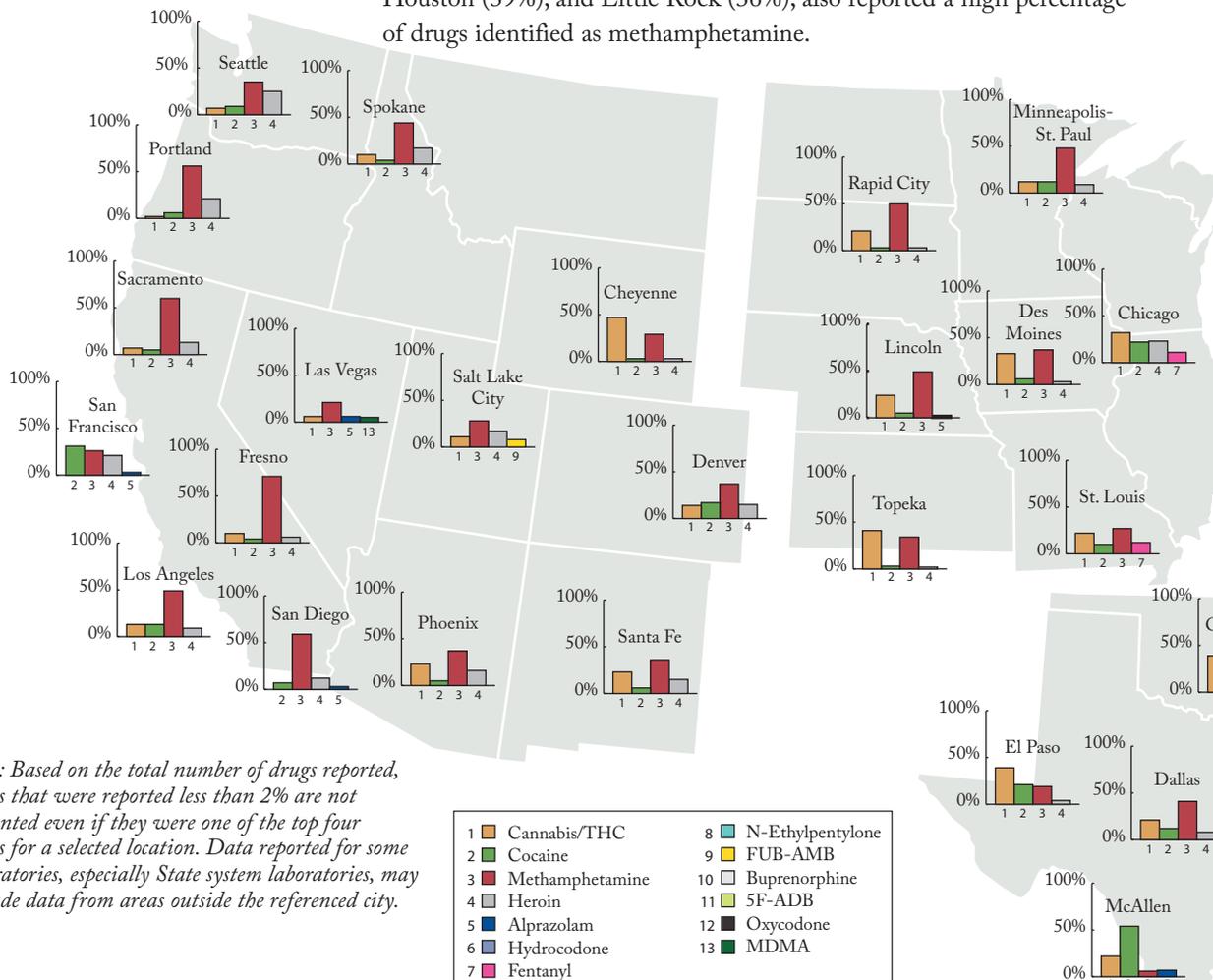
¹ Includes drugs submitted to State and local laboratories during the calendar year that were analyzed within three months of the reporting period.

DRUGS IDENTIFIED BY LABORATORIES IN SELECTED U.S. CITIES

NFLIS-Drug can be used to monitor drugs reported by forensic laboratories across the country, including laboratories in large U.S. cities. This section presents drug analysis results of all drugs submitted to State and local laboratories during 2018 and analyzed by March 31, 2019.

This section presents data for the four most common drugs reported by NFLIS-Drug laboratories located in selected cities. The laboratories representing selected cities are presented in the summary table on the next page. The following results highlight geographic differences in the types of drugs abused and trafficked, such as the higher levels of cocaine reporting on the East Coast and methamphetamine reporting on the West Coast.

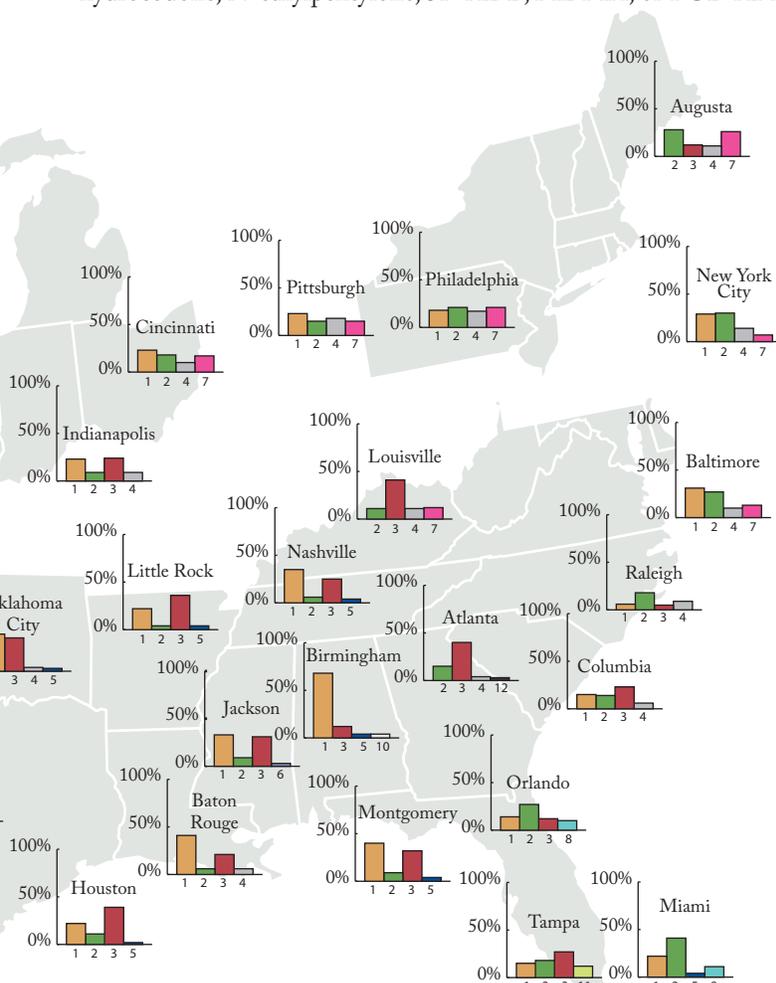
Nationally, 24% of all drugs in NFLIS-Drug were identified as methamphetamine (Table 1.1). The highest percentages of methamphetamine were reported by laboratories representing cities in the West and Midwest, including Fresno (71%), Sacramento (60%), San Diego (59%), Portland (56%), Rapid City (50%), Los Angeles (49%), Lincoln (49%), Minneapolis-St. Paul (48%), and Spokane (44%). Cities in the South, such as Dallas (41%), Louisville (41%), Atlanta (40%), Houston (39%), and Little Rock (36%), also reported a high percentage of drugs identified as methamphetamine.



The highest percentages of cocaine were reported by laboratories representing cities in the South and Northeast, such as McAllen (54%), Miami (41%), New York City (30%), Augusta (28%), Baltimore (27%), Orlando (27%), Philadelphia (21%), and El Paso (21%). Cities in the West, such as San Francisco (31%) and Denver (17%), and the Midwest, such as Chicago (22%) and Cincinnati (18%), also reported a high percentage of cocaine. Nationally, 14% of drugs in NFLIS-Drug were identified as cocaine.

The highest percentages of heroin were reported by laboratories representing the Northeastern cities of Pittsburgh (18%) and Philadelphia (17%); the Midwestern cities of Chicago (23%) and Cincinnati (10%); the Southern cities of Baltimore (10%) and Raleigh (9%); and the Western cities of Seattle (25%), San Francisco (21%), Portland (21%), Salt Lake City (17%), and Spokane (17%). Nationally, 9% of all drugs in NFLIS-Drug were identified as heroin.

Among controlled prescription drugs, Augusta (26%), Philadelphia (21%), Cincinnati (17%), and Pittsburgh (15%) reported the highest percentages of fentanyl. Nationally, 5% of drugs in NFLIS-Drug were identified as fentanyl. McAllen (7%) and Las Vegas (6%) reported the highest percentages of alprazolam, while Atlanta (3%) reported the highest percentage of oxycodone. Nationally, 3% of drugs in NFLIS-Drug were identified as alprazolam and 2% were identified as oxycodone. Birmingham (4%) reported the highest percentage of buprenorphine, while Jackson (3%) reported the highest percentage of hydrocodone. Miami (11%) and Orlando (10%) reported the highest percentage of N-ethylpentylone, Tampa (12%) reported the highest percentage of 5F-ADB, Las Vegas (5%) reported the highest percentage of MDMA, and Salt Lake City (8%) reported the highest percentage of FUB-AMB. Nationally, 1% or less of drugs were identified as buprenorphine, hydrocodone, N-ethylpentylone, 5F-ADB, MDMA, or FUB-AMB.



Selected Laboratories

Atlanta (Georgia State Bureau of Investigation—Decatur Laboratory)
Augusta (Maine Department of Health and Human Services)
Baltimore (Baltimore City Police Department)
Baton Rouge (Louisiana State Police)
Birmingham (Alabama Department of Forensic Sciences—Birmingham Laboratory)
Cheyenne (Wyoming State Crime Laboratory)
Chicago (Illinois State Police—Chicago Laboratory)
Cincinnati (Hamilton County Coroner's Office)
Columbia (South Carolina Law Enforcement Division—Columbia Laboratory)
Dallas (Texas Department of Public Safety—Garland Laboratory)
Denver (Denver Police Department Crime Laboratory)
Des Moines (Iowa Division of Criminal Investigations)
El Paso (Texas Department of Public Safety—El Paso Laboratory)
Fresno (California Department of Justice—Fresno Laboratory and Fresno County Sheriff's Forensic Laboratory)
Houston (Texas Department of Public Safety—Houston Laboratory and Harris County Institute of Forensic Sciences Crime Laboratory)
Indianapolis (Indianapolis-Marion County Forensic Laboratory)
Jackson (Mississippi Department of Public Safety—Jackson Laboratory and Jackson Police Department Crime Laboratory)
Las Vegas (Las Vegas Metropolitan Police Crime Laboratory)
Lincoln (Nebraska State Patrol Criminalistics Laboratory—Lincoln Laboratory)
Little Rock (Arkansas State Crime Laboratory)
Los Angeles (Los Angeles Police Department and Los Angeles County Sheriff's Department)
Louisville (Kentucky State Police—Louisville Laboratory)
McAllen (Texas Department of Public Safety—McAllen Laboratory)
Miami (Miami-Dade Police Department Crime Laboratory)
Minneapolis-St. Paul (Minnesota Bureau of Criminal Apprehension—Minneapolis Laboratory)
Montgomery (Alabama Department of Forensic Sciences—Montgomery Laboratory)
Nashville (Tennessee Bureau of Investigation—Nashville Laboratory)
New York City (New York City Police Department Crime Laboratory)
Oklahoma City (Oklahoma State Bureau of Investigation—Oklahoma City Laboratory)
Orlando (Florida Department of Law Enforcement—Orlando Laboratory)
Philadelphia (Philadelphia Police Department Forensic Science Laboratory)
Phoenix (Phoenix Police Department)
Pittsburgh (Allegheny Office of the Medical Examiner Forensic Laboratory)
Portland (Oregon State Police Forensic Services Division—Portland Laboratory)
Rapid City (Rapid City Police Department)
Raleigh (North Carolina State Bureau of Investigation—Raleigh Laboratory)
Sacramento (Sacramento County District Attorney's Office)
Salt Lake City (Utah Department of Public Safety—Salt Lake City State Crime Laboratory)
San Diego (San Diego Police Department)
San Francisco (San Francisco Police Department)
Santa Fe (New Mexico Department of Public Safety—Santa Fe Laboratory)
Seattle (Washington State Patrol—Seattle Laboratory)
Spokane (Washington State Patrol—Spokane Laboratory)
St. Louis (St. Louis Police Department)
Tampa (Florida Department of Law Enforcement—Tampa Laboratory)
Topeka (Kansas Bureau of Investigation—Topeka Laboratory)

Overview

Since 2001, NFLIS-Drug publications have included national and regional estimates for the number of drug reports and drug cases analyzed by State and local forensic laboratories in the United States. This appendix discusses the methods used for producing these estimates, including sample selection, weighting, imputation, and trend analysis procedures. RTI International, under contract to the DEA, began implementing NFLIS-Drug in 1997. Results from a 1998 survey (updated in 2002, 2004, 2008, and 2013) provided laboratory-specific information, including annual caseloads, which was used to establish a national sampling frame of all known State and local forensic laboratories that routinely perform drug chemistry analyses. A probability proportional to size (PPS) sample was drawn on the basis of annual cases analyzed per laboratory, resulting in a NFLIS-Drug national sample of 29 State laboratory systems and 31 local or municipal laboratories, and a total of 168 individual laboratories (see Appendix B for a list of sampled NFLIS-Drug laboratories).

Estimates appearing in this publication are based on cases and items *submitted* to laboratories between January 1, 2018, and December 31, 2018, and analyzed by March 31, 2019. Analysis has shown that approximately 95% of cases submitted during an annual period are analyzed within three months of the end of the annual period (not including the approximately 30% of cases that are never analyzed).

Since 2011, the estimation procedures have accounted for multiple drugs per item. For each drug item (or exhibit) analyzed by a laboratory in the NFLIS-Drug program, up to three drugs were reported to NFLIS and counted in the estimation process. A further enhancement to account for multiple drugs per item was introduced in 2017 for the 2016 Annual Report. All drugs reported in an item are now counted in the estimation process. This change ensures that the estimates will take into consideration all reported substances, including emerging drugs of interest that may typically be reported as the fourth or fifth drug within an item. This change was implemented in the 2016 data processing cycle and for future years. Although this change could not be applied to reporting periods before 2016, the 2016 data showed that 99.97% of drug reports are captured in the first, second, or third drug report for any item; therefore, no statistical adjustments were deemed necessary to maintain the trend with prior years.

Currently, laboratories representing more than 98% of the national drug caseload participate in NFLIS-Drug, with about 97% of the national caseload reported for the current reporting period. Because of the continued high level of reporting among laboratories, the NEAR (National Estimates Based on All Reports) method, which has strong statistical advantages for producing national and regional estimates, continues to be implemented.

NEAR Methodology

In NFLIS-Drug publications before 2011, data reported by nonsampled laboratories were not used in national or regional estimates.^{vii} However, as the number of nonsampled laboratories reporting to NFLIS-Drug increased,^{viii} it began to make sense to consider ways to utilize the data they submitted. Under NEAR, the “volunteer” laboratories (i.e., the reporting nonsampled laboratories) represent themselves and are no longer represented by the reporting sampled laboratories. The volunteer laboratories are assigned weights of one; hence, the weights of the sampled and responding laboratories are appropriately adjusted downward. The outcome is that the estimates are more precise, especially for recent years, which include a large number of volunteer laboratories. More precision allows for more power to detect trends and fewer suppressed estimates in [Tables 1.1](#) and [1.2](#) of the NFLIS-Drug Annual and Midyear Reports.

NEAR imputations and adjusting for missing monthly data in reporting laboratories

Because of technical and other reporting issues, some laboratories do not report data for every month during a given reporting period, resulting in missing monthly data. If a laboratory reports fewer than six months of data for the annual estimates (fewer than three months for the semiannual estimates), it is considered nonreporting, and its reported data are not included in the estimates. Otherwise, imputations are performed separately by drug for laboratories that are missing monthly data, using drug-specific proportions generated from laboratories that are reporting all months of data. This imputation method is used for cases, items, and drug-specific reports and accounts for the typical month-to-month variation and the size of the laboratory requiring imputation. The general idea is to use the nonmissing months to assess the size of the laboratory requiring imputation and then to apply the seasonal pattern exhibited by all laboratories with no missing data. Imputations of monthly case counts are created using the following ratio (r_L):

$$r_L = \frac{\sum_{m \in R_L} c_{L,m}}{\sum_{m \in R_L} c_{.,m}}$$

where

- R_L = set of all nonmissing months in laboratory L ,
- $c_{L,m}$ = case count for laboratory L in month m , and
- $c_{.,m}$ = mean case counts for all laboratories reporting complete data.

^{vii} The case and item loads for the nonsampled laboratories were used in calculating the weights.

^{viii} In the current reporting period, for example, out of 113 nonsampled laboratories and laboratory systems, 85 (or 75%) reported.

Monthly item counts are imputed for each laboratory using an estimated item-to-case ratio (s_L) for nonmissing monthly item counts within the laboratory. The imputed value for the missing monthly number of items in each laboratory is calculated by multiplying $c_{L,m}$ by s_L .

$$s_L = \frac{\sum_{m \in R_L} i_{L,m}}{\sum_{m \in R_L} c_{L,m}},$$

where

- R_L = set of all nonmissing months in laboratory L ,
- $i_{L,m}$ = item count for laboratory L in month m , and
- $c_{L,m}$ = case count for laboratory L in month m .

Drug-specific case and report counts are imputed using the same imputation techniques presented above for the case and item counts. The total drug, item, and case counts are calculated by aggregating the laboratory and laboratory system counts for those with complete reporting and those that require imputation.

NEAR imputations and drug report-level adjustments

Most forensic laboratories classify and report case-level analyses consistently in terms of the number of vials of a particular pill. A small number, however, do not produce drug report-level counts in the same way as those submitted by the vast majority. Instead, they report as items the count of the individual pills themselves. Laboratories that consider items in this manner also consider drug report-level counts in this same manner. Drug report-to-case ratios for each drug are produced for the similarly sized laboratories, and these drug-specific ratios are then used to adjust the drug report counts for the relevant laboratories.

NEAR weighting procedures

Each NFLIS-Drug reporting laboratory is assigned a weight to be used in calculating design-consistent, nonresponse-adjusted estimates. Two weights are created: one for estimating cases and one for estimating drug reports. The weight used for case estimation is based on the caseload for every laboratory in the NFLIS-Drug population, and the weight used for drug reports' estimation is based on the item load for every laboratory in the NFLIS-Drug population. For reporting laboratories, the caseload and item load used in weighting are the reported totals. For nonreporting laboratories, the caseload and item load used in weighting are based on completion-based data obtained from an updated laboratory survey administered in 2013, or, in some cases, via direct communication with laboratories or other external sources.

When the NFLIS-Drug sample was originally drawn, State systems (and the multilaboratory local systems known to exist) were treated as a single laboratory; so, if a State system was selected, all laboratories in the system were selected. The sampling

frame of laboratories was divided into four strata by two stratifiers: (1) type of laboratory (State system or municipal or county laboratory) and (2) determination of "certainty" laboratory status. The criteria used in selecting the certainty laboratories included (1) size, (2) region, (3) geographical location, and (4) other special considerations (e.g., strategic importance of the laboratory). To ensure that the NFLIS-Drug sample had strong regional representation, U.S. census regions were used as the geographical divisions to guide the selection of certainty laboratories and systems. Some large laboratories were automatically part of the original NFLIS-Drug sample because they were deemed critically important to the calculation of reliable estimates.

Each weight has two components, the design weight and the nonresponse adjustment factor, the product of which is the final weight used in estimation. After imputation, the final item weight is based on the item count, and the final case weight is based on the case count of each laboratory or laboratory system. The final weights are used to calculate national and regional estimates. The first component, the design weight, is based on the proportion of the caseload and item load of the NFLIS-Drug universe^{ix} represented by the individual laboratory or laboratory system. This step takes advantage of the original PPS sample design and provides precise estimates as long as the drug-specific case and report counts are correlated with the overall caseload and item load.^x

During the weighting process, laboratories are further categorized into 16 strata by region (Northeast, Midwest, South, and West), in addition to type of laboratory (State system or municipal or county laboratory) and certainty status, which were both used in defining the sampling strata. For noncertainty reporting laboratories in the sample (and reporting laboratories in the certainty strata with nonreporting laboratories), the design-based weight for each laboratory is calculated as follows:

$$\text{Design Weight}_i = A / (B \times \text{Case [item] Count for Laboratory or Laboratory System } i),$$

where

- i = i th laboratory or laboratory system;
- A = sum of the case (item) counts for all of the laboratories and laboratory systems (sampled and nonsampled) within a specific stratum, excluding certainty strata and the volunteer stratum; and
- B = number of sampled laboratories and laboratory systems within the same stratum, excluding certainty strata and the volunteer stratum.

^{ix} See the Introduction of this publication for a description of the NFLIS-Drug universe.

^x Lohr, S. L. (2010). *Sampling: Design and analysis* (2nd ed., pp. 231–234). Boston, MA: Brooks/Cole.

Certainty laboratories are assigned a design weight of one.^{xi}

The second component, the nonresponse adjustment factor, adjusts the weights of the reporting and sampled laboratories to account for the nonreporting and sampled laboratories. The nonresponse (*NR*) adjustment, for certainty and noncertainty laboratories, is calculated as follows:

$$NR_j = C/D,$$

where

j = stratum;

C = number of sampled laboratories and laboratory systems in the stratum, excluding the volunteer stratum; and

D = number of laboratories and laboratory systems in the stratum that are sampled and reporting.

Because volunteer laboratories represent only themselves, they are automatically assigned a final weight of one.

NEAR estimation

The estimates in this publication are the weighted sum of the counts from each laboratory. The weighting procedures make the estimates more precise by assigning large weights to small laboratories and small weights to large laboratories.^{xii} Because most of the values being estimated tend to be related to laboratory size, the product of the weight and the value to be estimated tend to be relatively stable across laboratories, resulting in precise estimates.

A finite population correction is also applied to account for the high sampling rate. In a sample-based design, the sampling fraction, which is used to create the weights, equals the number of sampled laboratories divided by the number of laboratories in the NFLIS-Drug universe. Under NEAR, the sampling fraction equals the number of sampled laboratories divided by the sum of the number of sampled laboratories and the number of nonreporting, nonsampled laboratories. Volunteer laboratories are not included in the sampling fraction calculation. Thus, the NEAR approach makes the sampling rate even higher because volunteer laboratories do not count as nonsampled laboratories.

Suppression of Unreliable Estimates

For some drugs, such as cannabis/THC and cocaine, thousands of reports occur annually, allowing for reliable national prevalence estimates to be computed. For other drugs, reliable and precise estimates cannot be computed because of a combination of low report counts and substantial variability in report counts

^{xi} With respect to the design weight, reporting laboratories and laboratory systems in certainty strata with nonreporting laboratories and laboratory systems are treated the same way as reporting noncertainty sampled laboratories and laboratory systems. This is done to reduce the variance; otherwise, all reporting laboratories and laboratory systems in these strata would get the same weight regardless of their size.

^{xii} See footnote [x](#).

between laboratories. Thus, a suppression rule was established. Precision and reliability of estimates are evaluated using the relative standard error (RSE), which is the ratio between the standard error of an estimate and the estimate. Drug estimates with an RSE > 50% are suppressed and not shown in the tables.

Statistical Techniques for Trend Analysis

Two types of analyses to compare estimates across years are used. The first is called *prior-year comparisons* and compares national and regional estimates from January 2017 through December 2017 with those from January 2018 through December 2018. The second is called *long-term trends* and examines trends in the annual national and regional estimates from January 2001 through December 2018. The long-term trends method described below was implemented beginning with the 2012 Midyear Report. The new method offers the ability to identify linear and curved trends, unlike the method used in previous NFLIS-Drug publications. Both types of trend analyses are described below. For the region-level prior-year comparisons and long-term trends, the estimated drug reports are standardized to the most recent regional population totals for persons aged 15 years or older.

Prior-year comparisons

For selected drugs, the prior-year comparisons statistically compare estimates in [Table 1.1](#) of this publication with estimates in Table 1.1 of the 2017 Annual Report. The specific test examines whether the difference between any two estimates is significantly different from zero. A standard t test is completed using the statistic,

$$t_{df} = \frac{a\hat{T}_{2018} - b\hat{T}_{2017}}{\sqrt{a^2 \text{var}(\hat{T}_{2018}) + b^2 \text{var}(\hat{T}_{2017}) - 2ab \text{cov}(\hat{T}_{2017}, \hat{T}_{2018})}},$$

where

df = appropriate degrees of freedom (number of laboratories minus number of strata);

\hat{T}_{2018} = estimated total number of reports for the given drug for January 2018 through December 2018;

\hat{T}_{2017} = estimated total number of reports for the given drug for January 2017 through December 2017;

$\text{var}(\hat{T}_{2018})$ = variance of \hat{T}_{2018} ;

$\text{var}(\hat{T}_{2017})$ = variance of \hat{T}_{2017} ; and

$\text{cov}(\hat{T}_{2017}, \hat{T}_{2018})$ = covariance between \hat{T}_{2017} and \hat{T}_{2018} .

For the national prior-year comparisons, $a = b = 1$. For the regional prior-year comparisons, $a = 100,000$ divided by the regional population total for 2018, and $b = 100,000$ divided by the regional population total for 2017.

The percentile of the test statistic in the t distribution determines whether the prior-year comparison is statistically significant (a two-tailed test at $\alpha = .05$).

Long-term trends

A long-term trend analysis is performed on the January 2001 through December 2018 annual national estimates of totals and regional estimates of rates for selected drug reports. The models allow for randomness in the totals and rates due to the sample and the population. That is, for the vector of time period totals over that time,

$$\mathbf{Y}^T \equiv (Y_1, Y_2, \dots, Y_{18}),$$

and for the estimates,

$$\hat{\mathbf{Y}}^T \equiv (\hat{Y}_1, \hat{Y}_2, \dots, \hat{Y}_{18}),$$

the regression model is

$$\hat{\mathbf{Y}} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\eta} + \boldsymbol{\varepsilon},$$

where

$\boldsymbol{\eta} = \hat{\mathbf{Y}} - \mathbf{Y}$ is a 18×1 vector of errors due to the probability sample, and

$\boldsymbol{\varepsilon} = 18 \times 1$ vector of errors due to the underlying model.

Randomness due to the sample exists because only a sample of all eligible laboratories has been randomly selected to be included. Randomness due to the population exists because many factors that can be viewed as random contribute to the specific total reported by a laboratory in a time period. For example, not all drug seizures that could have been made were actually made, and there may have been some reporting errors. If rates (per 100,000 persons aged 15 years or older) and not totals are of interest, the above model can be applied to $\hat{\mathbf{Y}}^* = c\hat{\mathbf{Y}}$, where c equals 100,000 divided by the 15-or-older regional population size as given by the U.S. Census Bureau.

The regression model used to perform the analysis is

$$Y_t = \alpha_0 + \alpha_1 t + \alpha_2 t^2 + \dots + \alpha_m t^m + \varepsilon_t \quad t = 1, \dots, T,$$

where

Y_t = the population total value, considered to be a realization of the underlying model; and

ε_t = one of a set of 18 independent normal variates with a mean of zero and a variance of σ^2 .

The model allows for a variety of trend types, depending on the maximal polynomial degree of the analysis, such as the following: linear (straight line; $m = 1$), quadratic (U-shaped; $m = 2$), cubic (S-shaped; $m = 3$), quartic (higher-order shape; $m = 4$), and quintic (higher-order shape; $m = 5$). Because it is a model for Y_t but the sample estimates \hat{Y}_t differ by the sampling error, estimation was performed by restricted maximum likelihood (REML), allowing for the two sources of error.

To implement the regression model, point estimates of totals \hat{Y}_t and their standard errors are obtained for all 18 annual periods beginning with the January to December 2001 period and ending with the January to December 2018 period. Sampling standard errors are estimated as the full sampling variance-covariance matrix \mathbf{S} over these 18 time periods. The \mathbf{S} matrix contains variances in totals at any time period and covariances in totals between any two time periods, thus giving a very general modeling of the sampling variance structure. The variance-covariance matrix of the totals is then $V[\hat{\mathbf{Y}}] = \sigma^2 \mathbf{I} + \mathbf{S}$, where \mathbf{I} is the identity matrix.

Before the 2016 Annual Report, the variance and covariance components of the \mathbf{S} matrix for the means were estimated simultaneously. The variance-covariance matrix for the means was then converted into a variance-covariance matrix for the totals. A change was introduced in 2017 in which the covariances of the totals are directly estimated, and the estimation of the covariance of the means is no longer necessary. This change in the computation of the covariance of totals provides an incremental improvement over the old approach and theoretically provides more valid statistical inferences. In addition, it creates consistency in the covariance estimation between these long-term trends and the prior-year comparisons.

Regression coefficients are estimated using the REML method. Because higher-order polynomial regression models generally show strong collinearity among predictor variables, the model is reparameterized using orthogonal polynomials. The reparameterized model is

$$Y_t = \beta_0 X_0(t) + \beta_1 X_1(t) + \beta_2 X_2(t) + \dots + \beta_m X_m(t) + \varepsilon_t \quad t = 1, \dots, T,$$

where

$$X_0(t) = 1/\sqrt{T} \text{ for all } t, \text{ and}$$

$X_1(t), \dots, X_m(t)$ provide contributions for the first-order (linear), second-order (quadratic), and higher-order polynomials.

Note that the error term is the same in the original model and the reparameterized model because the fitted surface is the same for both models. The model is further constrained to have regression residuals sum to zero, a constraint that is not guaranteed by theory for these models but is considered to improve model fit because of an approximation required to estimate \mathbf{S} . Standard errors of the regression trend estimates are obtained by simulation.

Final models are selected after testing for the significance of coefficients at the $\alpha = 0.05$ level ($p < .05$), which means that if the trend of interest (linear, quadratic, or other higher-order polynomial) was in fact zero, then there would be a 5% chance that the trend would be detected as statistically significant when in fact it is not. Final fitted models are most easily interpreted using graphical plots.

NFLIS-DRUG PARTICIPATING AND REPORTING FORENSIC LABORATORIES

State	Lab Type	Laboratory Name	Reporting
AK	State	Alaska Department of Public Safety	
AL	State	Alabama Department of Forensic Sciences (5 sites)	✓
AR	State	Arkansas State Crime Laboratory (2 sites)	✓
AZ	State	Arizona Department of Public Safety, Scientific Analysis Bureau (4 sites)	✓
	Local	Mesa Police Department	✓
	Local	Phoenix Police Department	✓
	Local	Scottsdale Police Department	✓
	Local	Tucson Police Department Crime Laboratory	✓
CA	State	California Department of Justice (10 sites)	✓
	Local	Alameda County Sheriff's Office Crime Laboratory (San Leandro)	✓
	Local	Contra Costa County Sheriff's Office (Martinez)	✓
	Local	Fresno County Sheriff's Forensic Laboratory	✓
	Local	Kern County District Attorney's Office (Bakersfield)	✓
	Local	Long Beach Police Department	✓
	Local	Los Angeles County Sheriff's Department (4 sites)	✓
	Local	Los Angeles Police Department (2 sites)	✓
	Local	Oakland Police Department Crime Laboratory	✓
	Local	Orange County Sheriff's Department (Santa Ana)	✓
	Local	Sacramento County District Attorney's Office	✓
	Local	San Bernardino County Sheriff's Department	✓
	Local	San Diego County Sheriff's Department	✓
	Local	San Diego Police Department	✓
	Local	San Francisco Police Department*	✓
	Local	San Mateo County Sheriff's Office (San Mateo)	✓
	Local	Santa Clara District Attorney's Office (San Jose)	✓
	Local	Solano County District Attorney Bureau of Forensic Services	✓
	Local	Ventura County Sheriff's Department	✓
CO	State	Colorado Bureau of Investigation (4 sites)	✓
	Local	Aurora Police Department	✓
	Local	Colorado Springs Police Department	✓
	Local	Denver Police Department Crime Laboratory	✓
	Local	Jefferson County Sheriff's Office (Golden)	✓
CT	State	Connecticut Department of Public Safety	✓
DE	State	Chief Medical Examiner's Office	✓
FL	State	Florida Department of Law Enforcement (5 sites)	✓
	Local	Broward County Sheriff's Office (Fort Lauderdale)	✓
	Local	Indian River Crime Laboratory (Fort Pierce)	✓
	Local	Manatee County Sheriff's Office (Bradenton)	✓
	Local	Miami-Dade Police Department Crime Laboratory	✓
	Local	Palm Beach County Sheriff's Office Crime Laboratory (West Palm Beach)	✓
	Local	Pinellas County Forensic Laboratory (Largo)	✓
	Local	Sarasota County Sheriff's Office	✓
GA	State	Georgia State Bureau of Investigation (6 sites)	✓
HI	Local	Honolulu Police Department	✓
IA	State	Iowa Division of Criminal Investigations	✓
ID	State	Idaho State Police (3 sites)	✓
IL	State	Illinois State Police (6 sites)	✓
	Local	DuPage County Forensic Science Center (Wheaton)	✓
	Local	Northern Illinois Police Crime Laboratory (Chicago)	✓
IN	State	Indiana State Police Laboratory (4 sites)	✓
	Local	Indianapolis-Marion County Forensic Laboratory (Indianapolis)	✓
KS	State	Kansas Bureau of Investigation (3 sites)	✓
	Local	Johnson County Sheriff's Office (Mission)	✓
	Local	Sedgwick County Regional Forensic Science Center (Wichita)	✓
KY	State	Kentucky State Police (6 sites)	✓
LA	State	Louisiana State Police	✓
	Local	Acadiana Criminalistics Laboratory (New Iberia)	✓
	Local	Jefferson Parish Sheriff's Office (Metairie)	✓
	Local	New Orleans Police Department Crime Laboratory	✓
	Local	North Louisiana Criminalistics Laboratory System (3 sites)	✓
	Local	Southwest Louisiana Criminalistics Laboratory (Lake Charles)	✓
	Local	St. Tammany Parish Sheriff's Office Crime Laboratory (Slidell)	✓
MA	State	Massachusetts State Police	✓
	Local	University of Massachusetts Medical School (Worcester)	✓
MD	State	Maryland State Police Forensic Sciences Division (3 sites)	✓
	Local	Anne Arundel County Police Department (Millersville)	✓
	Local	Baltimore City Police Department	✓
	Local	Baltimore County Police Department (Towson)	✓
	Local	Montgomery County Police Department Crime Laboratory (Rockville)	✓
	Local	Prince George's County Police Department (Landover)	✓
ME	State	Maine Department of Health and Human Services	✓
MI	State	Michigan State Police (8 sites)	✓
	Local	Oakland County Sheriff's Office Forensic Science Laboratory (Pontiac)	✓
MN	State	Minnesota Bureau of Criminal Apprehension (2 sites)	✓

State	Lab Type	Laboratory Name	Reporting
MO	State	Missouri State Highway Patrol (8 sites)	✓
	Local	KCMO Regional Crime Laboratory (Kansas City)	✓
	Local	St. Charles County Police Department Criminalistics Laboratory (O'Fallon)	✓
	Local	St. Louis County Police Department Crime Laboratory (Clayton)	✓
	Local	St. Louis Police Department	✓
MS	State	Mississippi Department of Public Safety (4 sites)	✓
	Local	Jackson Police Department Crime Laboratory	✓
	Local	Tupelo Police Department	✓
MT	State	Montana Forensic Science Division	✓
NC	State	North Carolina State Bureau of Investigation (3 sites)	✓
	Local	Charlotte-Mecklenburg Police Department	✓
	Local	Raleigh/Wake City-County Bureau of Identification	✓
	Local	Wilmington Police Department	✓
ND	State	North Dakota Crime Laboratory Division	✓
NE	State	Nebraska State Patrol Criminalistics Laboratory	✓
NH	State	New Hampshire State Police Forensic Laboratory	✓
NJ	State	New Jersey State Police (4 sites)	✓
	Local	Burlington County Forensic Laboratory (Mt. Holly)	✓
	Local	Cape May County Prosecutor's Office	✓
	Local	Hudson County Prosecutor's Office (Jersey City)	✓
	Local	Ocean County Sheriff's Department (Toms River)	✓
	Local	Union County Prosecutor's Office (Westfield)	✓
NM	State	New Mexico Department of Public Safety (3 sites)	✓
	Local	Albuquerque Police Department	✓
NV	Local	Henderson City Crime Laboratory	✓
	Local	Las Vegas Metropolitan Police Crime Laboratory	✓
	Local	Washoe County Sheriff's Office Crime Laboratory (Reno)	✓
NY	State	New York State Police (4 sites)	✓
	Local	Erie County Central Police Services Laboratory (Buffalo)	✓
	Local	Nassau County Office of Medical Examiner (East Meadow)	✓
	Local	New York City Police Department Crime Laboratory**	✓
	Local	Niagara County Sheriff's Office Forensic Laboratory (Lockport)	✓
	Local	Onondaga County Center for Forensic Sciences (Syracuse)	✓
	Local	Suffolk County Crime Laboratory (Hauppauge)	✓
	Local	Westchester County Forensic Sciences Laboratory (Valhalla)	✓
	Local	Yonkers Police Department Forensic Science Laboratory	✓
OH	State	Ohio Bureau of Criminal Identification & Investigation (4 sites)	✓
	State	Ohio State Highway Patrol	✓
	Local	Canton-Stark County Crime Laboratory (Canton)	✓
	Local	Columbus Police Department	✓
	Local	Cuyahoga County Regional Forensic Science Laboratory (Cleveland)	✓
	Local	Hamilton County Coroner's Office (Cincinnati)	✓
	Local	Lake County Regional Forensic Laboratory (Painesville)	✓
	Local	Lorain County Crime Laboratory (Elyria)	✓
	Local	Mansfield Police Department	✓
	Local	Miami Valley Regional Crime Laboratory (Dayton)	✓
	Local	Newark Police Department Forensic Services	✓
	Local	Toledo Police Forensic Laboratory	✓
OK	State	Oklahoma State Bureau of Investigation (4 sites)	✓
	Local	Tulsa Police Department Forensic Laboratory	✓
OR	State	Oregon State Police Forensic Services Division (5 sites)	✓
PA	State	Pennsylvania State Police Crime Laboratory (6 sites)	✓
	Local	Allegheny Office of the Medical Examiner Forensic Laboratory (Pittsburgh)	✓
	Local	Philadelphia Police Department Forensic Science Laboratory	✓
RI	State	Rhode Island Forensic Sciences Laboratory	✓
SC	State	South Carolina Law Enforcement Division	✓
	Local	Anderson/Oconee Regional Forensics Laboratory	✓
	Local	Charleston Police Department	✓
	Local	Richland County Sheriff's Department Forensic Sciences Laboratory (Columbia)	✓
	Local	Spartanburg Police Department	✓
SD	State	South Dakota Department of Public Health Laboratory	✓
	Local	Rapid City Police Department	✓
TN	State	Tennessee Bureau of Investigation (3 sites)	✓
TX	State	Texas Department of Public Safety (13 sites)	✓
	Local	Austin Police Department	✓
	Local	Bexar County Criminal Investigations Laboratory (San Antonio)	✓
	Local	Brazoria County Sheriff's Office Crime Laboratory (Angleton)	✓
	Local	Dallas Institute of Forensic Sciences	✓
	Local	Fort Worth Police Department Criminalistics Laboratory	✓
	Local	Harris County Institute of Forensic Sciences Crime Laboratory (Houston)	✓
	Local	Houston Forensic Science Center	✓
	Local	Jefferson County Sheriff's Regional Crime Laboratory (Beaumont)	✓
UT	State	Utah Department of Public Safety (3 sites)	✓
VA	State	Virginia Department of Forensic Science (4 sites)	✓
VT	State	Vermont Forensic Laboratory	✓
WA	State	Washington State Patrol (6 sites)	✓
WI	State	Wisconsin Department of Justice (3 sites)	✓
	Local	Kenosha County Division of Health Services	✓
WV	State	West Virginia State Police	✓
WY	State	Wyoming State Crime Laboratory	✓
PR	Territory	Institute of Forensic Science of Puerto Rico Criminalistics Laboratory (3 sites)	✓

This list identifies laboratories that are participating in and reporting to NFLIS-Drug as of July 29, 2019.

*This laboratory is not currently conducting drug chemistry analyses. Cases for the agencies it serves are being analyzed via contracts or agreements with other laboratories.

**The New York City Police Department Crime Laboratory currently reports summary data.

Benefits

The systematic collection and analysis of drug identification data aid our understanding of the Nation's illicit drug problem. NFLIS-Drug serves as a resource for supporting drug scheduling policy and drug enforcement initiatives nationally and in specific communities around the country.

Specifically, NFLIS-Drug helps the drug control community achieve its mission by

- providing detailed information on the prevalence and types of controlled substances secured in law enforcement operations;
- identifying variations in controlled and noncontrolled substances at the national, State, and local levels;
- identifying emerging drug problems and changes in drug availability in a timely fashion;
- monitoring the diversion of legitimately marketed drugs into illicit channels;
- providing information on the characteristics of drugs, including quantity, purity, and drug combinations; and
- supplementing information from other drug sources, including the National Survey on Drug Use and Health (NSDUH) and the Monitoring the Future (MTF) study.

NFLIS-Drug is an opportunity for State and local laboratories to participate in a useful, high-visibility initiative. Participating laboratories regularly receive reports that summarize national and regional data. In addition, the Data Query System (DQS) is a secure website that allows NFLIS-Drug participants—including State and local laboratories, the DEA, and other Federal drug control agencies—to run customized queries on the NFLIS-Drug data.

Limitations

NFLIS-Drug has limitations that must be considered when interpreting findings generated from the database.

- Currently, NFLIS-Drug includes data from Federal, State, and local forensic laboratories. Federal data are shown separately in this publication. Efforts are under way to enroll additional Federal laboratories.
- NFLIS-Drug includes drug chemistry results from completed analyses only. Drug evidence secured by law enforcement but not analyzed by laboratories is not included in the database.
- National and regional estimates may be subject to variation associated with sample estimates, including nonresponse bias.
- State and local policies related to the enforcement and prosecution of specific drugs may affect drug evidence submissions to laboratories for analysis.
- Laboratory policies and procedures for handling drug evidence vary. Some laboratories analyze all evidence submitted to them, whereas others analyze only selected case items. Many laboratories do not analyze drug evidence if the criminal case was dismissed from court or if no defendant could be linked to the case.
- Laboratories vary with respect to the records they maintain. For example, some laboratories' automated records include the weight of the sample selected for analysis (e.g., the weight of one of five bags of powder), whereas others record total weight.

The NFLIS website (<https://www.nflis.deadiversion.usdoj.gov/>) is an important feature of the NFLIS program. It is the key resource to provide information related to NFLIS-Drug, through a public site and through a private site, which gives secure access to the NFLIS-Drug DQS.

The public site is frequently updated with news related to the NFLIS program, including downloadable versions of published NFLIS-Drug reports, NFLIS-Drug datasets, guides for accurate data use and citations, links to other websites, and contact information for key NFLIS-Drug staff. Public features include a link to the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG) mass spectral library at <http://www.swgdrug.org/>.

The private site requires user accounts, and security roles are assigned to manage access to its features, including the Map Library, NFLIS-Drug Data Entry Application, and DQS. The DQS is a distinct resource for NFLIS-Drug reporting laboratories to run customizable queries on their own case-level data and on aggregated metropolitan, State, regional, and national data. Features include the drug category queries for synthetic cannabinoids and synthetic cathinones.

To obtain information about NFLIS-Drug participation or the DQS, please visit the NFLIS website at <https://www.nflis.deadiversion.usdoj.gov/>.

The screenshot displays the NFLIS website interface. At the top, the header includes the Drug Enforcement Administration (DEA) logo, the NFLIS logo, and the text "National Forensic Laboratory Information System". Below the header is a navigation menu with links for Home, Reports, Resources, Related Links, Contacts, FAQ, and Site Map. A search bar is located on the right side of the navigation menu.

The main content area is divided into several sections:

- NFLIS News:** A list of recent news items, including "4/22/2018: The Drug Enforcement Administration would like to announce the availability of the NFLIS-Drug 2018 Annual Report" and "4/4/2018: The Drug Enforcement Administration would like to announce the availability of the NFLIS-Drug Special Report, Methamphetamine Seized in NFLIS 2017-2017".
- NFLIS-Drug:** A section providing information about the NFLIS-Drug program, including its purpose and how to become a participant.
- NFLIS-MEC and NFLIS-Tox:** A section providing information about the NFLIS-MEC and NFLIS-Tox programs, including their purposes and how to become a participant.
- Participation by state and local forensic laboratories as of May 2018:** A map of the United States showing the participation of state and local forensic laboratories. The map is color-coded by region (Northeast, Midwest, South, West) and includes a legend for different types of laboratory systems (e.g., Forensic Toxicology System, Participating State Laboratory System, Non-Participating State Laboratory System, Non-State Laboratory System, Individual Forensic Laboratory, Regional Forensic Laboratory, and Participating Local Laboratory (Department)).

At the bottom of the page, there is a footer with links for Privacy Statement, Terms of Use, and Section 508 Accessibility, along with the NFLIS logo and the text "Copyright 2009 by Drug Enforcement Administration's National Forensic Laboratory Information System".

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