NFLIS

NATIONAL FORENSIC LABORATORY INFORMATION SYSTEM

NFLIS-DRUG 2017 ANNUAL REPORT

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

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Cover photographs:

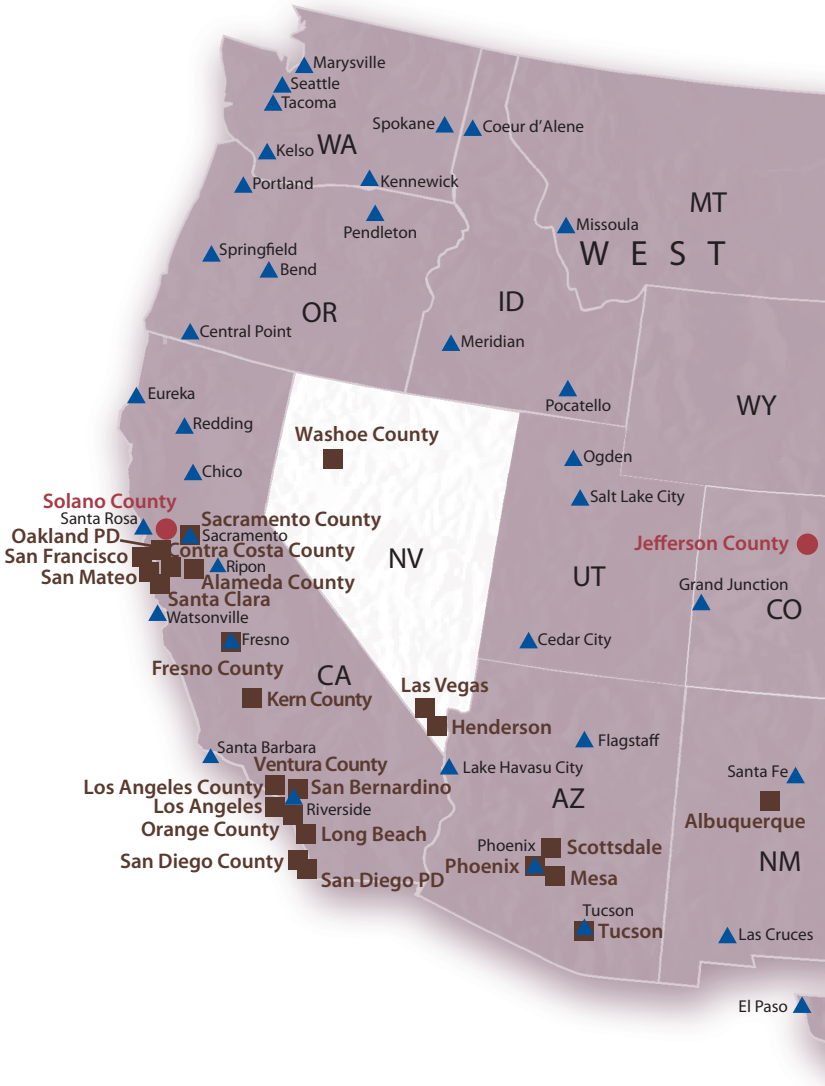
Small top left: LSD capsules.
Medium bottom: Cocaine.
Large top: Multiple pipettes and sample trays for medical research and testing.

Highlights

- From January 1, 2017, through December 31, 2017, an estimated 918,404 distinct drug cases were submitted to State and local laboratories in the United States and analyzed by March 31, 2018. From these cases, an estimated 1,581,426 drug reports were identified.
- Methamphetamine was the most frequently identified drug (347,807 reports) in 2017, followed by cannabis/THC (344,167 reports), cocaine (230,436 reports), and heroin (157,055 reports).
- Nationally, fentanyl reports remained steady from 2001 to 2005, followed by a noticeable increase in 2006. Fentanyl reports continued to remain steady until significant increases occurred from 2014 through 2017 ($p < .05$).* 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 a decrease in 2017. Oxycodone reports showed steady increases from 2001 to 2004 and more dramatic increases from 2006 to 2010, then steady declines through 2017. Hydrocodone reports had dramatic increases from 2001 to 2010, followed by steady decreases through 2017. Buprenorphine reports showed an S-shaped trend, with a steady increase in reports from 2006 through 2009, then a more significant increase from 2013 to 2017. Amphetamine reports also showed an S-shaped trend and were steady from 2001 through 2004, followed by a decrease in 2005, then steadily increased from 2007 through 2017.
- From 2016 to 2017, 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 in reports from 2001 to 2014, followed by significant increases from 2015 through 2017, 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, slight decreases through 2013, then continued increases until 2017. For oxycodone, the West, Northeast, and South regions showed S-shaped trends similar to the national trend, while the trend in the Midwest region had a slower rate of decrease from 2011 through 2017. For hydrocodone, all regions showed significant increases in reports from 2001 through at least 2009, followed by steady decreases through 2017. For buprenorphine, all four regions had S-shaped trends, with increases in reports from 2014 to 2017. For amphetamine, the Northeast, Midwest, and South regions had S-shaped trends, with steady increases in reports from 2008 to 2017, while the West region showed more variable increases from 2008 through 2015, followed by decreases in 2016 and 2017.
- In 2017, fentanyl, oxycodone, and hydrocodone accounted for 63% of narcotic analgesic reports. Alprazolam accounted for 60% of the reports of identified tranquilizers and depressants. Among identified synthetic cannabinoids, FUB-AMB and 5F-ADB accounted for 61% of reports.
- Nationwide, methamphetamine reports increased from 2001 through 2005, decreased from 2005 through 2010, and continued to increase since 2011. Cannabis/THC reports decreased from 2001 to 2004, slightly increased from 2005 to 2009, and decreased since 2009. Cocaine reports gradually increased from 2001 to 2006, then significantly decreased through 2014, followed by slight increases in reports through 2017. Heroin reports decreased from 2001 through 2006, then increased through 2015, followed by decreases in reports through 2017. MDMA reports decreased from 2001 to 2003, then increased through 2007. A sharp decrease in MDMA reports occurred from 2010 to 2013, followed by a gradual increase through 2017.

* 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 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 abuse and trafficking, including the diversion of legally manufactured pharmaceuticals into illegal markets. 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 more than 98%. NFLIS-Drug includes 50 State systems and 101 local or municipal laboratories/laboratory systems, representing a total of 277 individual laboratories. The NFLIS-Drug database also includes Federal data from DEA and U.S. Customs and Border Protection (CBP) laboratories.

The 2017 NFLIS-Drug Annual Report presents the results of drug cases submitted to State and local laboratories from January through December 2017 that were analyzed by March 31, 2018. Section 1 presents national and regional estimates for the 25 most frequently reported drugs, as well as national and regional trends from 2001 through 2017. Section 2 presents estimates of specific drugs by drug category. All estimates are based on the NEAR approach (National Estimates Based on All Reports). See Appendix A for details on the NEAR approach and Appendix B for a list of NFLIS-Drug participating and reporting laboratories. Data from Federal laboratories are also included in this publication.

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 tramadol and furanyl fentanyl reports by State and by county for selected States. Section 4 presents drugs reported by selected laboratories in cities across the country. The benefits and limitations of NFLIS-Drug are presented in Appendix C. A key area of improvement to NFLIS-Drug includes ongoing enhancements to the NFLIS-Drug Data Query System (DQS); Appendix D summarizes these DQS enhancement activities.

NORTHEAST
MIDWEST
SOUTH
ME
Augusta
Waterbury
VT
NH
Concord
Sudbury
University of MA Medical Center, Worcester
Providence
RI
Hartford
Onondaga County
NY
Albany
Niagara County
Erie County
Port Crane
Newburgh
Olean
Lorain County
Cuyahoga County
Wyoming
Yonkers
Suffolk County
Westchester County
Nassau County
New York City
Erie
PA
Union County
Hamilton
Little Falls
NJ
Hudson County
Burlington County
Ocean County
Bethlehem
Allegheny County
Philadelphia
Sea Girt
Hammonton
Harrisburg
Greensburg
Media
Baltimore City
Cape May
Baltimore County
Montgomery County
Pikesville
Hagerstown
DE
Fairfax
Anne Arundel County
Prince George's County
Berlin
MD
VA
Richmond
Norfolk
Roanoke
WV
Highland Heights
Ashland
South Charleston
Greensboro
Raleigh/Wake County
NC
Raleigh
Charlotte-Mecklenburg PD
Wilmington PD
Spartanburg
Anderson/Oconee
Columbia
Richland County
SC
Charleston
Savannah
Jacksonville
Orlando
Pinellas County
Tampa
Manatee County
Sarasota County
FL
Indian River
Palm Beach County
Broward County
Miami-Dade PD
Fort Myers
GA
Macon
Midland
Moultrie
Decatur
Huntsville
Knoxville
Asheville
Nashville
TN
Cleveland
Madisonville
Louisville
KY
London
Frankfort
Evansville
Bridgeport
MI
Grayling
East Lansing
Sterling Heights
Detroit
Northville
Toledo
Mansfield PD
Lake County
Richfield
OH
Springfield
Bowling Green
Canton-Columbus PD
Stark County
Columbus
London
Newark PD
Miami Valley
Hamilton County
Wisconsin
WI
Wausau
Marquette
Grand Rapids
Milwaukee
Madison
Kenosha County
Rockford
Chicago
Fort Wayne
Lowell
Joliet
Northern Illinois
DuPage County
IN
Morton
Indianapolis-Marion County
Indianapolis
Springfield
IL
Macon
Belleville
St. Louis
St. Louis County
Park Hills
Jefferson City
Cape Girardeau
Willow Springs
Carthage
Pittsburg
Springfield
Sedgwick County
Great Bend
Topeka
Johnson County
St. Joseph
KCMO Regional
St. Charles County
KS
MO
Des Moines
Lincoln
IA
Minnesota
MN
Bemidji
St. Paul
Bismarck
ND
Pierre
SD
Rapid City
Cheyenne
NE
Greely
Denver
Denver
Aurora
Colorado Springs
Pueblo
Hobbs
Amarillo
Enid
Tulsa
OK
Tahlequah
Edmond
McAlester
Lubbock
Fort Worth
Garland
Dallas
Abilene
Tyler
Midland
Waco
TX
Austin
Houston
Jefferson County
Bexar County
Harris County
Pasadena
Brazoria County
Laredo
Corpus Christi
McAllen
AR
Little Rock
Hope
Memphis
Tupelo
Batesville
Birmingham
Jackson PD
MS
Jackson
Meridian
North LA
LA
Southwest LA
Acadiana
Baton Rouge
New Orleans
Jefferson Parish
Mobile
Gulfport
Pensacola
AL
Auburn
Montgomery
Honolulu
HI
AK
Anchorage
San Juan
PR
Mayagüez
Ponce
Reporting State Laboratory System
Participating State Laboratory System
(Not Yet Reporting)
No State Laboratory System
Individual State Laboratory

Section 1

NATIONAL AND REGIONAL ESTIMATES

This section describes national and regional estimates for drugs submitted to State and local laboratories from January through December 2017 that were analyzed by March 31, 2018. Trends are presented for selected drugs from 2001 through 2017.

National and regional drug estimates presented in the following section include all drug reports. 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 2017, a total of 1,581,426 drug reports were identified by State and local forensic laboratories in the United States. This estimate is an increase of about 2% from the 1,552,720 drug reports identified during 2016. 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 86% of all drugs analyzed in 2017. The majority of all drugs reported in NFLIS-Drug were identified as the top four drugs, with methamphetamine, cannabis/THC, cocaine, and heroin representing 68% of all drug reports. Nationally, 347,807 drug reports were identified as methamphetamine (22%), 344,167 as cannabis/THC (22%), 230,436 as cocaine (15%), and 157,055 as heroin (10%).

In addition, nine narcotic analgesics were among the top 25 drugs: fentanyl (56,530 reports), oxycodone (33,076 reports), hydrocodone (20,812 reports), buprenorphine (19,137 reports), tramadol (6,498 reports), carfentanil (6,213 reports), morphine (5,192 reports), furanyl fentanyl (4,970 reports), and codeine (3,110 reports). Four tranquilizers and depressants were included: alprazolam (47,160 reports), clonazepam (10,869 reports), phencyclidine (PCP) (4,910 reports), and diazepam (4,249 reports). There were also three phenethylamines: amphetamine (12,551 reports), N-ethylpentylone (6,551 reports), and MDMA (5,773 reports). In addition, there were two synthetic cannabinoids: FUB-AMB (8,108 reports) and 5F-ADB (6,951 reports). Lysergic acid diethylamide (LSD) (4,287 reports) and psilocin/psilocibin (4,107 reports), which are controlled drugs, as well as naloxone (4,304 reports), 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 DRUGS[1]

Estimated number and percentage of total drug reports submitted to laboratories from January 1, 2017, through December 31, 2017, and analyzed by March 31, 2018

	National		West		Midwest		Northeast		South	
Drug	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Methamphetamine	347,807	21.99%	107,667	46.24%	73,814	18.90%	6,869	2.48%	159,457	23.40%
Cannabis/THC	344,167	21.76%	33,770	14.50%	94,163	24.12%	76,553	27.68%	139,682	20.49%
Cocaine	230,436	14.57%	16,592	7.13%	54,252	13.89%	57,093	20.65%	102,499	15.04%
Heroin	157,055	9.93%	29,820	12.81%	40,803	10.45%	46,535	16.83%	39,897	5.85%
Fentanyl	56,530	3.57%	1,086	0.47%	18,047	4.62%	24,638	8.91%	12,758	1.87%
Alprazolam	47,160	2.98%	5,141	2.21%	10,177	2.61%	6,133	2.22%	25,708	3.77%
Oxycodone	33,076	2.09%	2,616	1.12%	7,739	1.98%	6,863	2.48%	15,859	2.33%
Hydrocodone	20,812	1.32%	2,365	1.02%	5,419	1.39%	756	0.27%	12,272	1.80%
Buprenorphine	19,137	1.21%	1,474	0.63%	3,778	0.97%	4,933	1.78%	8,951	1.31%
Amphetamine	12,551	0.79%	929	0.40%	3,473	0.89%	1,927	0.70%	6,222	0.91%
Clonazepam	10,869	0.69%	826	0.35%	2,612	0.67%	1,989	0.72%	5,442	0.80%
FUB-AMB	8,108	0.51%	555	0.24%	1,748	0.45%	1,485	0.54%	4,321	0.63%
5F-ADB	6,951	0.44%	110	0.05%	870	0.22%	430	0.16%	5,541	0.81%
N-Ethylpentylone	6,551	0.41%	58	0.03%	1,038	0.27%	689	0.25%	4,766	0.70%
Tramadol	6,498	0.41%	536	0.23%	2,068	0.53%	971	0.35%	2,924	0.43%
Carfentanil	6,213	0.39%	12	0.01%	5,173	1.32%	249	0.09%	779	0.11%
MDMA	5,773	0.37%	1,465	0.63%	1,899	0.49%	622	0.22%	1,787	0.26%
Morphine	5,192	0.33%	678	0.29%	1,322	0.34%	522	0.19%	2,669	0.39%
Furanyl fentanyl	4,970	0.31%	65	0.03%	1,528	0.39%	1,692	0.61%	1,684	0.25%
Phencyclidine (PCP)	4,910	0.31%	356	0.15%	1,037	0.27%	1,397	0.51%	2,121	0.31%
Naloxone	4,304	0.27%	143	0.06%	643	0.16%	1,622	0.59%	1,896	0.28%
Lysergic acid diethylamide (LSD)	4,287	0.27%	672	0.29%	1,650	0.42%	520	0.19%	1,446	0.21%
Diazepam	4,249	0.27%	450	0.19%	1,160	0.30%	379	0.14%	2,259	0.33%
Psilocin/psilocibin	4,107	0.26%	1,120	0.48%	1,303	0.33%	437	0.16%	1,247	0.18%
Codeine	3,110	0.20%	383	0.16%	670	0.17%	411	0.15%	1,645	0.24%
Top 25 Total	1,354,823	85.67%	208,890	89.71%	336,388	86.15%	245,715	88.85%	563,830	82.72%
All Other Drug Reports	226,602	14.33%	23,954	10.29%	54,071	13.85%	30,828	11.15%	117,750	17.28%
Total Drug Reports[2]	1,581,426	100.00%	232,844	100.00%	390,459	100.00%	276,543	100.00%	681,580	100.00%

FUB-AMB=Methyl 2-(1-(4-fluorobenzyl)-1H-indazole-3-carboxamido)-3-methylbutanoate
5F-ADB=Methyl 2-(1-(5-fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate
MDMA=3,4-Methylenedioxymethamphetamine

[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 in 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 2017, there were 1,222,676 drug cases submitted to and analyzed by State and local forensic laboratories, representing a 3% increase from the 1,183,436 drug cases in 2016.

Among all drug cases, methamphetamine was the most common drug reported during 2017. Nationally, 29% of drug cases contained one or more reports of methamphetamine, followed by cannabis/THC, which was identified in 27% of all drug cases. About 20% of drug cases contained cocaine, and 13% contained heroin. Fentanyl was reported in 5% of cases, while alprazolam was reported in 4% of cases, and oxycodone was reported in about 3% of cases.

Table 1.2 *National Case Estimates*
Top 25 estimated number of drug-specific cases and their percentage of distinct cases, January 1, 2017, through December 31, 2017

Drug	Number	Percent
Methamphetamine	270,313	29.43%
Cannabis/THC	244,345	26.61%
Cocaine	183,311	19.96%
Heroin	122,396	13.33%
Fentanyl	44,258	4.82%
Alprazolam	39,671	4.32%
Oxycodone	25,849	2.81%
Hydrocodone	17,891	1.95%
Buprenorphine	17,107	1.86%
Amphetamine	10,591	1.15%
Clonazepam	9,680	1.05%
FUB-AMB	6,360	0.69%
5F-ADB	5,742	0.63%
Tramadol	5,689	0.62%
Carfentanil	5,283	0.58%
Morphine	4,509	0.49%
N-Ethylpentylone	4,468	0.49%
Phencyclidine (PCP)	4,366	0.48%
MDMA	4,344	0.47%
Furanyl fentanyl	4,106	0.45%
Naloxone	3,898	0.42%
Diazepam	3,827	0.42%
Psilocin/psilocibin	3,645	0.40%
Lysergic acid diethylamide (LSD)	3,607	0.39%
Methadone	2,769	0.30%
Top 25 Total	1,048,024	114.11%
All Other Drugs	174,653	19.02%
Total All Drugs[1]	1,222,676	133.13%[2]

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

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

MDMA=3,4-Methylenedioxymethamphetamine

[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 918,404 distinct cases submitted to State and local laboratories from January 1, 2017, through December 31, 2017, and analyzed by March 31, 2018.*

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 select local police agencies. Although DEA data capture domestic and international drug cases, the results presented in this section describe only those drugs obtained in 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 53,453 drugs were submitted to DEA and CBP laboratories in 2017 and analyzed by March 31, 2018, or about 3% of the estimated 1.58 million drugs reported by NFLIS-Drug State and local laboratories during this period. In 2017, nearly half of the drugs reported by DEA and CBP laboratories were identified as methamphetamine (19%), cocaine (14%), heroin (10%), or cannabis/THC (5%). Fentanyl was identified in 4% of the reported drugs.

MOST FREQUENTLY REPORTED DRUGS BY FEDERAL LABORATORIES[1]

Number and percentage of drugs submitted to laboratories from January 1, 2017, through December 31, 2017, and analyzed by March 31, 2018

Drug	Number	Percent
Methamphetamine	9,965	18.64%
Cocaine	7,328	13.71%
Heroin	5,438	10.17%
Cannabis/THC	2,799	5.24%
Fentanyl	2,251	4.21%
Oxycodone	718	1.34%
FUB-AMB	597	1.12%
Alprazolam	484	0.91%
Testosterone	451	0.84%
Tramadol	372	0.70%
All Other Drug Reports	23,050	43.12%
Total Drug Reports	53,453	100.00%[2]

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

[1] *Federal drug reports in this table include 50,106 reports from Drug Enforcement Administration laboratories and 3,347 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 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 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, hydrocodone, buprenorphine, 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 2017.
- 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 a decrease in 2017.

Figure 1.1 National trend estimates for fentanyl, alprazolam, and oxycodone, January 2001–December 2017

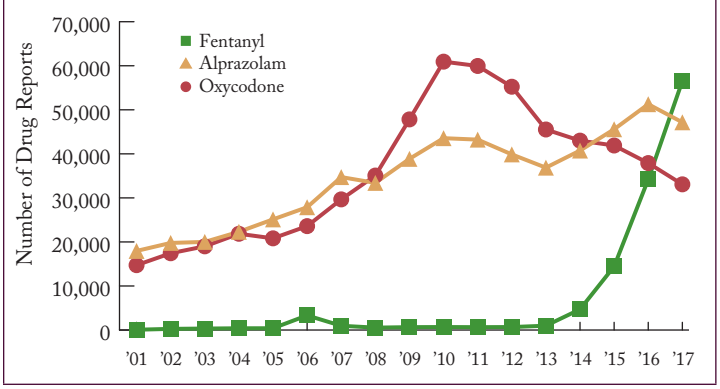
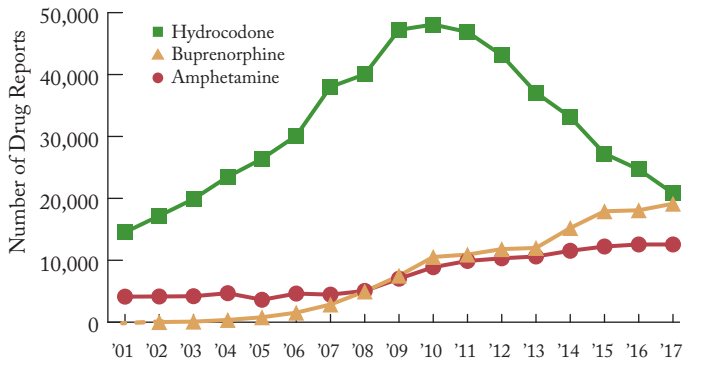


Figure 1.2 National trend estimates for hydrocodone, buprenorphine, and amphetamine, January 2001–December 2017[1]



[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 2017. The numbers of oxycodone reports in 2016 and 2017 were comparable with the number of reports in 2008.
- Hydrocodone reports had dramatic increases from 2001 to 2010, followed by steady decreases through 2017. The number of hydrocodone reports in 2017 was similar to the number of reports in 2003.
- Buprenorphine and amphetamine reports showed S-shaped trends. Buprenorphine reports steadily increased from 2006 through 2009, then experienced a more significant increase from 2013 to 2017. Amphetamine reports were steady from 2001 through 2004, followed by a decrease in 2005; reports then steadily increased from 2007 through 2017.

Significance tests were also performed on differences between 2016 and 2017 to identify more recent changes. Across these two periods, reports of fentanyl (from 34,199 to 56,530 reports) and buprenorphine (from 18,077 to 19,137 reports) increased significantly ($p < .05$). Reports of alprazolam (from 51,271 to 47,160 reports), oxycodone (from 37,904 to 33,076 reports), and hydrocodone (from 24,681 to 20,812 reports) decreased significantly.

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 continued to increase since 2011.
- Cannabis/THC reports decreased from 2001 to 2004, slightly increased from 2005 to 2009, and decreased since 2009.
- Cocaine reports gradually increased from 2001 to 2006, then significantly decreased through 2014, followed by slight increases in reports through 2017.
- Heroin reports decreased from 2001 through 2006, then increased through 2015, followed by decreases in reports through 2017.
- MDMA reports decreased from 2001 to 2003, then increased through 2007. A sharp decrease in reports occurred from 2010 to 2013, followed by a gradual increase through 2017.

More recently, between 2016 and 2017, reports of cannabis/THC (from 374,712 to 344,167 reports) and heroin (from 173,842 to 157,055 reports) decreased significantly, while reports of methamphetamine (from 314,872 to 347,807 reports) and cocaine (from 214,602 to 230,436 reports) increased significantly ($p < .05$). The slight increase in MDMA (from 5,726 to 5,773 reports) was not statistically significant.

Figure 1.3 National trend estimates for methamphetamine and cannabis/THC, January 2001–December 2017

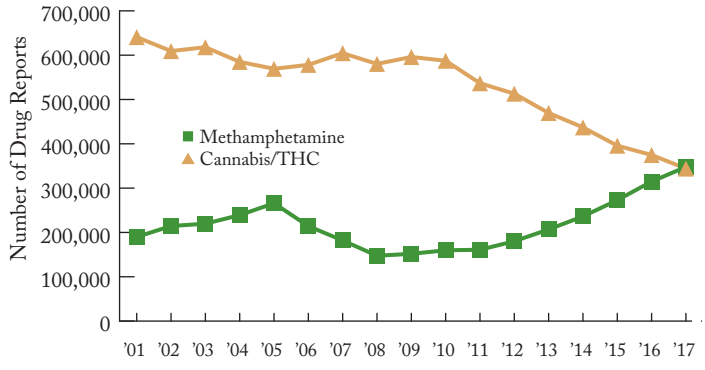
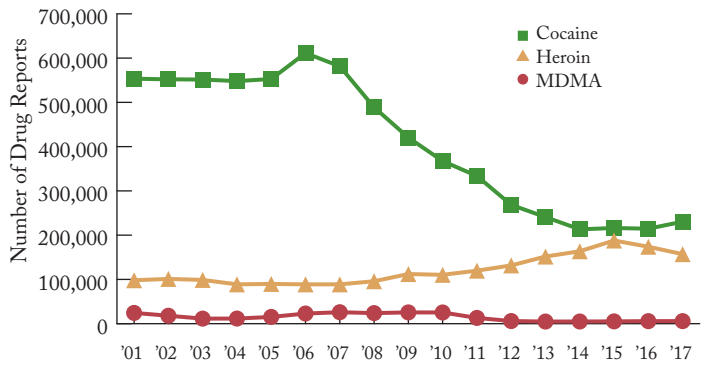


Figure 1.4 National trend estimates for cocaine, heroin, and MDMA, January 2001–December 2017



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, hydrocodone, buprenorphine, and amphetamine from 2001 to 2017. 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 2017. 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 showed a linear-increasing trend. The Midwest, Northeast, and South regions had increasing curved trend lines, with increases from roughly 2003 to 2010, followed by slight decreases through 2013, then continued increases until 2017.
- For oxycodone, all regions except the Midwest showed S-shaped trends similar to the national trend. The Midwest trend had a slower rate of decrease from 2011 through 2017 than the other regions.
- For hydrocodone, all regions showed significant increases from 2001 through at least 2009, followed by steady decreases through 2017.
- For buprenorphine, all four regions had S-shaped trends. The increase in reports slowed for all regions from 2011 to 2013, then continued to increase through 2017.
- For amphetamine, the Northeast, Midwest and South regions had S-shaped trends, with steady increases in reports from 2008 to 2017. Reports in the West region were more variable, with increases in reports from 2008 through 2015, followed by decreases in 2016 and 2017.

More recently, between 2016 and 2017, fentanyl reports increased significantly in all regions, while alprazolam reports decreased significantly in the South and Northeast. Oxycodone reports decreased significantly in all regions except the Midwest, while hydrocodone reports decreased significantly in all regions. Buprenorphine reports increased significantly in the Midwest and South regions. Amphetamine reports decreased significantly in the West.

Figure 1.5 Regional trends in fentanyl reported per 100,000 persons aged 15 or older, January 2001–December 2017[1]

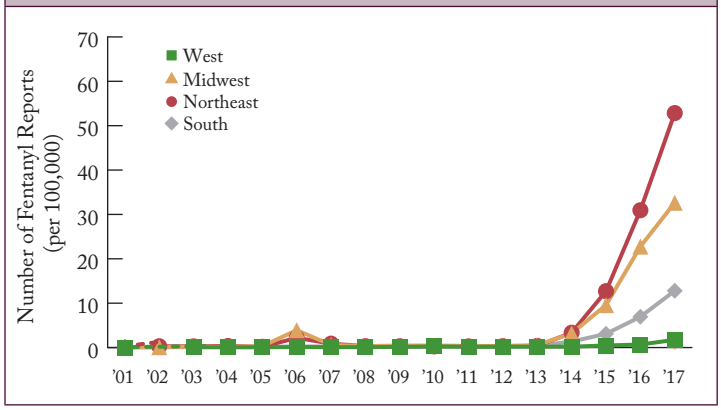


Figure 1.6 Regional trends in alprazolam reported per 100,000 persons aged 15 or older, January 2001–December 2017[1]

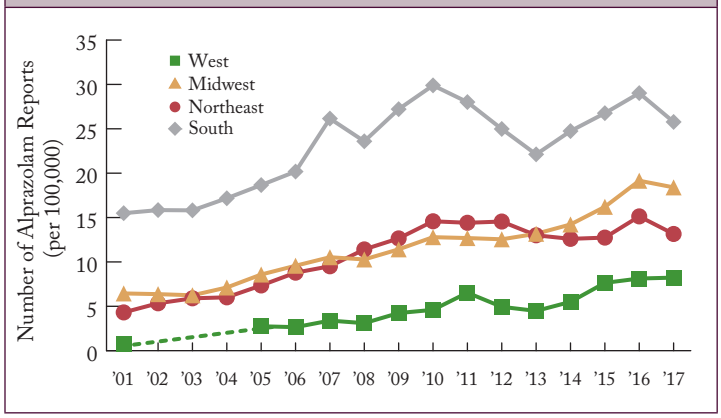
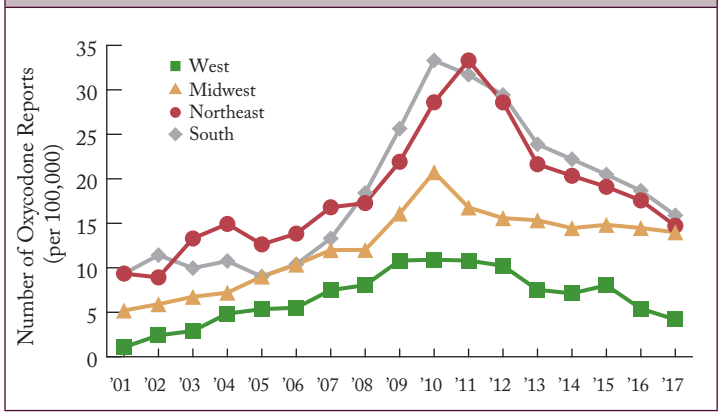


Figure 1.7 Regional trends in oxycodone reported per 100,000 persons aged 15 or older, January 2001–December 2017



Note: U.S. Census 2017 population data by age were not available for this publication. Population data for 2017 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 hydrocodone reported per 100,000 persons aged 15 or older, January 2001–December 2017

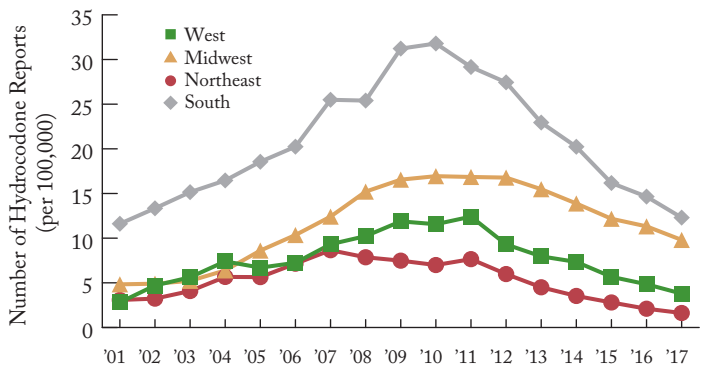


Figure 1.9 Regional trends in buprenorphine reported per 100,000 persons aged 15 or older, January 2001–December 2017[1]

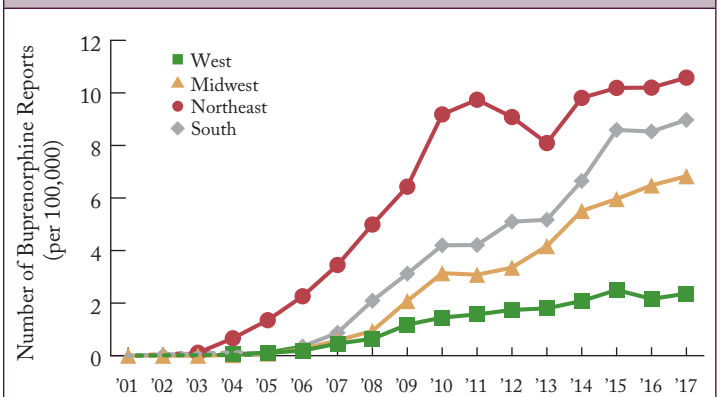
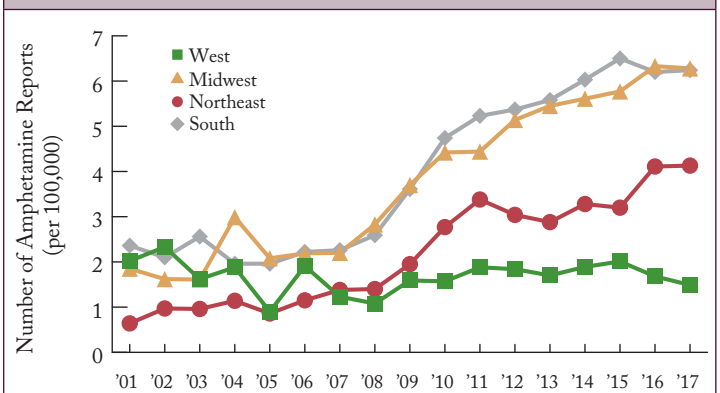


Figure 1.10 Regional trends in amphetamine reported per 100,000 persons aged 15 or older, January 2001–December 2017



Note: U.S. Census 2017 population data by age were not available for this publication. Population data for 2017 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 2017. Significant ($p < .05$) trends include the following:

- For methamphetamine reports, the trends for the Northeast and South regions were S-shaped. The West and Midwest regions had more pronounced decreases than the other two regions from around 2005 through 2010. All regions showed increases beginning around 2010 and 2011 and continuing through 2017, except that the West region had a decrease in reports in 2016 and 2017.
- For cannabis/THC reports, 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 2017.
- For cocaine, the West and South regions had rolling decreasing trend lines. The Midwest and Northeast regions had increases from 2001 through 2008, followed by more significant decreases in reports, until increases in reports occurred from 2015 through 2017.
- For heroin, the South showed an upward-facing U-shaped trend, while the other regions had S-shaped curves. The South and Northeast had steady increases in reports from 2011 through 2015, while the West and Midwest had similar increases in reports from 2008 through 2015. All four regions had decreases in reports from 2015 through 2017.
- 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 since 2013.

Between 2016 and 2017, cannabis/THC reports decreased significantly in the Midwest and West regions ($p < .05$), and heroin reports decreased significantly in all regions except the West. Methamphetamine reports increased significantly in all regions except the West, in which reports significantly decreased, while MDMA reports increased significantly in the Midwest and South regions and decreased significantly in the West. Cocaine reports increased significantly in the South and Midwest regions.

Figure 1.11 Regional trends in methamphetamine reported per 100,000 persons aged 15 or older, January 2001–December 2017[1]

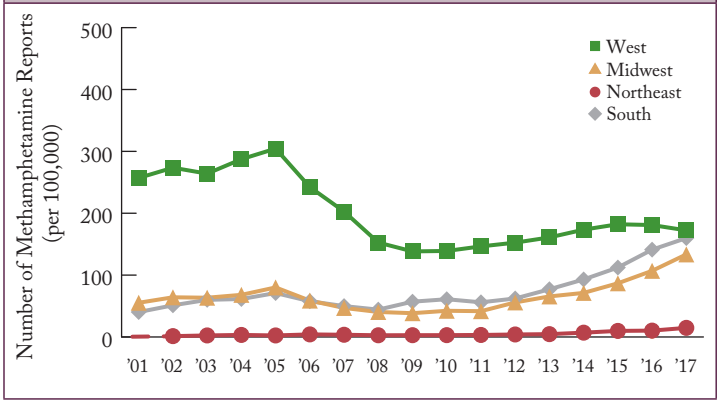


Figure 1.12 Regional trends in cannabis/THC reported per 100,000 persons aged 15 or older, January 2001–December 2017

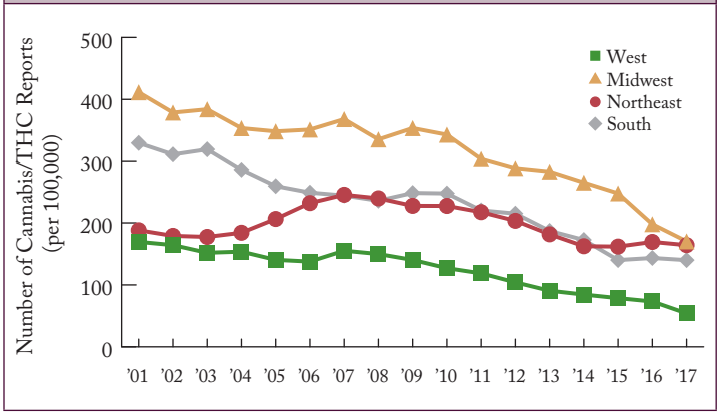
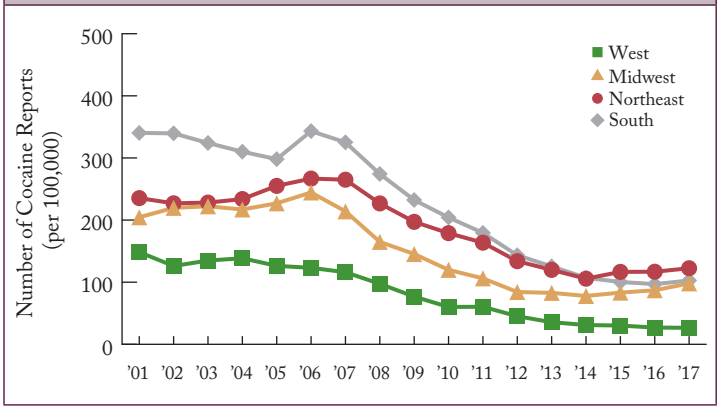


Figure 1.13 Regional trends in cocaine reported per 100,000 persons aged 15 or older, January 2001–December 2017



Note: U.S. Census 2017 population data by age were not available for this publication. Population data for 2017 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 1.14 Regional trends in heroin reported per 100,000 persons aged 15 or older, January 2001–December 2017

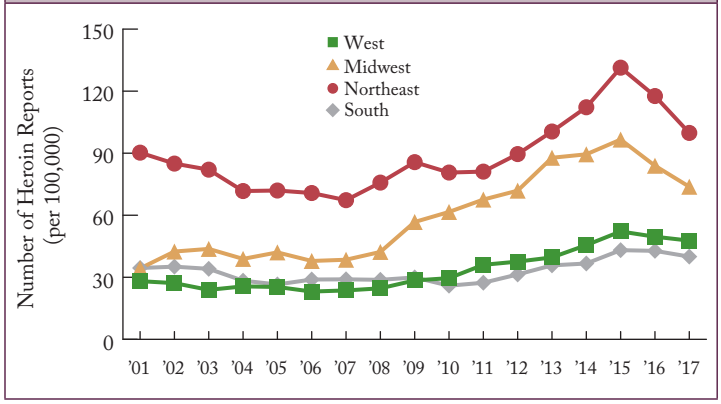
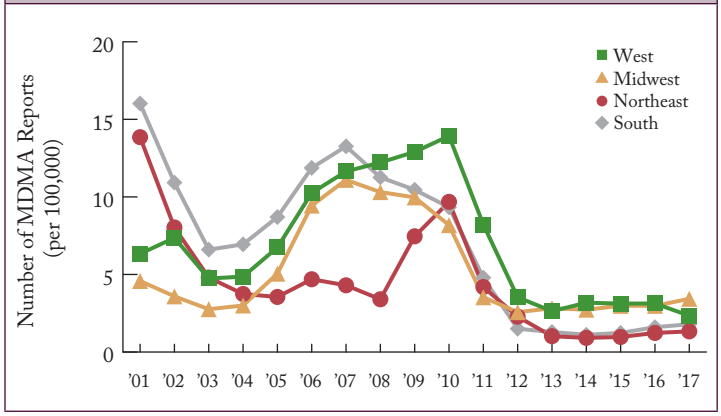


Figure 1.15 Regional trends in MDMA reported per 100,000 persons aged 15 or older, January 2001–December 2017



Section 2

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 1,581,426 drugs were submitted to State and local laboratories during 2017 and were analyzed by March 31, 2018.

2.1 Narcotic Analgesics

Narcotic drugs, or opioids, are typically used to relieve pain. Drug overdose deaths involving opioids increased 11% between 2014 and 2015 and by 21% between 2015 and 2016. Of the 63,632 drug overdose deaths that occurred in 2016, 66% or 42,249 involved opioids. Between 2015 and 2016, overdose deaths involving opioids increased nearly 28% from 10.3 deaths to 13.3 deaths per 100,000 population. Deaths involving synthetic opioids doubled between 2015 and 2016, while deaths involving prescription opioids increased by nearly a fifth.[i]

A total of 176,496 narcotic analgesic reports were identified by NFLIS-Drug laboratories in 2017, representing 11% of all drug reports (Table 2.1). Fentanyl (32%) accounted for nearly a third of narcotic analgesic reports, while oxycodone (19%) and hydrocodone (12%) accounted for another 31%. Other narcotic analgesics reported included buprenorphine (11%), tramadol (4%), carfentanil (4%), morphine (3%), and furanyl fentanyl (3%). The types of 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 percentages of fentanyl (55% and 34%, respectively). The West and South regions reported the highest percentages of oxycodone (26% and 23%, respectively), hydrocodone (23% and 18%), and buprenorphine (15% and 13%).

[i] Seth, P., Scholl, L., Rudd, R. A., & Bacon, S. (2018). Overdose deaths involving opioids, cocaine, and psychostimulants — United States, 2015–2016. *Morbidity and Mortality Weekly Report, 67*, 349–358. https://doi.org/10.15585/mmwr.mm6712a1

Table 2.1 *Narcotic Analgesics*
Number and percentage of narcotic analgesic reports in the United States, 2017[1]

Narcotic Analgesic Reports	Number	Percent
Fentanyl	56,530	32.03%
Oxycodone	33,076	18.74%
Hydrocodone	20,812	11.79%
Buprenorphine	19,137	10.84%
Tramadol	6,498	3.68%
Carfentanil	6,213	3.52%
Morphine	5,192	2.94%
Furanyl fentanyl	4,970	2.82%
Codeine	3,110	1.76%
Methadone	3,105	1.76%
Hydromorphone	2,975	1.69%
U-47700	2,315	1.31%
Acryl fentanyl	2,194	1.24%
Oxymorphone	1,648	0.93%
4-Fluoroisobutyryl fentanyl	1,434	0.81%
Other narcotic analgesics	7,287	4.13%
Total Narcotic Analgesic Reports[2]	176,496	100.00%
Total Drug Reports	1,581,426	

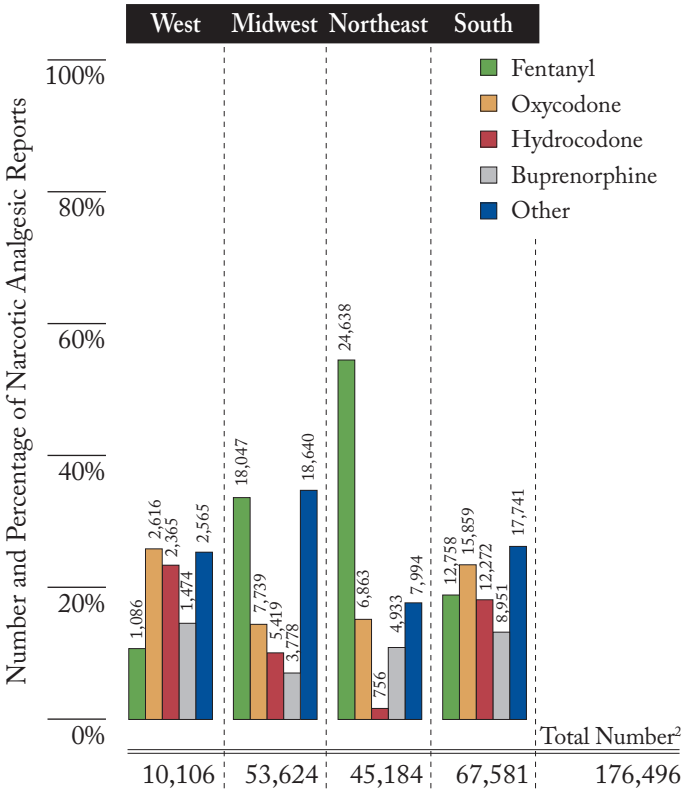
Table 2.1 Notes:

U-47700=3,4-Dichloro-N-[2-(dimethylamino)cyclohexyl]-N-methylbenzamide

[1] *Includes drug reports submitted to laboratories from January 1, 2017, through December 31, 2017, that were analyzed by March 31, 2018.*

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

Figure 2.1 Distribution of narcotic analgesic reports within region, 2017[1]



2.2 Tranquilizers and Depressants

Many tranquilizers and depressants are classified as benzodiazepines. Drug overdose deaths involving benzodiazepines, such as alprazolam and diazepam, increased fourfold from 2,022 deaths in 2002 to 8,791 deaths in 2015. Between 2014 and 2015, benzodiazepine-related deaths increased 11%. In 2015, approximately 85% of drug overdose deaths involving benzodiazepines involved opioids.[ii] Combining opioids and benzodiazepines is dangerous because both types of drugs suppress breathing and impair cognitive functions.[iii]

Approximately 5% of all drug reports in 2017, or 78,785 reports, were identified by NFLIS-Drug laboratories as tranquilizers and depressants (Table 2.2). Alprazolam accounted for 60% 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 across all regions, with the highest percentages reported in the South and West regions (63% and 62%, respectively) (Figure 2.2). Clonazepam accounted for 16% of tranquilizers and depressants identified in the Northeast region and 15% identified in the Midwest region. The Northeast region reported the highest percentage of PCP (12%), while the Midwest region reported the highest percentage of diazepam (7%).

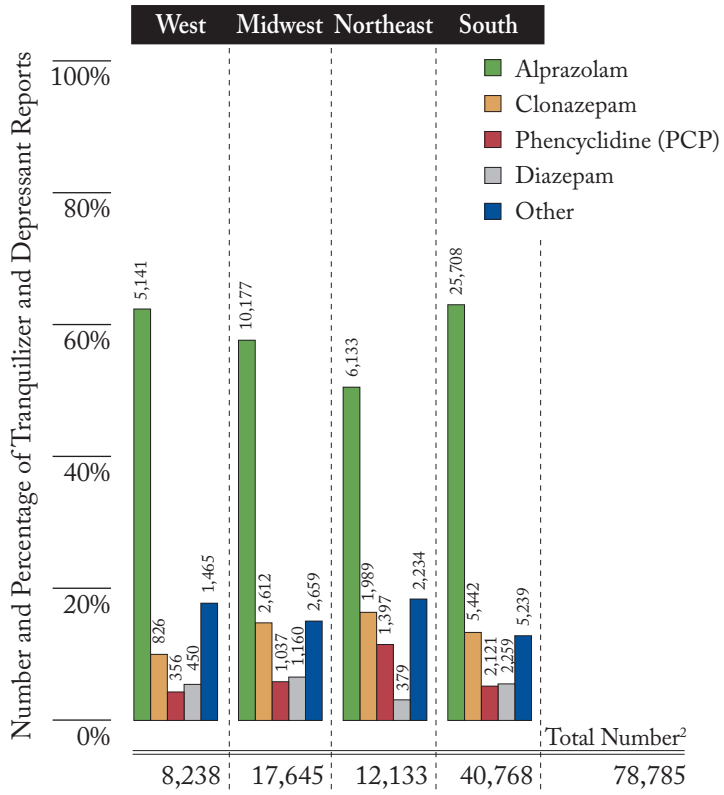
[ii] National Institute on Drug Abuse. (2017, September). *Overdose death rates.* Retrieved from https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates

[iii] National Institute on Drug Abuse. (2018, March). *Benzodiazepines and opioids.* Retrieved from https://www.drugabuse.gov/drugs-abuse/opioids/benzodiazepines-opioids

Table 2.2 *Tranquilizers and Depressants*
Number and percentage of tranquilizer and depressant reports in the United States, 2017[1]

Tranquilizer and Depressant Reports	Number	Percent
Alprazolam	47,160	59.86%
Clonazepam	10,869	13.80%
Phencyclidine (PCP)	4,910	6.23%
Diazepam	4,249	5.39%
Lorazepam	2,229	2.83%
Carisoprodol	1,705	2.16%
Ketamine	1,643	2.09%
Zolpidem	1,261	1.60%
Cyclobenzaprine	912	1.16%
Etizolam	844	1.07%
Pregabalin	447	0.57%
Hydroxyzine	394	0.50%
Flubromazolam	233	0.30%
Temazepam	219	0.28%
Gamma-hydroxybutrate (GHB)	214	0.27%
Other tranquilizers and depressants	1,494	1.90%
Total Tranquilizer and Depressant Reports[2]	78,785	100.00%
Total Drug Reports	1,581,426	

Figure 2.2 Distribution of tranquilizer and depressant reports within region, 2017[1]



[1] *Includes drug reports submitted to laboratories from January 1, 2017, through December 31, 2017, that were analyzed by March 31, 2018.*

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

2.3 Anabolic Steroids

Anabolic steroids are available in many different forms, including tablets and capsules, liquid drops, gels and creams, transdermal patches, subdermal implant pellets, and injectable solutions. Steroids are prescribed to treat testosterone deficiency, delayed puberty, low red blood cell count, breast cancer, and tissue wasting resulting from AIDS. Long-term use of anabolic steroids, however, can have adverse effects mentally and physically, including depression, aggression, stunted growth, and heart attack or stroke. Anabolic steroids are not associated with overdoses because adverse effects develop over time.[iv]

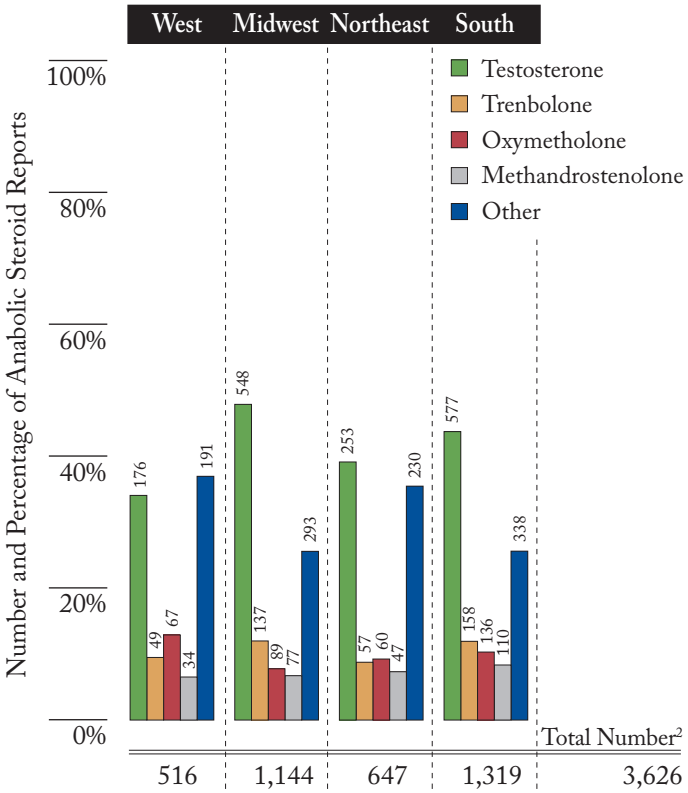
During 2017, a total of 3,626 drug reports were identified by NFLIS-Drug laboratories as anabolic steroids (Table 2.3), representing less than 1% of all drug reports. The most commonly identified anabolic steroid was testosterone (43%), followed by trenbolone (11%), oxymetholone (10%), methandrostenolone (7%), and stanozolol (6%). Testosterone accounted for 48% of anabolic steroids reported in the Midwest region, 44% in the South region, 39% in the Northeast region, and 34% in the West region (Figure 2.3). The Midwest and South regions reported the highest percentages of trenbolone (12% each), the West region reported the highest percentage of oxymetholone (13%), and the South region reported the highest percentage of methandrostenolone (8%).

Table 2.3 *Anabolic Steroids*
Number and percentage of anabolic steroid reports in the United States, 2017[1]

Anabolic Steroid Reports	Number	Percent
Testosterone	1,554	42.86%
Trenbolone	401	11.05%
Oxymetholone	352	9.70%
Methandrostenolone	268	7.40%
Stanozolol	200	5.51%
Nandrolone	184	5.07%
Boldenone	146	4.02%
Oxandrolone	129	3.55%
Drostanolone	98	2.70%
Mesterolone	25	0.68%
Dehydrochloromethyltestosterone	24	0.65%
Mestanolone	19	0.54%
Methyltestosterone	18	0.50%
Methenolone	12	0.32%
Methandriol	7	0.19%
Other steroids	191	5.26%
Total Anabolic Steroid Reports[2]	3,626	100.00%
Total Drug Reports	1,581,426	

[iv] 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

Figure 2.3 Distribution of anabolic steroid reports within region, 2017[1]



[1] *Includes drug reports submitted to laboratories from January 1, 2017, through December 31, 2017, that were analyzed by March 31, 2018.*

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

2.4 Phenethylamines

Phenethylamines mimic hallucinogens and when used in even small amounts can cause serious side effects, such as seizures, cardiac and respiratory arrest, and death.[v]

NFLIS-Drug laboratories identified 382,297 phenethylamine reports in 2017, representing 24% 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 97% of phenethylamine reports in the West region, 90% in the Midwest region, 90% in the South region, and 60% in the Northeast region (Figure 2.4). Approximately 17% of the phenethylamines reported in the Northeast region were amphetamine. The Northeast region also reported the highest percentages of N-Ethylpentylone (6%) and MDMA (5%).

Table 2.4 *Phenethylamines*
Number and percentage of phenethylamine reports in the United States, 2017[1]

Phenethylamine Reports	Number	Percent
Methamphetamine	347,807	90.98%
Amphetamine	12,551	3.28%
N-Ethylpentylone	6,551	1.71%
MDMA	5,773	1.51%
Lisdexamfetamine	1,638	0.43%
MDA	1,213	0.32%
Dibutylone	1,112	0.29%
alpha-PVP	1,023	0.27%
Phentermine	516	0.14%
Benzphetamine	364	0.10%
Ethylone	284	0.07%
Pentylone	229	0.06%
4-CEC	174	0.05%
alpha-Ethylaminohexanophenone	150	0.04%
alpha-PHP	134	0.04%
Other phenethylamines	2,778	0.73%
Total Phenethylamine Reports[2]	382,297	100.00%
Total Drug Reports	1,581,426	

MDMA=3,4-Methylenedioxymethamphetamine
MDA=3,4-Methylenedioxyamphetamine
alpha-PVP=alpha-Pyrrolidinopentiophenone
4-CEC=4-Chloro-N-ethylcathinone
alpha-Ethylaminohexanophenone=2-(Ethylamino)-1-phenyl-1-hexanone
alpha-PHP=1-phenyl-2-(pyrrolidin-1-yl)hexan-1-one

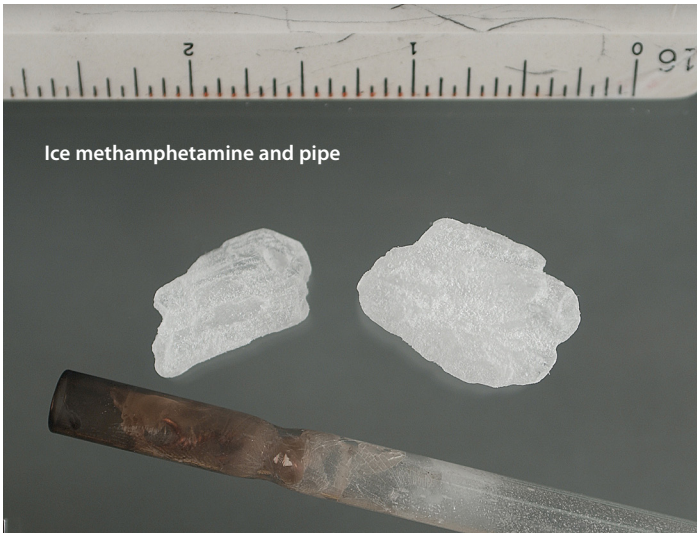
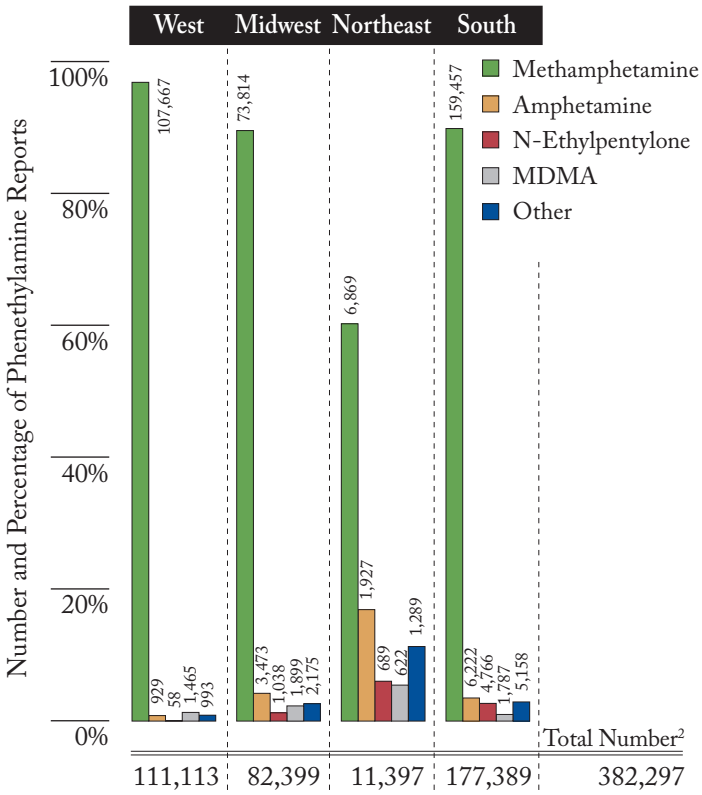


Figure 2.4 Distribution of phenethylamine reports within region, 2017[1]



[1] *Includes drug reports submitted to laboratories from January 1, 2017, through December 31, 2017, that were analyzed by March 31, 2018.*

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

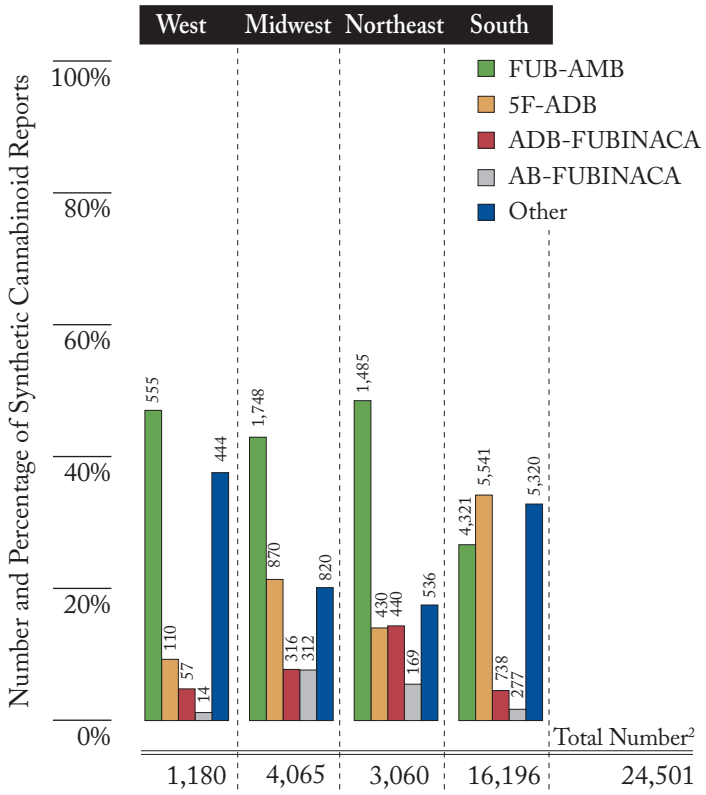
[v] U.S. Department of Justice, Drug Enforcement Administration. (2018, July). *About synthetic drugs.* Retrieved from https://www.deadiversion.usdoj.gov/synthetic_drugs/about_sd.html

2.5 Synthetic Cannabinoids

Synthetic cannabinoids are man-made substances sometimes wrongly referred to as synthetic marijuana and falsely advertised as safe, legal alternatives to that drug. Use among young people is attributed to easy access, the belief that these products are natural, and the difficulty standard drug tests have detecting many of the chemicals used to make these products. Synthetic cannabinoids can cause serious mental and physical health problems and can be addictive.[vi]

A total of 24,501 synthetic cannabinoid reports were identified during 2017, accounting for about 2% of all drugs reported (Table 2.5). FUB-AMB (33%) and 5F-ADB (28%) were the most commonly identified synthetic cannabinoids. FUB-AMB accounted for 49% of synthetic cannabinoid reports in the Northeast region, 47% in the West region, 43% in the Midwest region, and 27% in the South region (Figure 2.5). 5F-ADB accounted for a third of all synthetic cannabinoids reported in the South region (34%) and a fifth in the Midwest region (21%). The Northeast region reported the highest percentage of ADB-FUBINACA (14%), and the Midwest region reported the highest percentage of AB-FUBINACA (8%).

Figure 2.5 Distribution of synthetic cannabinoid reports within region, 2017[1]



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

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

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

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

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

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

Fluoro-ADB=(Methyl 2-(1-(fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate)

AB-CHMINACA=N-(1-Amino-3-methyl-1oxobutan-2-yl)-1-(cyclohexylmethyl)1H-indazole-3-carboxamide

MAB-CHMINACA=N-(1-Amino-3,3-dimethyl-1-oxobutan-2-yl)-1-(cyclohexylmethyl)-1H-indazole-3-carboxamide

5F-AMB=Methyl 2-(1-(5-fluoropentyl)-1H-indazole-3-carboxamido)-3-methylbutanoate

NM2201=Naphthalene-1-yl 1-(5-fluoropentyl)-1H-indole-3-carboxylate

AKB48 N-(4-fluorobenzyl)=N-(1-adamantyl)-1-(4-fluorobenzyl)-1H-indazole-3-carboxamide

JWH-018 (AM-678)=1-Pentyl-3-(1-naphthoyl)indole

MMB-CHMICA=Methyl 2-(1-(cyclohexymethyl)-1H-indole-3-carboxamido)-3-methylbutanoate

MDMB-CHMICA (MMB-CHMINACA)=Methyl 2-(1-(cyclohexylmethyl)-1H-indole-3-carboxamido)-3,3-dimethylbutanoate

Table 2.5 ***Synthetic Cannabinoids***
Number and percentage of synthetic cannabinoid reports in the United States, 2017[1]

Synthetic Cannabinoid Reports	Number	Percent
FUB-AMB	8,108	33.09%
5F-ADB	6,951	28.37%
ADB-FUBINACA	1,550	6.32%
AB-FUBINACA	772	3.15%
4-cyano CUMYL-BUTINACA	451	1.84%
XLR11	316	1.29%
Fluoro-ADB	298	1.22%
AB-CHMINACA	279	1.14%
MAB-CHMINACA	239	0.98%
5F-AMB	189	0.77%
NM2201	156	0.64%
AKB48 N-(4-fluorobenzyl)	143	0.58%
JWH-018 (AM-678)	113	0.46%
MMB-CHMICA	104	0.42%
MDMB-CHMICA (MMB-CHMINACA)	99	0.41%
Other synthetic cannabinoids	4,732	19.32%
Total Synthetic Cannabinoid Reports[2]	24,501	100.00%
Total Drug Reports	1,581,426	

[1] Includes drug reports submitted to laboratories from January 1, 2017, through December 31, 2017, that were analyzed by March 31, 2018.

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

[vi] National Institute on Drug Abuse. (2018, February). *What are synthetic cannabinoids (K2/Spice)*? Retrieved from https://www.drugabuse.gov/publications/drugfacts/synthetic-cannabinoids-k2spice

Section 3

GIS ANALYSIS: TRAMADOL AND FURANYL FENTANYL COMPARISONS, BY LOCATION, 2015 AND 2017

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 tramadol and furanyl fentanyl at two points in time—2015 and 2017. In 2017, both drugs appeared in the NFLIS-Drug list of the top 25 most frequently identified drugs. Tramadol was the 5th highest listed narcotic analgesic and was the 15th most frequently reported drug. Furanyl fentanyl was the 8th highest listed narcotic analgesic and was the 19th 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 tramadol, by State, 2015[1]

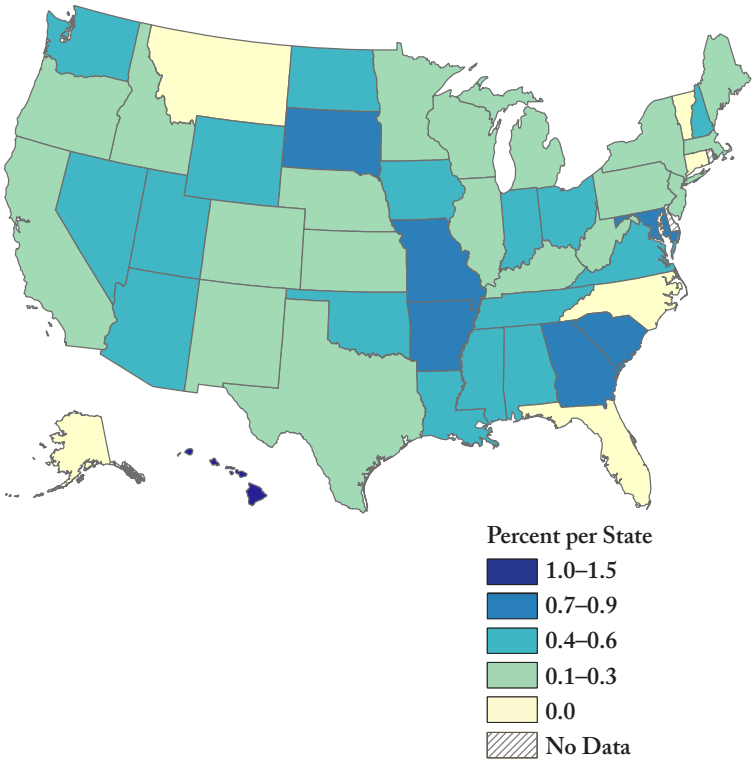


Figure 3.2 Percentage of total drug reports identified as tramadol, by State, 2017[1]

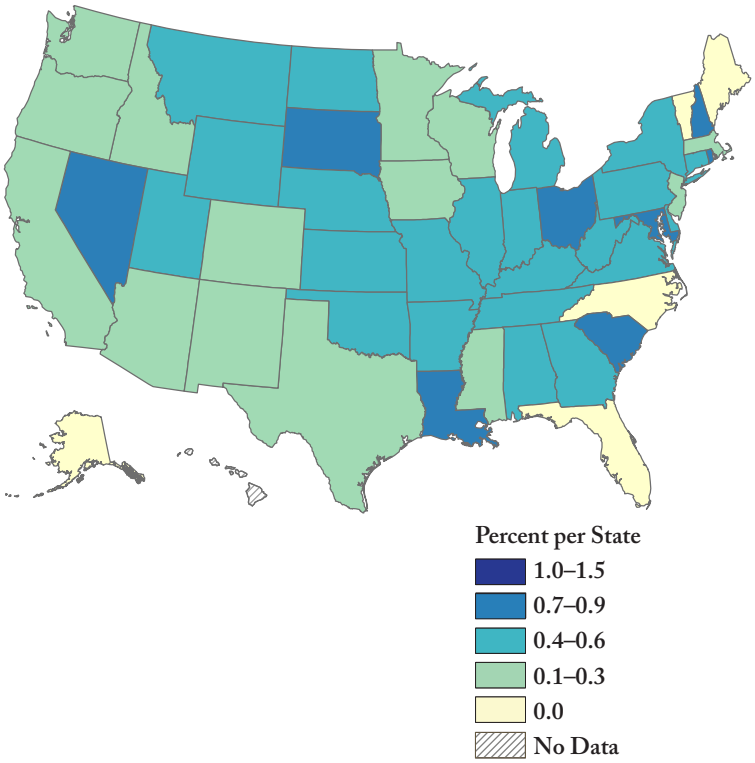


Figure 3.3 Percentage of total drug reports identified as furanyl fentanyl, by State, 2015[1]

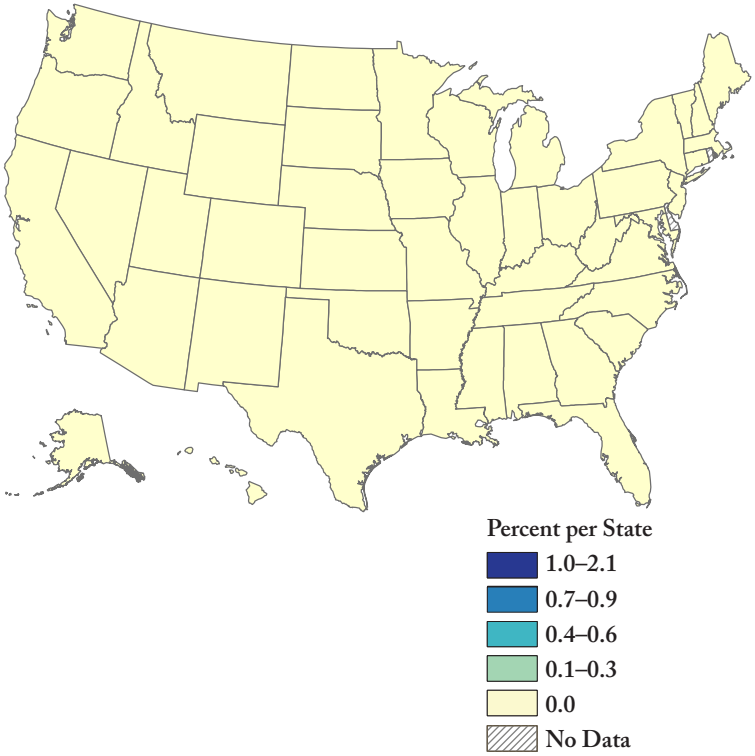
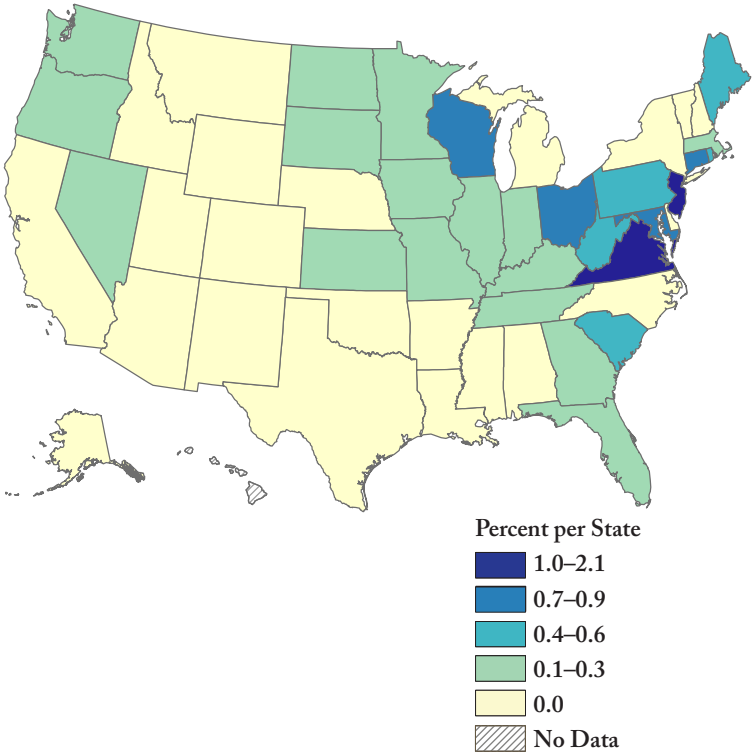


Figure 3.4 Percentage of total drug reports identified as furanyl fentanyl, by State, 2017[1]



[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 tramadol in South Carolina, by county, 2015[1]

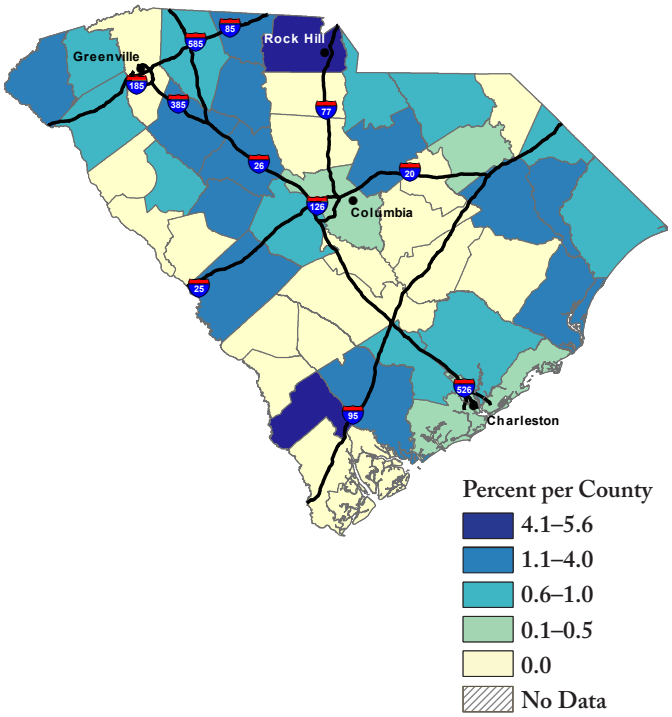


Figure 3.6 Percentage of total drug reports identified as tramadol in South Carolina, by county, 2017[1]

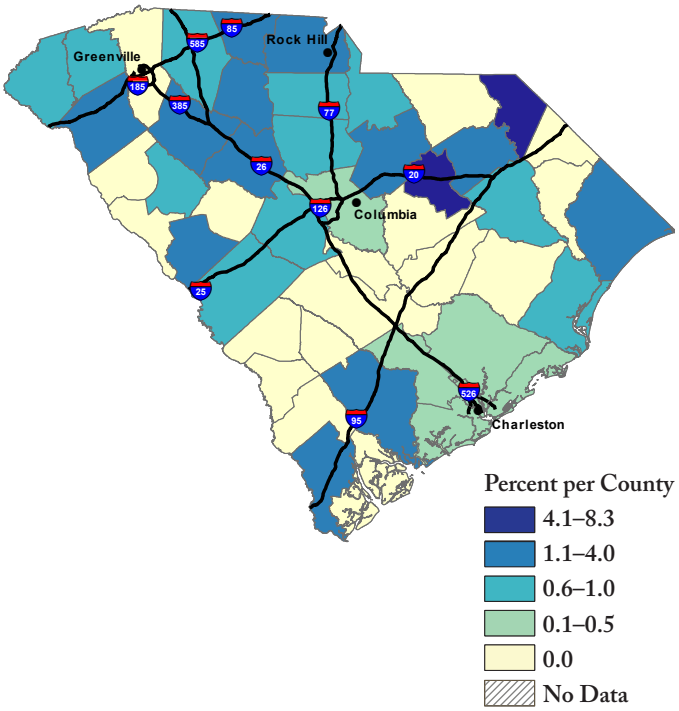


Figure 3.7 Percentage of total drug reports identified as furanyl fentanyl in New Jersey, by county, 2015[1]

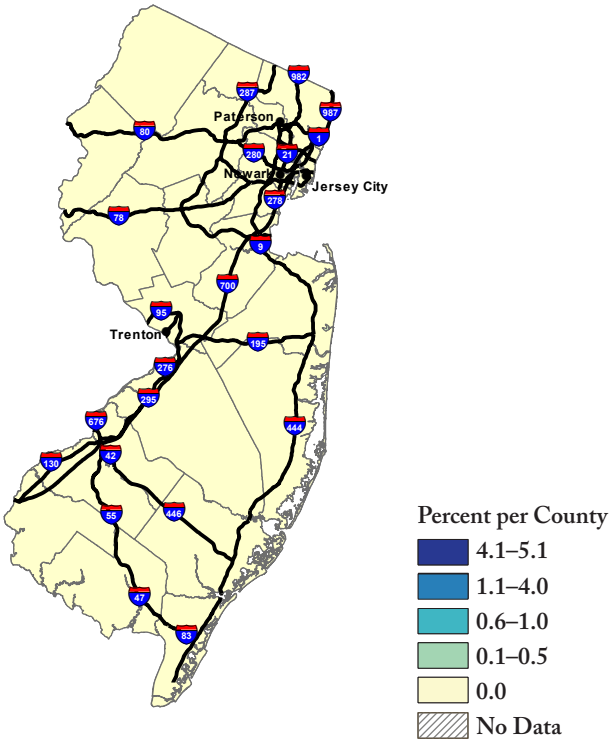
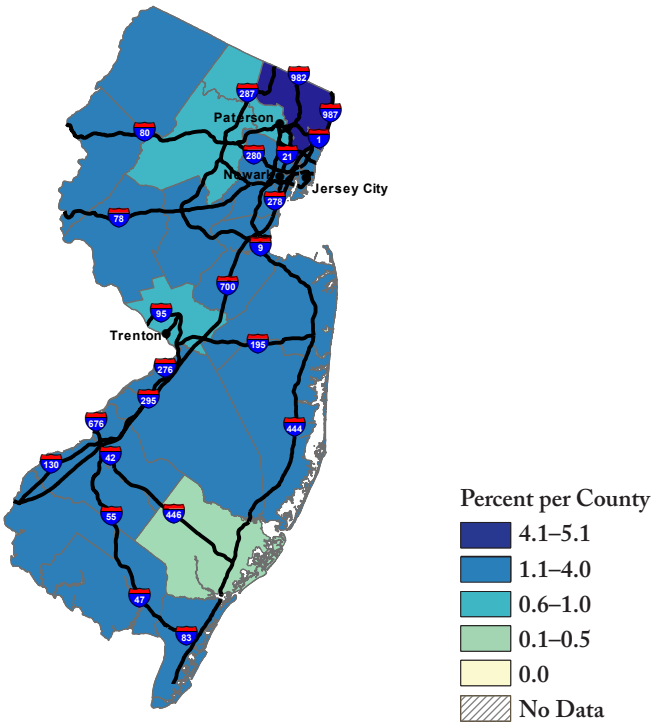


Figure 3.8 Percentage of total drug reports identified as furanyl fentanyl in New Jersey, by county, 2017[1]



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

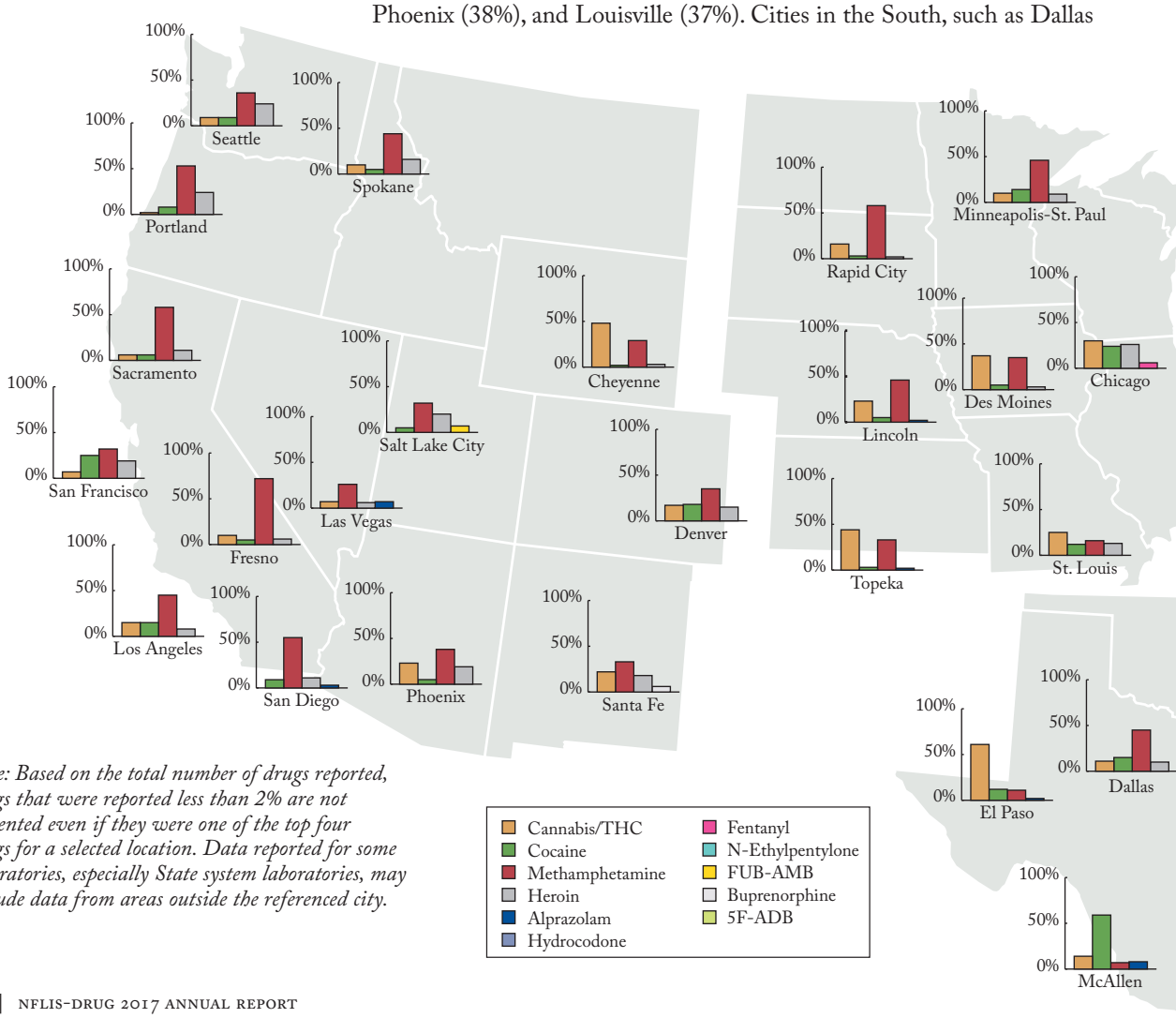
Section 4

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 2017 and analyzed by March 31, 2018.

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, 22% 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 (72%), Sacramento (58%), Rapid City (58%), San Diego (55%), Portland (53%), Lincoln (46%), Minneapolis-St. Paul (46%), Los Angeles (45%), Spokane (44%), Phoenix (38%), and Louisville (37%). Cities in the South, such as Dallas



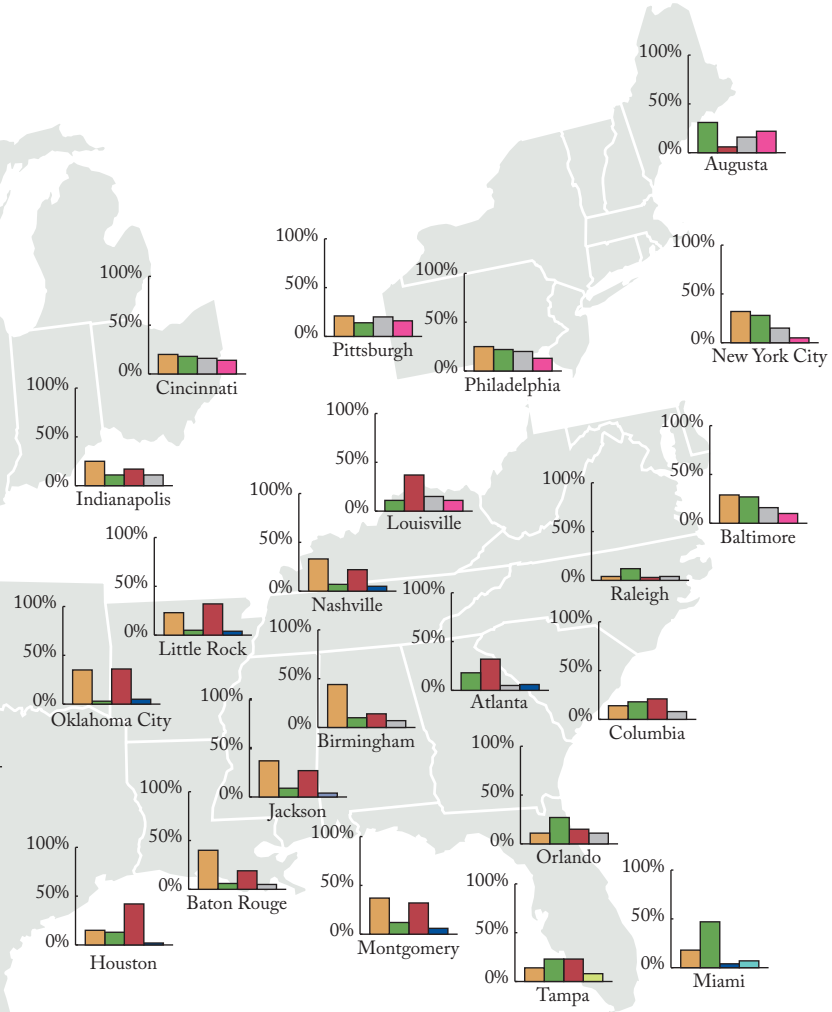
Note: Based on the total number of drugs reported, drugs that were reported less than 2% are not presented even if they were one of the top four drugs for a selected location. Data reported for some laboratories, especially State system laboratories, may include data from areas outside the referenced city.

(45%), Houston (42%), and Oklahoma City (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 (59%), Miami (47%), Augusta (31%), New York City (28%), Orlando (27%), Baltimore (27%), Tampa (23%), and Philadelphia (22%). Cities in the West, such as San Francisco (25%) and Denver (18%), and the Midwest, such as Chicago (24%) and Cincinnati (18%), also reported a high percentage of cocaine. Nationally, 15% of drugs in NFLIS-Drug were identified as cocaine.

The highest percentages of heroin were reported by laboratories representing the Northeastern cities of Philadelphia (20%) and Pittsburgh (20%); the Midwestern cities of Chicago (26%) and Cincinnati (16%); the Southern cities of Baltimore (16%) and Louisville (15%); and the Western cities of Portland (24%), Seattle (24%), and Salt Lake City (20%). Nationally, 10% of all drugs in NFLIS-Drug were identified as heroin.

Among other drugs, Augusta (22%), Pittsburgh (16%), Cincinnati (13%), and Philadelphia (13%) reported the highest percentages of fentanyl. Nationally, 4% of drugs in NFLIS-Drug were identified as fentanyl. McAllen (8%) and Las Vegas (7%) reported the highest percentages of alprazolam. Nationally, 3% of drugs in NFLIS-Drug were identified as alprazolam. Jackson (4%) reported the highest percentage of hydrocodone, while Santa Fe (6%) reported the highest percentage of buprenorphine, Salt Lake City (7%) reported the highest percentage of FUB-AMB, and Tampa (8%) reported the highest percentage of 5F-ADB. Nationally, 1% or less of drugs were identified as hydrocodone, buprenorphine, FUB-AMB, or 5F-ADB.



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—Edmond 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)

Appendix A Statistical Methodology

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, 2017, and December 31, 2017, and analyzed by March 31, 2018. 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, 83 (or 77%) 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 = ith 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 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 2016 through December 2016 with those from January 2017 through December 2017. The second is called *long-term trends* and examines trends in the annual national and regional estimates from January 2001 through December 2017. 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 2016 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,

$$t_{df} = \frac{a\hat{T}_{2017} - b\hat{T}_{2016}}{\sqrt{a^2\,\mathrm{var}(\hat{T}_{2017}) + b^2\,\mathrm{var}(\hat{T}_{2016}) - 2ab\,\mathrm{cov}(\hat{T}_{2016}, \hat{T}_{2017})}},$$

where

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

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

$\hat{T}_{2016}$ = estimated total number of reports for the given drug for January 2016 through December 2016;

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

$\mathrm{var}(\hat{T}_{2016})$ = variance of $\hat{T}_{2016}$; and

$\mathrm{cov}(\hat{T}_{2016}, \hat{T}_{2017})$ = covariance between $\hat{T}_{2016}$ and $\hat{T}_{2017}$.

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 2017, and b = 100,000 divided by the regional population total for 2016.

[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.

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

Long-term trends

A long-term trend analysis is performed on the January 2001 through December 2017 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,

$$\mathbf{Y}^T \equiv (Y_1, Y_2, \ldots, Y_{17}),$$

and for the estimates,

$$\hat{\mathbf{Y}}^T \equiv (\hat{Y}_1, \hat{Y}_2, \ldots, \hat{Y}_{17}),$$

the regression model is

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

where

$\eta = \hat{\mathbf{Y}} - \mathbf{Y}$ is a 17 × 1 vector of errors due to the probability sample, and

$\varepsilon =$ 17 × 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

$$Y_t = \alpha_0 + \alpha_1 t + \alpha_2 t^2 + \cdots + \alpha_m t^m + \varepsilon_t \qquad t = 1, \ldots, T,$$

where

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

ε_t = one of a set of 17 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 17 annual periods beginning with the January to December 2001 period and ending with the January to December 2017 period. Sampling standard errors are estimated as the full sampling variance-covariance matrix $\mathbf{S}$ over these 17 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 $V[\hat{\mathbf{Y}}] = \sigma^2 \boldsymbol{I} + \mathbf{S}$, where $\boldsymbol{I}$ 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

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

where

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

$X_1(t), \ldots, X_m(t)$ 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 α = 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.

Appendix B 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)	✓
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)	✓
MN	State	Minnesota Bureau of Criminal Apprehension (2 sites)	✓
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 Local Governance Corporation	✓
	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 23, 2018.

*This laboratory is not currently conducting drug chemistry analysis. 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.

Appendix C NFLIS-Drug Benefits and Limitations

Benefits

The systematic collection and analysis of drug analysis 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. Enhancements to the DQS provide a new interagency exchange forum that will allow the DEA, forensic laboratories, and other members of the drug control community to post and respond to current information.

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.

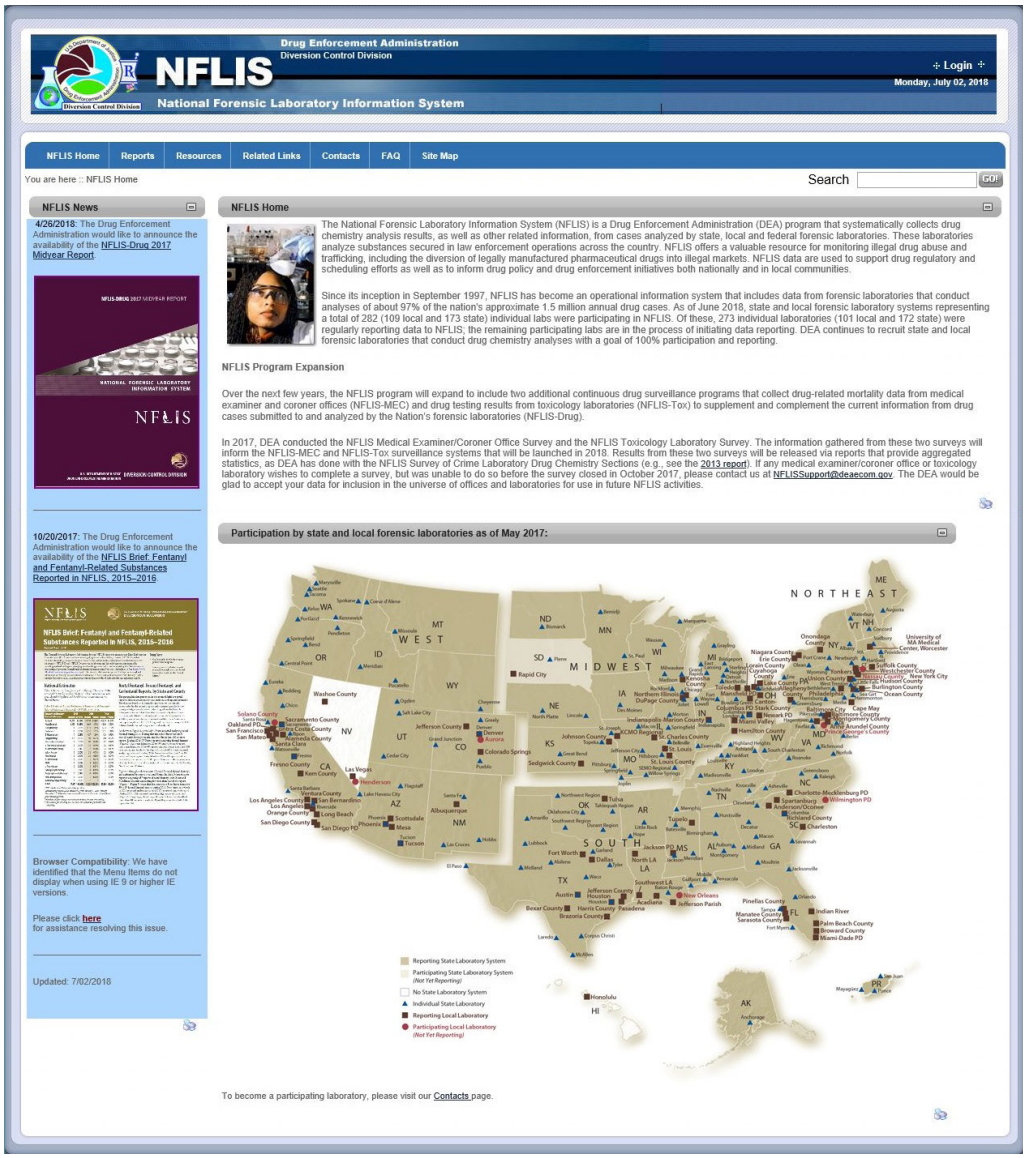
NFLIS-Drug Website and Data Query System (DQS)

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 NFLIS-Drug, including information relevant to drug control efforts and DEA participation in conferences. Also available are downloadable versions of published NFLIS-Drug reports, 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/.



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