NFLIS

NATIONAL FORENSIC LABORATORY INFORMATION SYSTEM

2015 ANNUAL REPORT

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

Contents

Highlights

- From January 1, 2015, through December 31, 2015, an estimated 1,192,079 distinct drug cases were submitted to State and local laboratories in the United States and analyzed by March 31, 2016. From these cases, an estimated 1,549,466 drug reports were identified.
- Cannabis/THC was the most frequently identified drug (395,767 reports) in 2015, followed by methamphetamine (272,823 reports), cocaine (216,129 reports), and heroin (187,868 reports).
- Nationally, alprazolam showed a linear-increasing trend from 2001 through 2015, with significant increases occurring in 2014 and 2015 ($p < .05$).* Oxycodone, hydrocodone, buprenorphine, fentanyl, and clonazepam reports showed S-shaped trends. Oxycodone and hydrocodone reports increased dramatically from 2002 to 2010, followed by recent downturns. The trend curve for buprenorphine showed dramatic increases from 2005 to 2010, followed by a steady increase through 2013 and significant increases in 2014 and 2015. Fentanyl reports remained steady from 2001 to 2005, increased in 2006, remained steady again through 2013, then dramatically increased in 2014 and 2015. The most dramatic increase for clonazepam occurred between 2008 and 2010, then remained fairly steady until further increases occurred in 2014 and 2015.
- From 2014 to 2015, national reports of hydrocodone decreased significantly, while reports of alprazolam, buprenorphine, fentanyl, and clonazepam increased significantly.
- Regionally, for alprazolam, the West, Midwest, and South regions showed linear-increasing trends, while the Northeast region showed an S-shaped trend that began to curve downward in 2011. For oxycodone, all regions showed S-shaped trends. For hydrocodone, all regions showed S-shaped trends except the Northeast region, which had an upside-down U-shaped trend that decreased from 2008 through 2015. For buprenorphine, the West, Midwest, and South regions showed upward-curving trends, and the Northeast region had an S-shaped trend that began to turn downward in 2011. For fentanyl, the Midwest, Northeast, and South regions showed S-shaped trends that dramatically increased from 2013 through 2015, while the West region showed a linear-increasing trend, with a significant increase in 2015. For clonazepam, the West region showed a linear-increasing trend, the Midwest region had an upward-curving trend, and the South and Northeast regions had S-shaped trends.
- In 2015, oxycodone and hydrocodone accounted for 52% of narcotic analgesic reports. Alprazolam accounted for 56% of the reports of identified tranquilizers and depressants. Among identified synthetic cannabinoids, AB-CHMINACA accounted for 22% and XLR11 accounted for 21% of reports.
- Nationwide, cannabis/THC, methamphetamine, and cocaine reports showed S-shaped trends. Cannabis/THC decreased from 2001 through 2004, slightly increased from 2005 to 2009, and decreased since 2009. Methamphetamine reports increased from 2001 through 2005, decreased from 2005 through 2010, and increased since 2011. Cocaine reports gradually increased from 2001 to 2006 and steadily decreased through 2014 until a slight increase occurred in 2015. Heroin reports showed a U-shaped trend, with decreases from 2001 through 2005, followed by increases from 2006 to 2015. MDMA reports showed an upside-down U-shaped trend, with an overall increase in MDMA reports from 2001 to 2007, followed by a decrease through 2015.

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

INTRODUCTION

The National Forensic Laboratory Information System (NFLIS) is a program of the Drug Enforcement Administration (DEA), Diversion Control Division, which 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. NFLIS represents an important resource in monitoring illicit drug abuse and trafficking, including the diversion of legally manufactured pharmaceuticals into illegal markets. NFLIS 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 is a comprehensive information system that includes data from forensic laboratories that handle the Nation's drug analysis cases. The NFLIS participation rate, defined as the percentage of the national drug caseload represented by laboratories that have joined NFLIS, is currently over 97%. NFLIS includes 50 State systems and 101 local or municipal laboratories/laboratory systems, representing a total of 277 individual laboratories. The NFLIS database also includes Federal data from DEA and U.S. Customs and Border Protection (CBP) laboratories.

The 2015 Annual Report presents the results of drug cases submitted to State and local laboratories from January through December 2015 that were analyzed by March 31, 2016. Section 1 presents national and regional estimates for the 25 most frequently reported drugs, as well as national and regional trends from 2001 through 2015. Section 2 presents estimates of specific drugs by drug category. All estimates are based on the NEAR (National Estimates Based on All Reports) approach. See Appendix A for details on the NEAR approach and Appendix B for a list of NFLIS participating and reporting laboratories. Data from Federal laboratories are also included in this publication. All data presented in this publication include the first, second, and third drugs that were mentioned in laboratories' reported drug items.

Sections 3 and 4 present actual reported data rather than national and regional estimates; all data reported by NFLIS State and local laboratories are included. Section 3 presents a Geographic Information System (GIS) analysis on ethylone and AB-CHMINACA 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 are presented in Appendix C. A key area of improvement to NFLIS includes ongoing enhancements to the NFLIS Data Query System (DQS); Appendix D summarizes these DQS enhancement activities.


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

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 2015 that were analyzed by March 31, 2016. Trends are presented for selected drugs from 2001 through 2015.

National and regional drug estimates presented in the following section include all drug reports (up to three per laboratory drug item). The NEAR approach was used to produce estimates for the Nation and for the U.S. census regions. The NEAR approach uses all NFLIS reporting laboratories. Appendix A provides a detailed description of the methods used in preparing these estimates.

1.1 Drug Reports

In 2015, a total of 1,549,466 drug reports were identified by State and local forensic laboratories in the United States. This estimate is an increase of 3% from the 1,511,313 drug reports identified during 2014. 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 2015. The majority of all drugs reported in NFLIS were identified as the top four drugs, with cannabis/THC, methamphetamine, cocaine, and heroin representing 69% of all drug reports. Nationally, 395,767 drug reports were identified as cannabis/THC (26%), 272,823 as methamphetamine (18%), 216,129 as cocaine (14%), and 187,868 as heroin (12%).

In addition, nine narcotic analgesics were among the top 25 drugs: oxycodone (41,894 reports), hydrocodone (27,219 reports), buprenorphine (17,917 reports), fentanyl (14,051 reports), morphine (7,290 reports), tramadol (5,334 reports), methadone (5,023 reports), hydromorphone (4,044 reports), and codeine (3,539 reports). Four tranquilizers and depressants were included: alprazolam (45,584 reports), clonazepam (12,269 reports), diazepam (5,306 reports), and phencyclidine (PCP) (4,751 reports). There were also four phenethylamines: amphetamine (12,222 reports), ethylone (9,237 reports), MDMA (5,188 reports), and alpha-PVP (the national estimate of alpha-PVP reports was suppressed; see Appendix A). In addition, there were two synthetic cannabinoids: AB-CHMINACA (7,571 reports) and XLR11 (6,973 reports). Psilocin/psilocibin (4,061 reports), a controlled drug, was 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 drugs submitted to laboratories from January 1, 2015, through December 31, 2015, and analyzed by March 31, 2016

	National		West		Midwest		Northeast		South	
Drug	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Cannabis/THC	395,767	25.54%	47,978	18.04%	135,988	35.13%	75,107	27.55%	136,694	21.92%
Methamphetamine	272,823	17.61%	111,124	41.78%	47,639	12.30%	4,554	1.67%	109,507	17.56%
Cocaine	216,129	13.95%	18,427	6.93%	45,683	11.80%	54,110	19.84%	97,908	15.70%
Heroin	187,868	12.12%	31,811	11.96%	53,029	13.70%	60,960	22.36%	42,068	6.75%
Alprazolam	45,584	2.94%	4,661	1.75%	8,901	2.30%	5,914	2.17%	26,109	4.19%
Oxycodone	41,894	2.70%	4,901	1.84%	8,144	2.10%	8,862	3.25%	19,987	3.20%
Hydrocodone	27,219	1.76%	3,458	1.30%	6,684	1.73%	1,298	0.48%	15,779	2.53%
Buprenorphine	17,917	1.16%	1,528	0.57%	3,275	0.85%	4,729	1.73%	8,385	1.34%
Fentanyl	14,051	0.91%	278	0.10%	4,864	1.26%	5,896	2.16%	3,013	0.48%
Clonazepam	12,269	0.79%	1,187	0.45%	2,716	0.70%	2,161	0.79%	6,205	0.99%
Amphetamine	12,222	0.79%	1,228	0.46%	3,169	0.82%	1,486	0.54%	6,340	1.02%
Ethylone	9,237	0.60%	562	0.21%	955	0.25%	1,547	0.57%	6,173	0.99%
alpha-PVP	*	*	233	0.09%	898	0.23%	665	0.24%	*	*
AB-CHMINACA	7,571	0.49%	855	0.32%	1,027	0.27%	1,207	0.44%	4,482	0.72%
Morphine	7,290	0.47%	1,293	0.49%	1,824	0.47%	551	0.20%	3,622	0.58%
XLR11	6,973	0.45%	769	0.29%	1,361	0.35%	1,520	0.56%	3,323	0.53%
Tramadol	5,334	0.34%	690	0.26%	1,604	0.41%	466	0.17%	2,575	0.41%
Diazepam	5,306	0.34%	892	0.34%	1,238	0.32%	532	0.20%	2,644	0.42%
MDMA	5,188	0.33%	1,904	0.72%	1,634	0.42%	451	0.17%	1,200	0.19%
Methadone	5,023	0.32%	783	0.29%	1,004	0.26%	989	0.36%	2,247	0.36%
Phencyclidine (PCP)	4,751	0.31%	359	0.14%	995	0.26%	1,781	0.65%	1,617	0.26%
Psilocin/psilocibin	4,061	0.26%	1,586	0.60%	1,082	0.28%	335	0.12%	1,057	0.17%
Hydromorphone	4,044	0.26%	332	0.12%	513	0.13%	193	0.07%	3,006	0.48%
Noncontrolled, non-narcotic[2]	3,861	0.25%	1,770	0.67%	52	0.01%	686	0.25%	1,352	0.22%
Codeine	3,539	0.23%	540	0.20%	843	0.22%	473	0.17%	1,682	0.27%
Top 25 Total	1,324,770	85.50%	239,148	89.91%	335,120	86.56%	236,473	86.73%	514,030	82.42%
All Other Drug Reports	224,696	14.50%	26,847	10.09%	52,033	13.44%	36,195	13.27%	109,621	17.58%
Total Drug Reports[3]	1,549,466	100.00%	265,995	100.00%	387,153	100.00%	272,667	100.00%	623,651	100.00%

alpha-PVP=alpha-Pyrrolidinopentiophenone
AB-CHMINACA=(N-(1-Amino-3-methyl-1oxobutan-2-yl)-1-(cyclohexylmethyl)1H-indazole-3-carboxamide)
XLR11=[1-(5-Fluoro-pentyl)-1H-indol-3-yl],(2,2,3,3-tetramethylcyclopropyl)methanone
MDMA=3,4-Methylenedioxymethamphetamine

** The estimate for this drug does not meet the standards of precision and reliability. See Appendix A for a more detailed methodology discussion.*
[1] Sample n's and 95% confidence intervals for all estimates are available on request.
[2] As reported by NFLIS laboratories, with no specific drug name provided.
[3] Numbers and percentages may not sum to totals because of rounding.

1.2 Drug Cases Analyzed

Drug analysis results are also reported to NFLIS at the case level. These case-level data typically describe all drugs identified within a drug-related incident, although a small proportion of laboratories may assign a single case number to all drug submissions related to an entire investigation. Table 1.2 presents national estimates of the top 25 drug-specific cases. This table illustrates the number of cases that contained one or more reports of the specified drug. In 2015, there were 1,192,079 drug-specific cases submitted to and analyzed by State and local forensic laboratories, representing a 1% increase from the 1,174,858 drug-specific cases in 2014.

Among all drug cases, cannabis/THC was the most common drug reported during 2015. Nationally, 31% of drug cases contained one or more reports of cannabis/THC, followed by methamphetamine, which was identified in 23% of all drug cases. About 19% of drug cases contained cocaine, and 16% contained heroin. Alprazolam and oxycodone were each reported in about 4% of cases.

Table 1.2 *National Case Estimates*
Top 25 estimated number of drug-specific cases and their percentage of distinct cases, January 1, 2015, through December 31, 2015

Drug	Number	Percent
Cannabis/THC	286,688	31.15%
Methamphetamine	208,983	22.71%
Cocaine	173,361	18.84%
Heroin	143,018	15.54%
Alprazolam	38,242	4.16%
Oxycodone	32,666	3.55%
Hydrocodone	23,621	2.57%
Buprenorphine	15,930	1.73%
Clonazepam	10,975	1.19%
Fentanyl	10,897	1.18%
Amphetamine	10,644	1.16%
Ethylone	7,481	0.81%
alpha-PVP	*	*
Morphine	6,338	0.69%
AB-CHMINACA	5,686	0.62%
Tramadol	4,802	0.52%
Diazepam	4,695	0.51%
XLR11	4,621	0.50%
Methadone	4,420	0.48%
Phencyclidine (PCP)	4,176	0.45%
MDMA	3,850	0.42%
Hydromorphone	3,543	0.38%
Psilocin/psilocibin	3,479	0.38%
Naloxone	3,234	0.35%
Codeine	3,129	0.34%
Top 25 Total	1,021,295	110.98%
All Other Drugs	170,784	18.56%
Total All Drugs[1]	1,192,079	129.54%[2]

alpha-PVP=alpha-Pyrrolidinopentiophenone

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

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

MDMA=3,4-Methylenedioxymethamphetamine

** The estimate for this drug does not meet the standards of precision and reliability. See Appendix A for a more detailed methodology discussion.*

[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 920,225 distinct cases submitted to State and local laboratories from January 1, 2015, through December 31, 2015, and analyzed by March 31, 2016.

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 the DEA captures domestic and international drug cases, the results presented in this section describe only those drugs obtained within the United States. In addition to drug reports from the DEA, reports from seven U.S. Customs and Border Protection (CBP) laboratories are included.

A total of 30,388 drugs were submitted to DEA and CBP laboratories in 2015 and analyzed by March 31, 2016, or about 2% of the estimated 1.55 million drugs reported by NFLIS State and local laboratories during this period. In 2015, about half of the drugs reported by DEA and CBP laboratories were identified as methamphetamine (17%), cocaine (13%), heroin (10%), or cannabis/THC (9%). Oxycodone was identified in 2% of the reported drugs.

MOST FREQUENTLY REPORTED DRUGS BY FEDERAL LABORATORIES[1]

Number and percentage of drugs submitted to laboratories from January 1, 2015, through December 31, 2015, and analyzed by March 31, 2016

Drug	Number	Percent
Methamphetamine	5,182	17.05%
Cocaine	4,036	13.28%
Heroin	3,144	10.35%
Cannabis/THC	2,617	8.61%
Oxycodone	473	1.56%
Ethylone	336	1.11%
Phenacetin	323	1.06%
Fentanyl	315	1.04%
XLR11	282	0.93%
AB-CHMINACA	278	0.91%
All Other Drug Reports	13,402	44.10%
Total Drug Reports	30,388	100.00%[2]

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

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

[1] *Federal drug reports in this table include 28,225 reports from DEA laboratories and 2,163 reports from CBP 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 either increasing-decreasing-increasing or decreasing-increasing-decreasing). Because the trends are determined through regression modeling, the descriptions of the trends detailed in this section may differ slightly from the plotted lines of estimates featured in Figures 1.1 through 1.15. Estimates include all drug reports (up to three) 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 alprazolam, oxycodone, hydrocodone, buprenorphine, fentanyl, and clonazepam. Significant ($p < .05$) results include the following:

- Alprazolam showed a linear-increasing trend from 2001 through 2015. Although there were decreases in reports from 2011 to 2013, significant increases occurred in 2014 and 2015, with the number of reports in 2015 surpassing all prior annual estimates.
- Oxycodone, hydrocodone, and buprenorphine reports showed S-shaped trends. Oxycodone and hydrocodone reports increased dramatically from 2002 to 2010, followed by recent downturns. The trend curve for buprenorphine lagged a few years behind, with dramatic increases occurring from 2005 to 2010, followed by a steady increase from 2011 to 2013 and a significant increase beginning in 2014.

Figure 1.1 National trend estimates for alprazolam, oxycodone, and hydrocodone, January 2001–December 2015

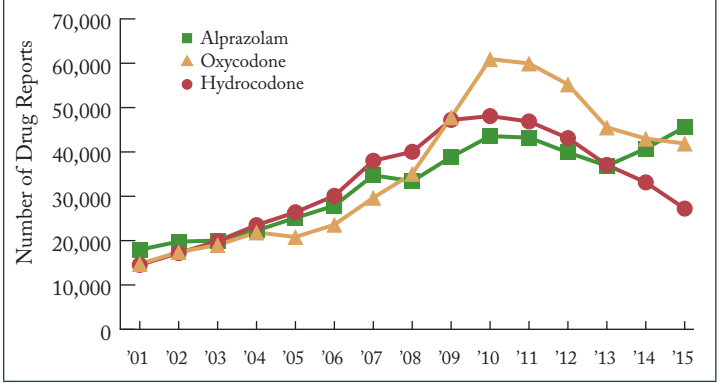
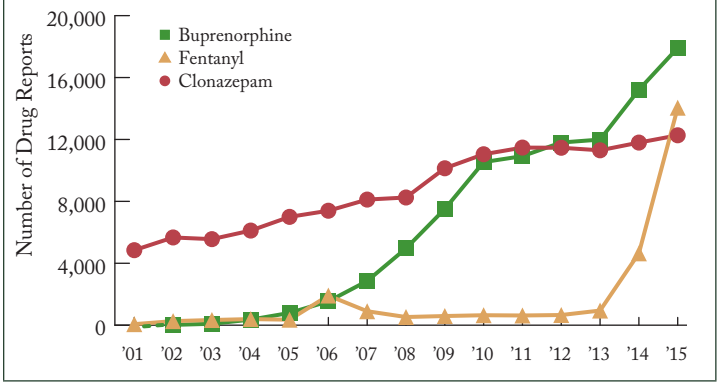


Figure 1.2 National trend estimates for buprenorphine, fentanyl, and clonazepam, January 2001–December 2015[1]



[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.*

- The S-shaped trend for fentanyl showed that reports remained steady from 2001 to 2005, which was followed by a noticeable increase in 2006. Fentanyl reports continued to remain fairly steady until dramatic increases occurred in 2014 and 2015.
- Clonazepam reports also showed an S-shaped trend, with the most dramatic increase occurring between 2008 and 2010. Estimates from 2011 to 2013 remained fairly steady, followed by further increases in 2014 and 2015.

Significance tests were also performed on differences from 2014 to 2015 in order to identify more recent changes. Across these two periods, reports of alprazolam (from 40,747 to 45,584 reports), buprenorphine (from 15,209 to 17,917 reports), fentanyl (from 4,642 to 14,051 reports), and clonazepam (from 11,797 to 12,269 reports) increased significantly ($p < .05$). Reports of hydrocodone (from 33,132 to 27,219 reports) decreased significantly. The decrease in oxycodone (from 43,000 to 41,894 reports) was not statistically significant.

Other national drug trends

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

- Cannabis/THC, methamphetamine, and cocaine reports all showed S-shaped trends. Cannabis/THC decreased from 2001 through 2004, slightly increased from 2005 to 2009, and decreased since 2009. Methamphetamine reports increased from 2001 through 2005, decreased from 2005 through 2010, then continued to increase from 2011 to 2015. Cocaine gradually increased from 2001 to 2006, then steadily decreased through 2014 until a slight increase occurred in 2015.
- Heroin reports showed a U-shaped trend in which reports decreased from 2001 through 2005, but then increased from 2006 to 2015.
- MDMA showed an upside-down U-shaped trend. There was an overall increase in MDMA reports from 2001 to 2007, followed by a decrease through 2015. The most dramatic decrease in MDMA reports occurred from 2010 to 2012.

More recently, from 2014 to 2015, reports of cannabis/THC (from 437,117 to 395,767 reports) decreased significantly, while reports of methamphetamine (from 236,175 to 272,823 reports) and heroin (from 163,600 to 187,868 reports) increased significantly ($p < .05$). The increases in cocaine (from 213,167 to 216,129 reports) and MDMA (from 4,902 to 5,188 reports) were not statistically significant.

Figure 1.3 National trend estimates for cannabis/THC and methamphetamine, January 2001–December 2015

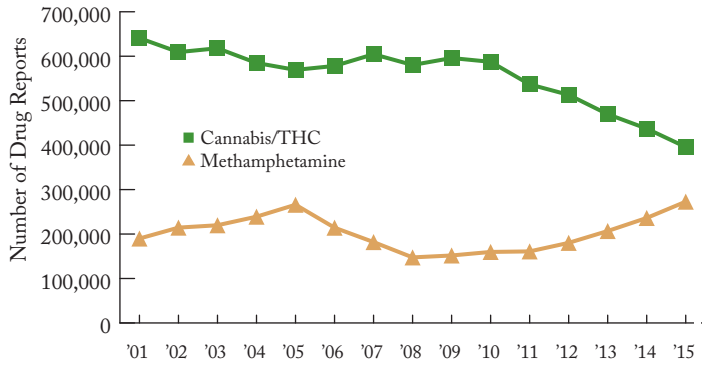
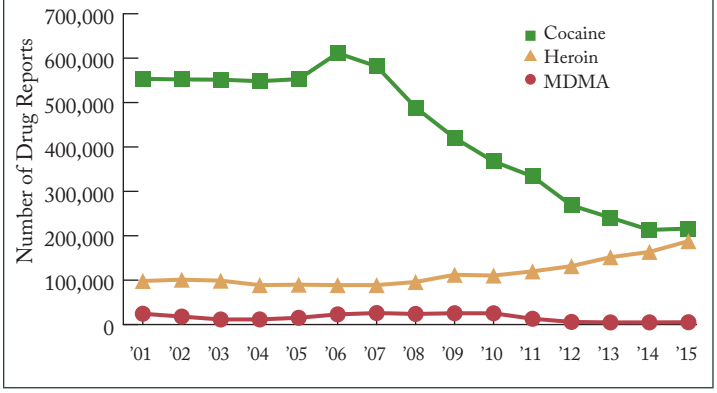


Figure 1.4 National trend estimates for cocaine, heroin, and MDMA, January 2001–December 2015



Regional prescription drug trends

Figures 1.5 through 1.10 show regional trends per 100,000 persons aged 15 or older for reports of alprazolam, oxycodone, hydrocodone, buprenorphine, fentanyl, and clonazepam from 2001 to 2015. These figures illustrate changes in prescription drugs reported over time, taking into account the population aged 15 years or older in each U.S. census region. Significant ($p < .05$) trend results include the following:

- For alprazolam, the West, Midwest, and South regions showed linear-increasing trends. In the Northeast region, the curve had a pronounced S-shape, with the trend lines beginning to curve downward in 2011.
- For oxycodone, all regions showed S-shaped trends similar to the national trend.
- For hydrocodone, all regions showed S-shaped trends except the Northeast region, which had an upside-down U-shaped trend, with the trend decreasing from 2008 through 2015.
- For buprenorphine, the West, Midwest, and South regions showed upward-curving trends. The Northeast had an S-shaped trend as the trend began to turn downward in 2011, while the other regions continued to increase.
- For fentanyl, the Midwest, Northeast, and South regions showed S-shaped trends, with trend lines dramatically increasing from 2013 through 2015. The West region showed a linear increasing trend due to a more gradual increase in reports from 2001 to 2014, followed by a significant increase in 2015.
- For clonazepam, the West region showed a linear-increasing trend, while the Midwest region had an upward-curving trend. The South and Northeast regions had S-shaped trends, although reports in the Northeast decreased more dramatically in more recent years.

More recently, from 2014 to 2015, alprazolam increased significantly in the West, Midwest, and South regions ($p < .05$). Oxycodone reports decreased significantly in the Northeast region but increased in the Midwest region, while hydrocodone reports decreased significantly in all regions. Buprenorphine increased significantly in all regions except the Northeast region, while fentanyl increased significantly in all regions. Clonazepam decreased significantly in the Northeast region but increased significantly in the Midwest and South regions.

Figure 1.5 Regional trends in alprazolam reported per 100,000 persons aged 15 or older, January 2001–December 2015[1]

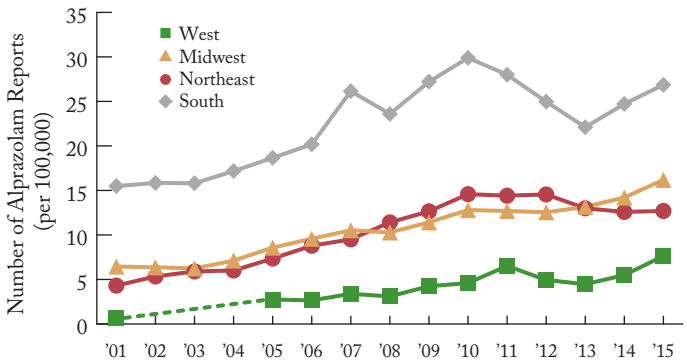


Figure 1.6 Regional trends in oxycodone reported per 100,000 persons aged 15 or older, January 2001–December 2015

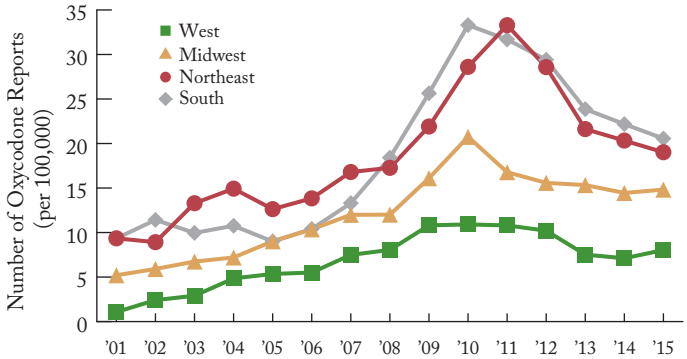
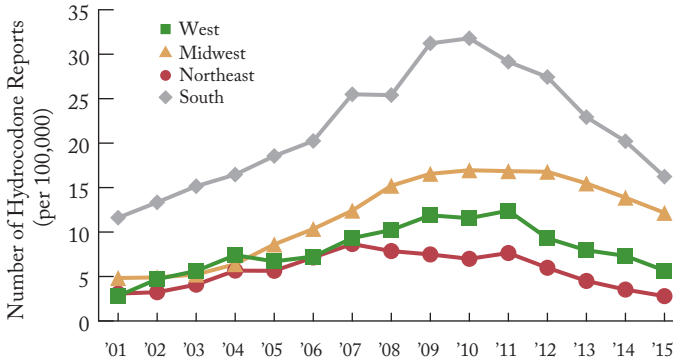


Figure 1.7 Regional trends in hydrocodone reported per 100,000 persons aged 15 or older, January 2001–December 2015



Note: U.S. census 2015 population data by age were not available for this publication. Population data for 2015 were imputed.

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

Figure 1.8 Regional trends in buprenorphine reported per 100,000 persons aged 15 or older, January 2001–December 2015[1]

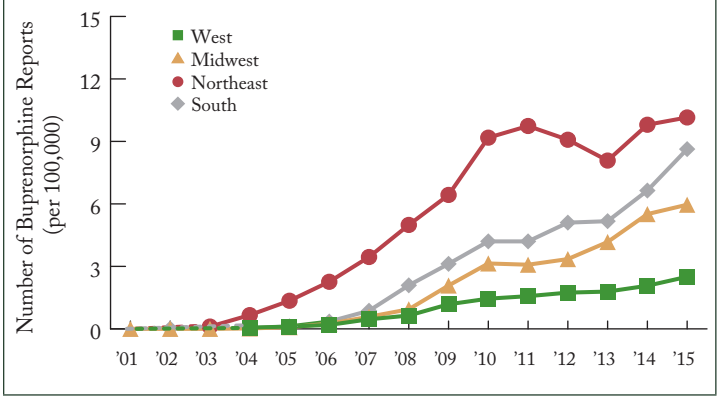


Figure 1.9 Regional trends in fentanyl reported per 100,000 persons aged 15 or older, January 2001–December 2015[1]

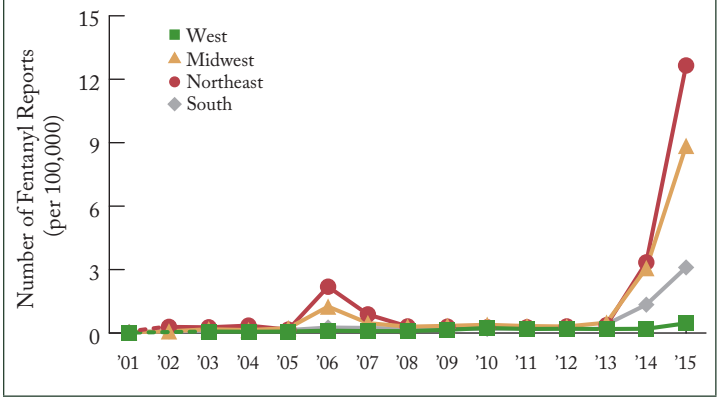
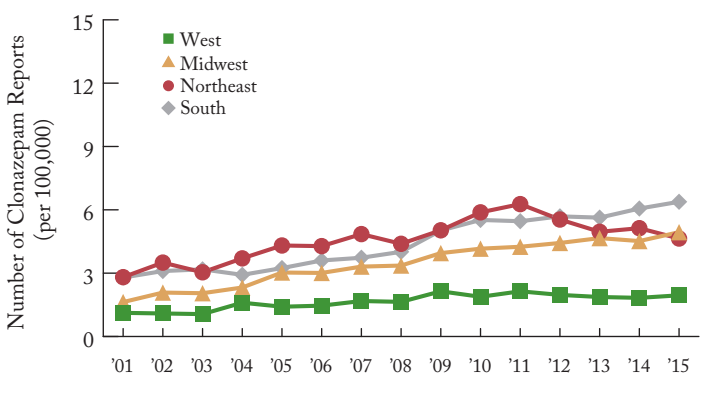


Figure 1.10 Regional trends in clonazepam reported per 100,000 persons aged 15 or older, January 2001–December 2015



Note: U.S. census 2015 population data by age were not available for this publication. Population data for 2015 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 cannabis/THC, methamphetamine, cocaine, heroin, and MDMA reports from 2001 through 2015. Significant ($p < .05$) trends include the following:

- For cannabis/THC, the Midwest and South regions showed downward-curving trends. The Northeast region showed an upside-down U-shaped trend, and the West region showed an S-shaped trend. All regions showed sharp decreases since 2009.
- For methamphetamine, all four regions showed S-shaped trends, with increases beginning around 2010 and 2011.
- For cocaine, all four regions showed S-shaped trends, with reports decreasing since about 2004, although the rate of decrease slowed down in recent years.
- For heroin, all regions showed U-shaped trends. The lowest point occurred in 2004 for the Midwest region, in 2006 for the West region, in 2007 for the Northeast region, and in 2008 for the South region.
- For MDMA, the West and Midwest regions showed upside-down U-shaped trends. The decline in the Midwest region began around 2008, while the decline in the West region began around 2009. The Northeast region showed an S-shaped trend, with the trend decreasing from 2011 through 2015. The South region showed a linear-decreasing trend.

Between 2014 and 2015, cannabis/THC decreased significantly in all regions except the Northeast region ($p < .05$). Methamphetamine increased significantly in all regions. Cocaine increased significantly in the Northeast and Midwest regions. Heroin increased significantly in all regions except the South region. MDMA increased significantly in the Midwest region only.


Heroin fentanyl pills

Figure 1.11 Regional trends in cannabis/THC reported per 100,000 persons aged 15 or older, January 2001–December 2015

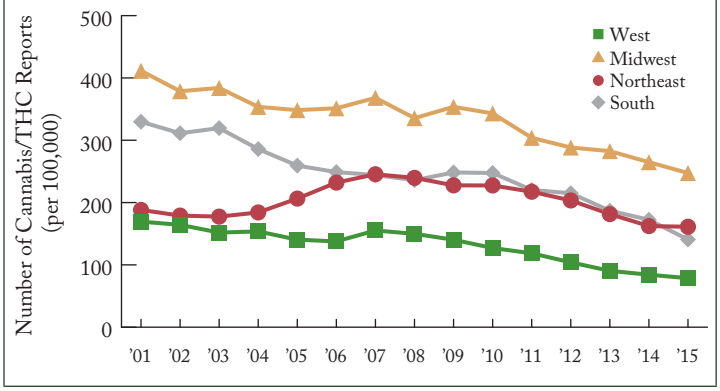


Figure 1.12 Regional trends in methamphetamine reported per 100,000 persons aged 15 or older, January 2001–December 2015[1]

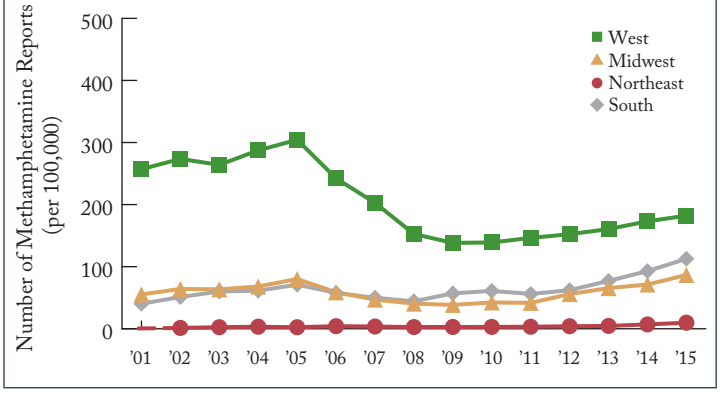
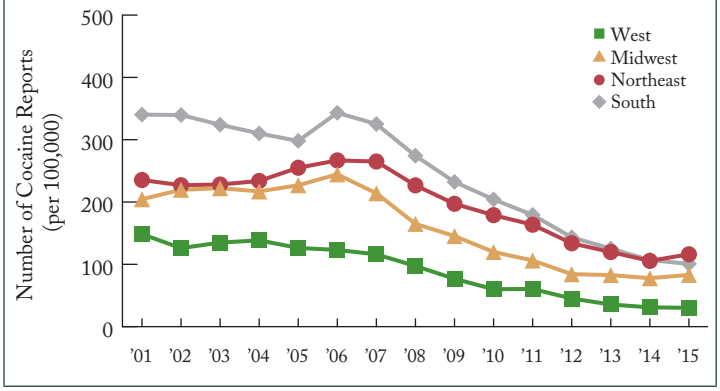


Figure 1.13 Regional trends in cocaine reported per 100,000 persons aged 15 or older, January 2001–December 2015



Note: U.S. census 2015 population data by age were not available for this publication. Population data for 2015 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 2015

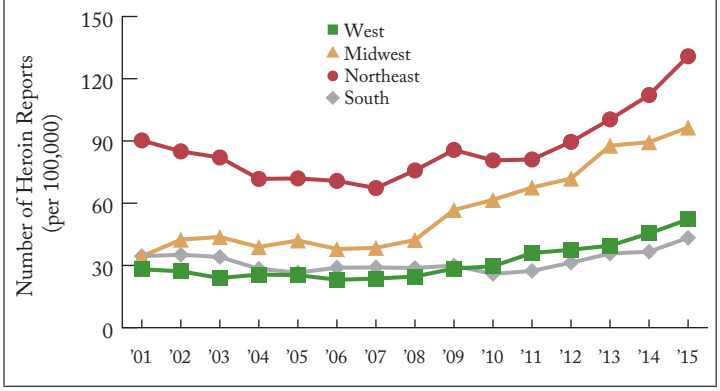
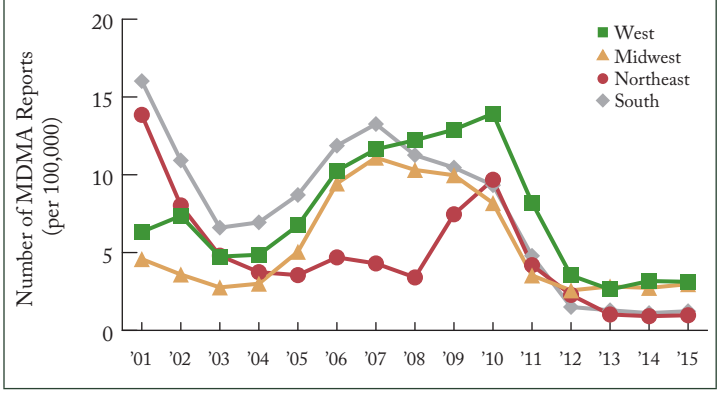


Figure 1.15 Regional trends in MDMA reported per 100,000 persons aged 15 or older, January 2001–December 2015



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). The first, second, and third drugs mentioned in laboratories' drug items are included. An estimated 1,549,466 drugs were submitted to State and local laboratories during 2015 and were analyzed by March 31, 2016.

2.1 Narcotic Analgesics

Narcotic analgesics are used to treat pain. Of these, opioids such as oxycodone and hydrocodone are highly addictive, and abuse can lead to injury and death. In fact, the majority of drug overdose deaths in the United States (more than 6 out of 10) involve an opioid.[i] Even so, these drugs continue to be prescribed and dispensed at increasingly higher levels, with the United States accounting for almost 100% of the world's hydrocodone prescriptions and 81% of all oxycodone prescriptions.[ii]

A total of 131,806 narcotic analgesic reports were identified by NFLIS laboratories in 2014, representing 9% of all drug reports (Table 2.1). Oxycodone (32%) and hydrocodone (21%) accounted for the majority of all narcotic analgesic reports. Other narcotic analgesics reported included buprenorphine (14%), fentanyl (11%), morphine (6%), tramadol (4%), methadone (4%), hydromorphone (3%), and codeine (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 West and Northeast regions reported the highest percentage of oxycodone (35% each). The Northeast region also reported the highest percentage of buprenorphine (19%) and fentanyl (23%). Hydrocodone accounted for 25% of narcotic analgesics in the West region, 25% in the South region, and 23% in the Midwest region.

Table 2.1 *Narcotic Analgesics*
Number and percentage of narcotic analgesic reports in the United States, 2015[1]

Narcotic Analgesic Reports	Number	Percent
Oxycodone	41,894	31.78%
Hydrocodone	27,219	20.65%
Buprenorphine	17,917	13.59%
Fentanyl	14,051	10.66%
Morphine	7,290	5.53%
Tramadol	5,334	4.05%
Methadone	5,023	3.81%
Hydromorphone	4,044	3.07%
Codeine	3,539	2.68%
Acetyl fentanyl	2,412	1.83%
Oxymorphone	2,277	1.73%
Butyryl fentanyl	205	0.16%
Mitragynine	129	0.10%
Propoxyphene	113	0.09%
Meperidine	109	0.08%
Other narcotic analgesics	251	0.19%
Total Narcotic Analgesic Reports[2]	131,806	100.00%
Total Drug Reports	1,549,466	

Table 2.1 Notes:

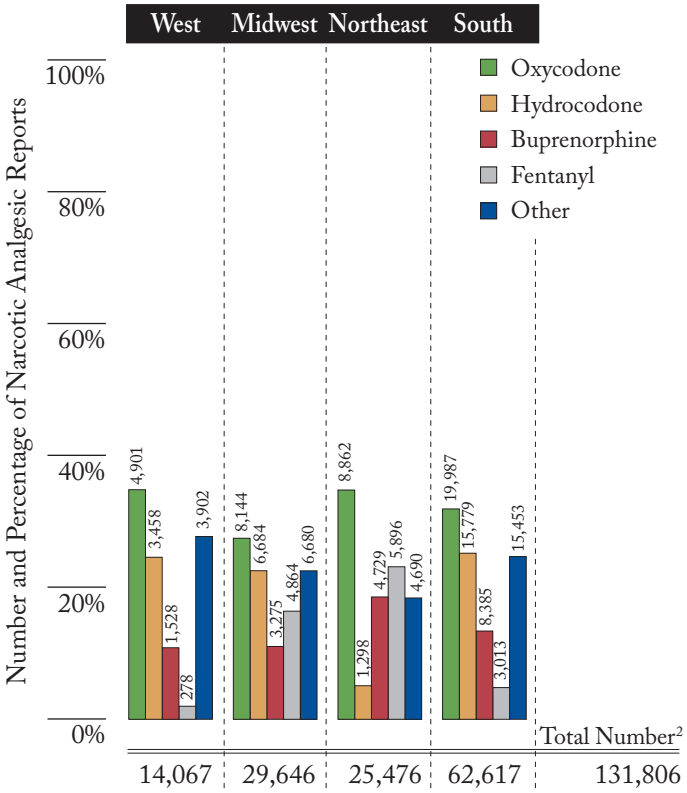
[1] *Includes drugs submitted to laboratories from January 1, 2015, through December 31, 2015, that were analyzed by March 31, 2016.*

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

[i] Rudd, R. A., Aleshire, N., Zibbell, J. E., & Gladden, R. M. (2016, January 1). Increases in drug and opioid overdose deaths — United States, 2000–2014. *Morbidity and Mortality Weekly Report, 64*, 1378–1382. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6450a3.htm?s_cid=mm6450a3_w

[ii] National Institute on Drug Abuse. (2015, May 14). *Testimony to Congress: America's addiction to opioids: Heroin and prescription drug abuse* (presented by Nora D. Volkow, M.D., to the Senate Caucus on International Narcotics Control). Retrieved from https://www.drugabuse.gov/about-nida/legislative-activities/testimony-to-congress/2016/americas-addiction-to-opioids-heroin-prescription-drug-abuse

Figure 2.1 Distribution of narcotic analgesic reports within region, 2015[1]



2.2 *Tranquilizers and Depressants*

Most tranquilizers and depressants are controlled and require a prescription. They are used to treat sleep problems, anxiety, muscle spasms, and seizures. Even at the recommended doses for medical treatment, long-term use can lead to physical dependence.[iii] In 2014, 1.9 million Americans aged 12 or older used tranquilizers for nonmedical reasons (i.e., without a prescription or simply for the experience or feeling the tranquilizers caused).[iv]

Approximately 5% of all drug reports in 2015, or 81,393 reports, were identified by NFLIS laboratories as tranquilizers and depressants (Table 2.2). Alprazolam accounted for 56% of reported tranquilizers and depressants. Approximately 15% of tranquilizers and depressants were identified as clonazepam. Alprazolam was identified in more than one-half of the tranquilizers and depressants reported in the South and Midwest regions (61% and 54%, respectively) (Figure 2.2). Clonazepam accounted for 17% of tranquilizers and depressants identified in the Midwest and Northeast regions. The West region reported the highest percentage of diazepam (9%), while the Northeast region reported the highest percentage of PCP (14%).

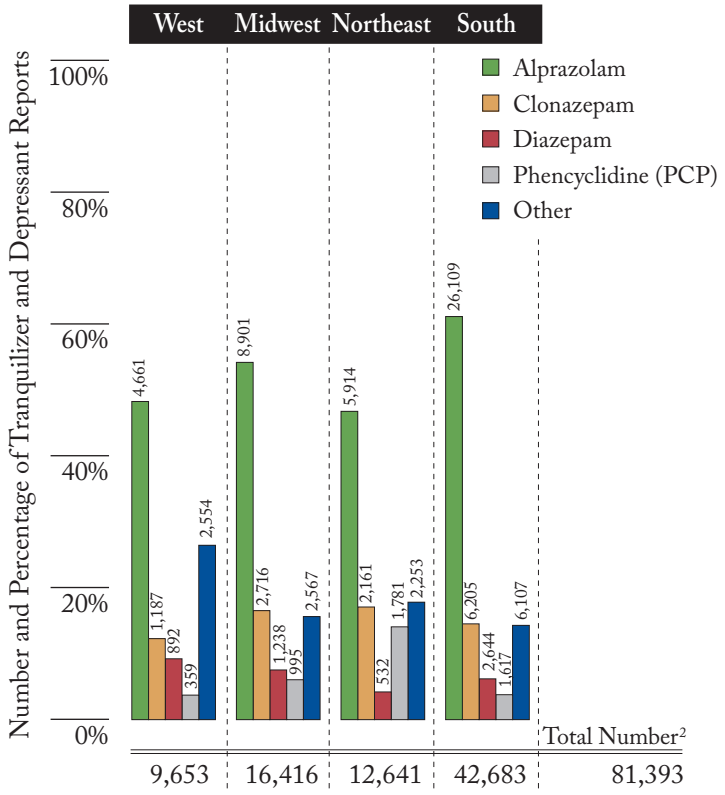
[iii] U.S. Drug Enforcement Administration. (2015). *Drugs of abuse: A DEA resource guide* (2015 ed.). Retrieved from https://www.dea.gov/pr/multimedia-library/publications/drug_of_abuse.pdf

[iv] Center for Behavioral Health Statistics and Quality. (2015). *Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health* (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from http://www.samhsa.gov/data

Table 2.2 *Tranquilizers and Depressants*
Number and percentage of tranquilizer and depressant reports in the United States, 2015[1]

Tranquilizer and Depressant Reports	Number	Percent
Alprazolam	45,584	56.01%
Clonazepam	12,269	15.07%
Diazepam	5,306	6.52%
Phencyclidine (PCP)	4,751	5.84%
Carisoprodol	2,808	3.45%
Lorazepam	2,635	3.24%
Zolpidem	1,668	2.05%
Ketamine	1,568	1.93%
Cyclobenzaprine	1,262	1.55%
Etizolam	504	0.62%
Hydroxyzine	392	0.48%
Pregabalin	388	0.48%
Temazepam	331	0.41%
Butalbital	311	0.38%
Gamma-hydroxybutrate (GHB)	296	0.36%
Other tranquilizers and depressants	1,319	1.62%
Total Tranquilizer and Depressant Reports[2]	81,393	100.00%
Total Drug Reports	1,549,466	

Figure 2.2 Distribution of tranquilizer and depressant reports within region, 2015[1]



[1] *Includes drugs submitted to laboratories from January 1, 2015, through December 31, 2015, that were analyzed by March 31, 2016.*

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

2.3 *Anabolic Steroids*

Anabolic steroids are synthetically produced versions of the naturally occurring male hormone testosterone. Anabolic steroids are usually swallowed or injected; however, they can also be applied to the skin as a cream, gel, or patch. People who abuse steroids often take doses that are 10 to 100 times higher than those prescribed to treat medical conditions.[v]

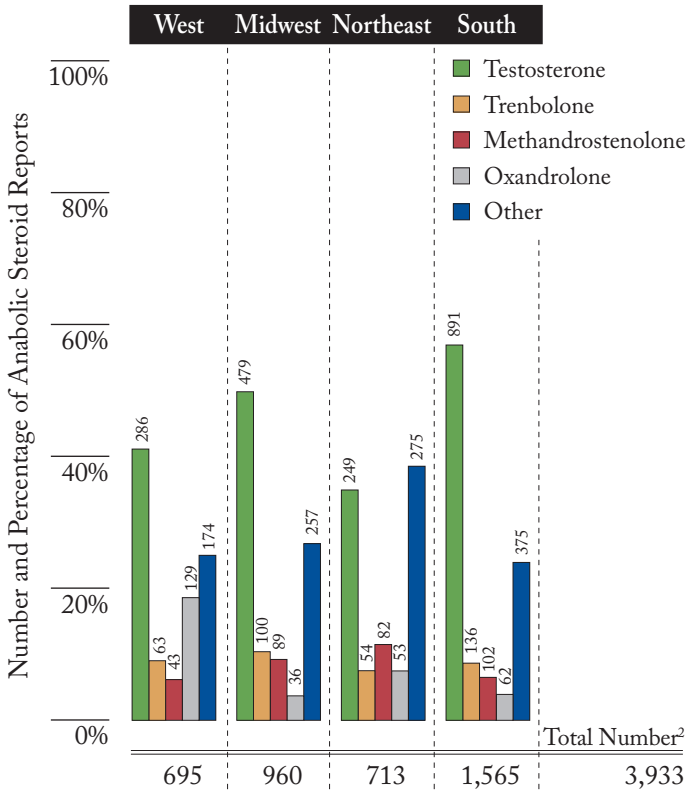
During 2015, a total of 3,933 drug reports were identified as anabolic steroids (Table 2.3). The most commonly identified anabolic steroid was testosterone (48%), followed by trenbolone (9%), methandrostenolone (8%), and oxandrolone (7%). Testosterone accounted for 57% of anabolic steroids in the South region, 50% in the Midwest region, 41% in the West region, and 35% in the Northeast region (Figure 2.3). The Midwest region reported the highest percentage of trenbolone (10%), the Northeast region reported the highest percentage of methandrostenolone (11%), and the West region reported the highest percentage of oxandrolone (19%).

Anabolic steroids

Table 2.3 *Anabolic Steroids*
Number and percentage of anabolic steroid reports in the United States, 2015[1]

Anabolic Steroid Reports	Number	Percent
Testosterone	1,905	48.43%
Trenbolone	352	8.95%
Methandrostenolone	315	8.02%
Oxandrolone	280	7.12%
Stanozolol	254	6.46%
Nandrolone	227	5.78%
Boldenone	175	4.46%
Oxymetholone	131	3.33%
Drostanolone	70	1.77%
Mestanolone	34	0.86%
Mesterolone	26	0.66%
Methenolone	19	0.47%
Dehydroepiandrosterone	16	0.40%
4-Chlorodehydromethyltestosterone	11	0.29%
Methyltestosterone	10	0.26%
Other steroids	107	2.73%
Total Anabolic Steroid Reports[2]	3,933	100.00%
Total Drug Reports	1,549,466	

Figure 2.3 Distribution of anabolic steroid reports within region, 2015[1]



[1] *Includes drugs submitted to laboratories from January 1, 2015, through December 31, 2015, that were analyzed by March 31, 2016.*

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

[v] National Institute on Drug Abuse. (2016, March). *What are anabolic steroids?* Retrieved from https://www.drugabuse.gov/publications/drugfacts/anabolic-steroids

2.4 Phenethylamines

The use of phenethylamines, which include synthetic cathinones, can result in serious health problems and death. From October 2010 to June 2013, poison centers in the United States received more than 9,600 calls related to side effects and overdoses from exposure to synthetic cathinone products. Synthetic cathinones were initially marked as "legal" alternatives to controlled substances, such as cocaine, amphetamine, and MDMA. Manufacturers often market these substances as common household products, including "bath salts," "shoe deodorizer," "glass cleaner," and "jewelry cleaner."[vi]

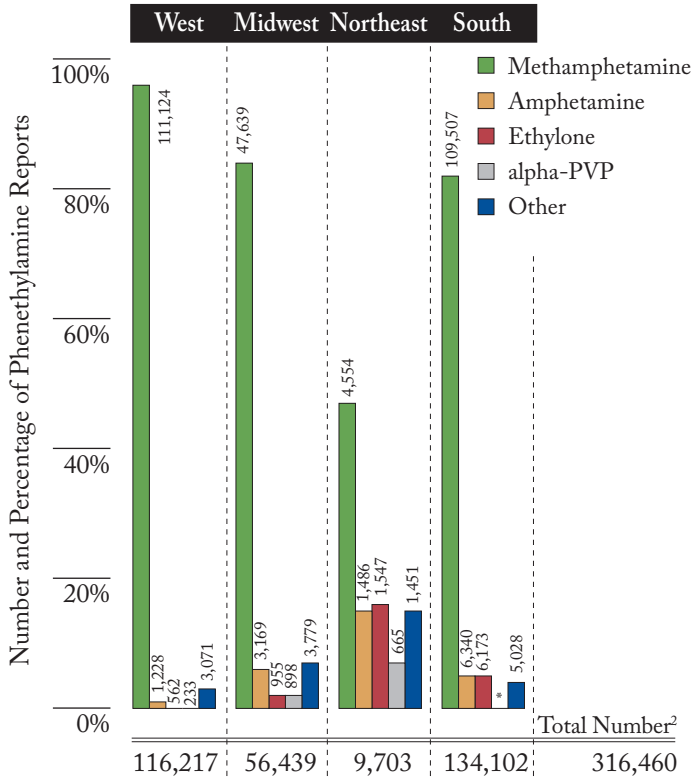
NFLIS laboratories identified 316,460 phenethylamine reports in 2015, representing 20% of all drug reports (Table 2.4). Of these, 86% were identified as methamphetamine. Among the other phenethylamine reports, 4% were identified as amphetamine and 3% as ethylone. Methamphetamine accounted for 96% of phenethylamine reports in the West region, 84% in the Midwest region, 82% in the South region, and 47% in the Northeast region (Figure 2.4). Approximately 15% of the phenethylamines reported in the Northeast region were amphetamine. The Northeast region also reported the highest percentages of ethylone (16%) and alpha-PVP (7%).

Table 2.4 *Phenethylamines*
Number and percentage of phenethylamine reports in the United States, 2015[1]

Phenethylamine Reports	Number	Percent
Methamphetamine	272,823	86.21%
Amphetamine	12,222	3.86%
Ethylone	9,237	2.92%
alpha-PVP	*	*
MDMA	5,188	1.64%
Lisdexamfetamine	1,941	0.61%
MDA	1,066	0.34%
25I-NBOMe	838	0.26%
Phentermine	631	0.20%
Methylone	447	0.14%
25C-NBOMe	293	0.09%
25B-NBOMe	255	0.08%
Ephedrine	173	0.05%
alpha-PHP	163	0.05%
Benzphetamine	156	0.05%
Other phenethylamines	2,178	0.69%
Total Phenethylamine Reports[2]	316,460	100.00%
Total Drug Reports	1,549,466	

alpha-PVP=alpha-Pyrrolidinopentiophenone
MDMA=3,4-Methylenedioxymethamphetamine
MDA=3,4-Methylenedioxyamphetamine
25I-NBOMe=2-(4-Iodo-2,5-dimethoxyphenyl)-N-(2-methoxybenzyl) ethanamine
25C-NBOMe=2-(4-Chloro-2,5-dimethoxyphenyl)-N-(2-methoxybenzyl) ethanamine
25B-NBOMe=2-(4-Bromo-2,5-dimethoxyphenyl)-N-(2-methoxybenzyl) ethanamine
alpha-PHP=alpha-Pyrrolidinohexanophenone

Figure 2.4 Distribution of phenethylamine reports within region, 2015[1]



* *The estimate for this drug does not meet the standards of precision or reliabiity. See Appendix A for a more detailed methodology discussion.*

[1] *Includes drugs submitted to laboratories from January 1, 2015, through December 31, 2015, that were analyzed by March 31, 2016.*

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

[vi] Rannazzisi, J. T. (2013, September 25). *Statement of Joseph T. Rannazzisi, Deputy Assistant Administrator, Office of Diversion Control, Drug Enforcement Administration, before the Caucus on International Narcotics Control, United States Senate, for a hearing entitled "Dangerous Synthetic Drugs."* Retrieved from http://www.justice.gov/dea/pr/speeches-testimony/2013t/092513t.pdf

2.5 Synthetic Cannabinoids

The side effects associated with the use of synthetic cannabinoids can be severe and include agitation, anxiety, nausea, vomiting, tachycardia, high blood pressure, seizures, hallucinations, suicidal thoughts, and death.[vii] Recently, poison centers across the United States experienced a significant increase in calls related to synthetic cannabinoids. From January through May 2014, there were 1,085 calls to poison centers related to synthetic cannabinoids. During the same period in 2015, the number of calls related to synthetic cannabinoids tripled to 3,572.[viii]

A total of 33,820 synthetic cannabinoid reports were identified during 2015, accounting for about 2% of all drugs reported (Table 2.5). AB-CHMINACA (22%) and XLR11 (21%) were the most commonly identified synthetic cannabinoids, followed by AB-PINACA (7%), AB-FUBINACA (7%), and 5-fluoro AMB (7%). AB-CHMINACA accounted for one-fifth or more of all synthetic cannabinoid reports in the West region (29%), South region (24%), and Northeast region (20%) (Figure 2.5). XLR11 accounted for one-fifth or more of all synthetic cannabinoids reported in the West region (26%), Northeast region (25%), and Midwest region (22%). The Midwest region reported the highest percentage of AB-PINACA (13%). In the Northeast region, 11% of synthetic cannabinoids were reported as AB-FUBINACA.

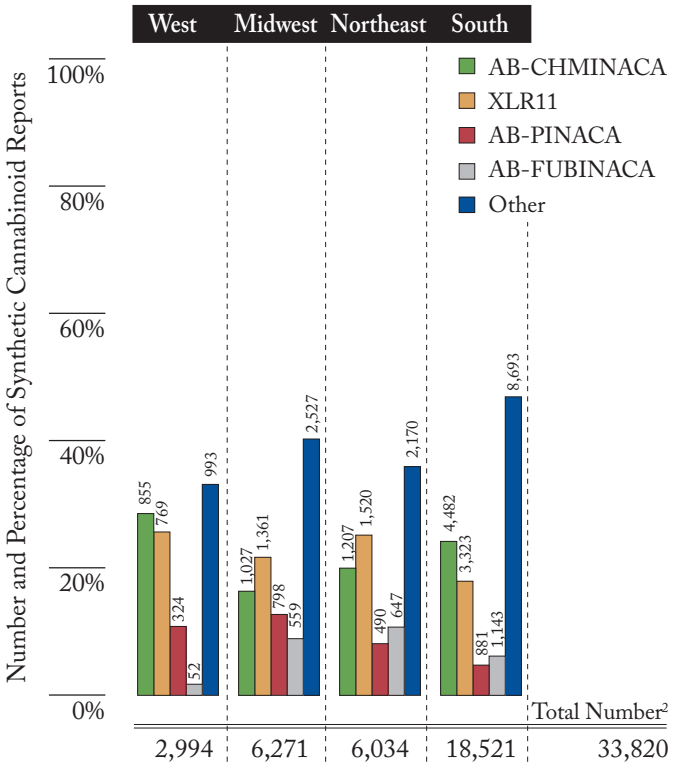
Table 2.5 ***Synthetic Cannabinoids***
Number and percentage of synthetic cannabinoid reports in the United States, 2015[1]

Synthetic Cannabinoid Reports	Number	Percent
AB-CHMINACA	7,571	22.39%
XLR11	6,973	20.62%
AB-PINACA	2,493	7.37%
AB-FUBINACA	2,402	7.10%
5-fluoro AMB	2,258	6.68%
MAB-CHMINACA	1,711	5.06%
NM2201	1,332	3.94%
5-fluoro-ADB	805	2.38%
5F-AB-PINACA	538	1.59%
FUB-AMB	534	1.58%
ADB-FUBINACA	450	1.33%
5F-PB-22	408	1.21%
FUB-PB-22	343	1.01%
MDMB-FUBINACA	328	0.97%
AKB48 N-(5-fluoropentyl)	313	0.92%
Other synthetic cannabinoids	5,361	15.85%
Total Synthetic Cannabinoid Reports[2]	33,820	100.00%
Total Drug Reports	1,549,466	

[1] *Includes drugs submitted to laboratories from January 1, 2015, through December 31, 2015, that were analyzed by March 31, 2016.*

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

Figure 2.5 Distribution of synthetic cannabinoid reports within region, 2015[1]



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

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

AB-PINACA=(N-(1-Amino-3-methyl1-oxobutan-2-yl)-1-pentyl-1H-indazole3-carboxamide)

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

5-fluoro AMB=methylN-{[1-(5-fluoropentyl)-1H-indazol-3-yl]carbonyl} valinate

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

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

5-fluoro ADB=Methyl (R)-2-(1-(5-Fluoropentyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

5F-AB-PINACA=N-(1-Amino-3-methyl-1-oxobutan-2-yl)-1-(5-fluoropentyl)-1H-indazole-3-carboxamide

FUB-AMB=Methyl 2-({1-[(4-fluorophenyl)methyl]-1H-indazole-3-carbonyl}amino)-3-methylbutanoate

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

5F-PB-22=(Quinolin-8-yl 1-(5-fluoropentyl)-1H-indole-3-carboxylate)

FUB-PB-22=Quinolin-8-yl 1-(4-fluorobenzyl)-1H-indole-3-carboxylate

MDMB-FUBINACA=Methyl (S)-2-(1-(4-fluorobenzyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate

AKB48 N-(5-fluoropentyl)=N-(1-adamantyl)-1-(5-fluoropentyl)-1H-indazole-3-carboxamide

[vii] Office of National Drug Control Policy, The White House. (n.d.). *Synthetic drugs (a.k.a. K2, spice, bath salts, etc.)*. Retrieved from http://www.whitehouse.gov/ondcp/ondcp-fact-sheets/synthetic-drugs-k2-spice-bath-salts

[viii] Law, R., Schier, J., Martin, C., Chang, A., & Wolkin, A. (2015, June 12). Notes from the field: Increase in reported adverse health effects related to synthetic cannabinoid use — United States, January–May 2015. *Morbidity and Mortality Weekly Report, 64,* 618–619. Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6422a5.htm

Section 3

GIS ANALYSIS: ETHYLONE AND AB-CHMINACA COMPARISONS, BY LOCATION, 2014 AND 2015

One of the unique features of NFLIS 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 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 ethylone and AB-CHMINACA at two points in time—2014 and 2015. Reports of ethylone and AB-CHMINACA increased substantially in NFLIS between 2014 and 2015. Ethylone was first reported NFLIS in 2011, and AB-CHMINACA was first reported in 2014. In 2015, both drugs first appeared in the NFLIS list of the top 25 most frequently identified drugs; ethylone and AB-CHMINACA were the 12th and 14th most frequently reported drugs, respectively.

The GIS data presented here are based on information provided to NFLIS 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 forensic laboratories. In addition, some laboratories within several States are not currently reporting data to NFLIS, 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 ethylone, by State, 2014[1]

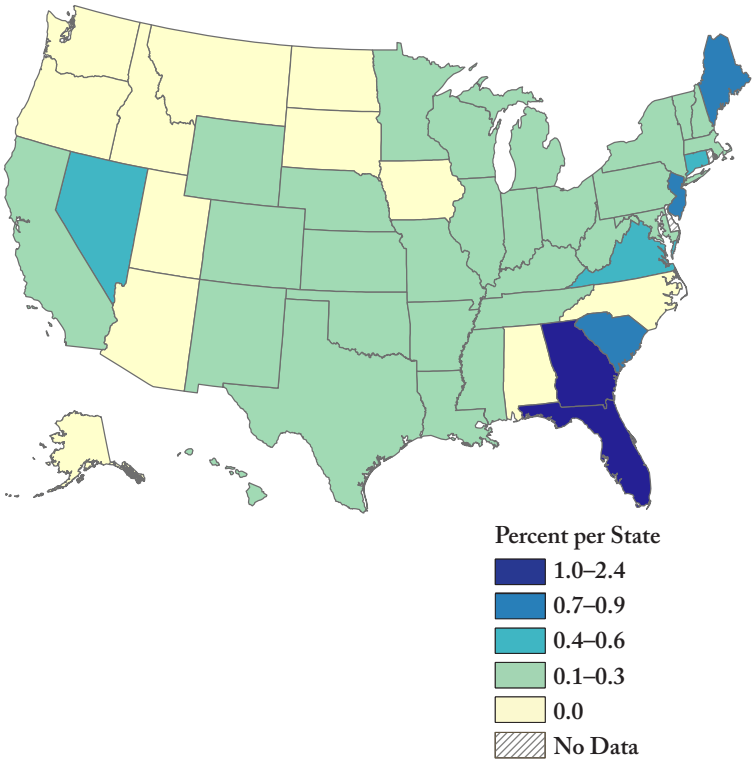


Figure 3.2 Percentage of total drug reports identified as ethylone, by State, 2015[1]

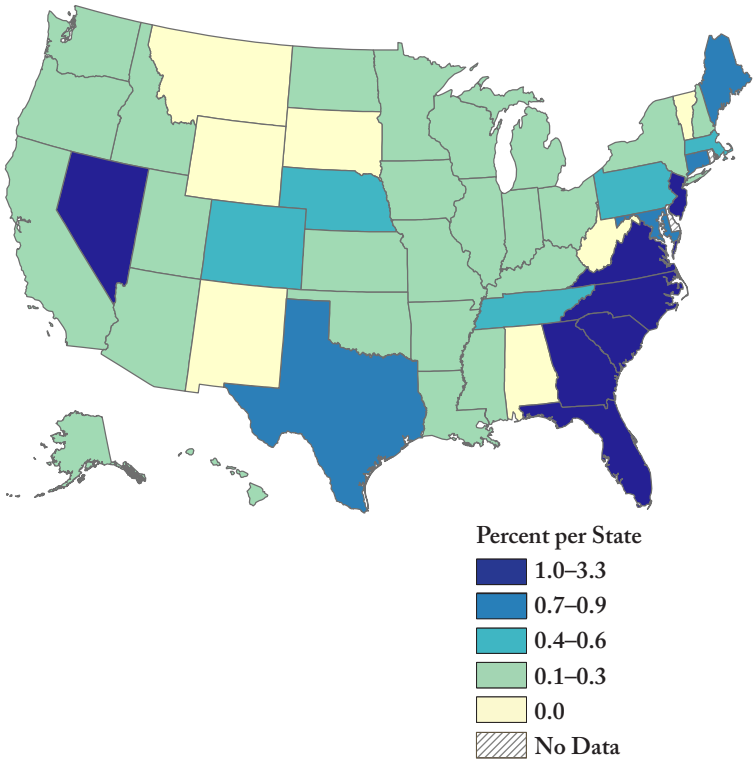


Figure 3.3 Percentage of total drug reports identified as AB-CHMINACA, by State, 2014[1]

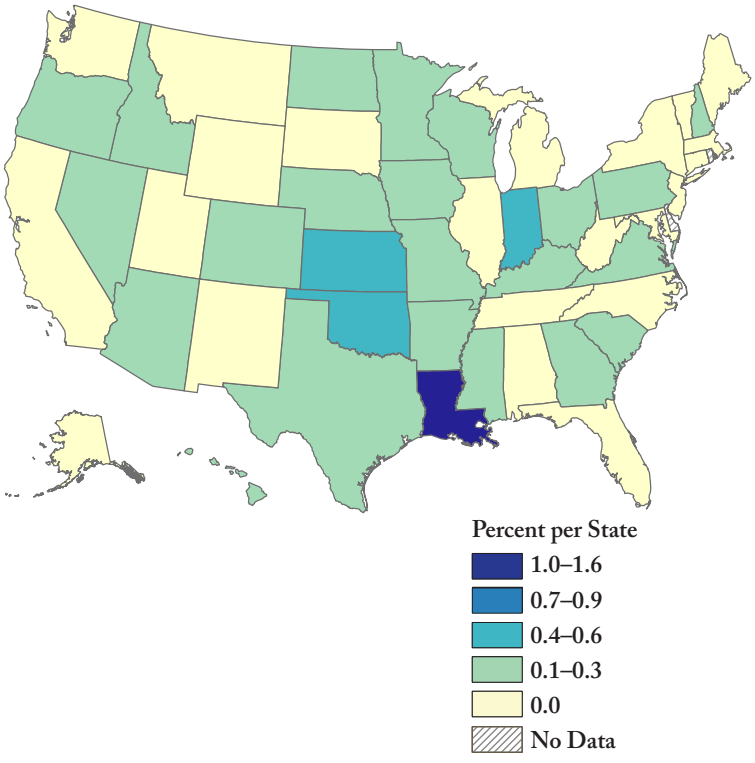
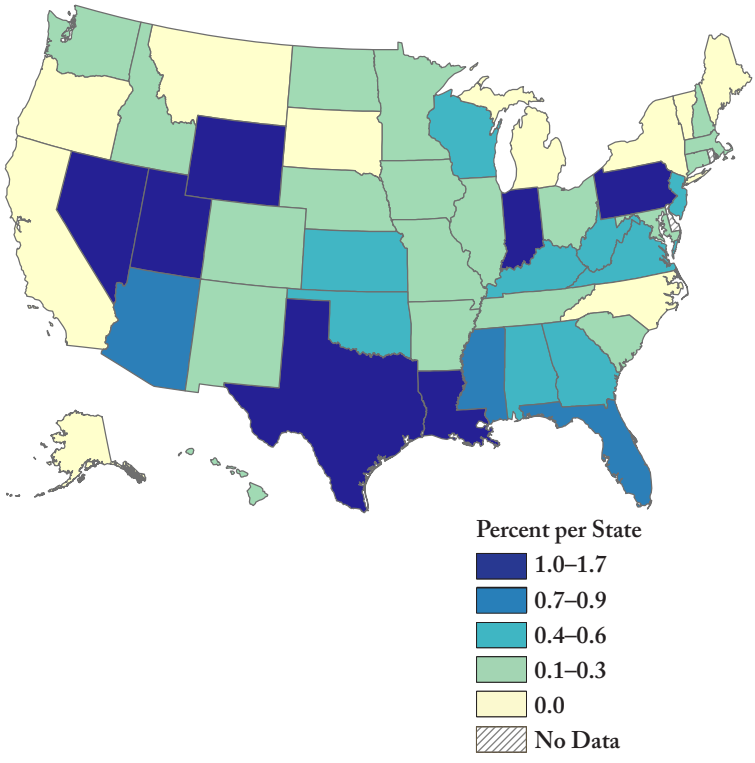


Figure 3.4 Percentage of total drug reports identified as AB-CHMINACA, by State, 2015[1]



[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 ethylone in Florida, by county, 2014[1]

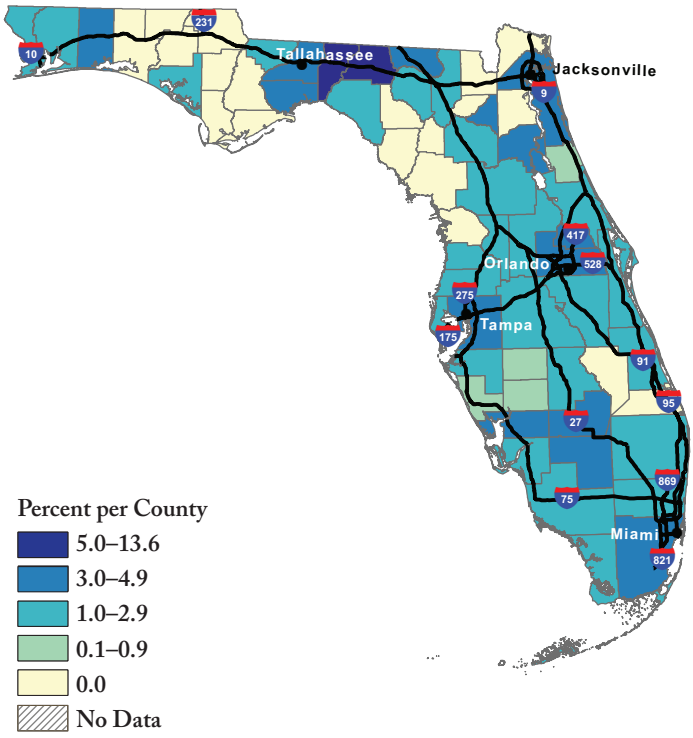


Figure 3.6 Percentage of total drug reports identified as ethylone in Florida, by county, 2015[1]

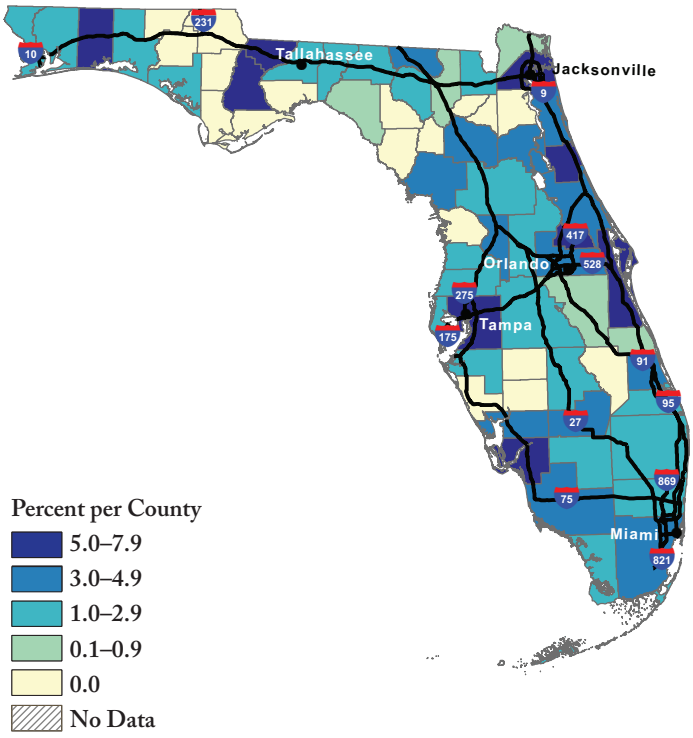


Figure 3.7 Percentage of total drug reports identified as AB-CHMINACA in Pennsylvania, by county, 2014[1]

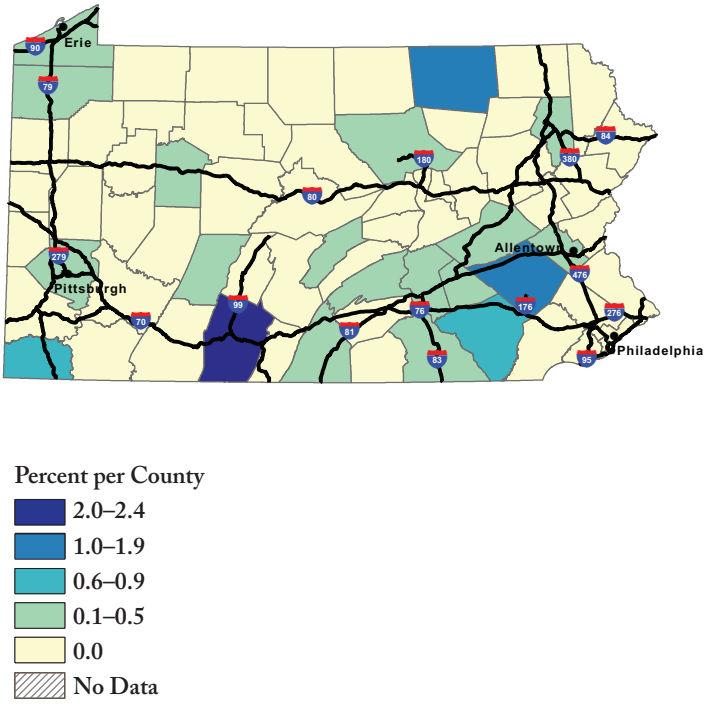
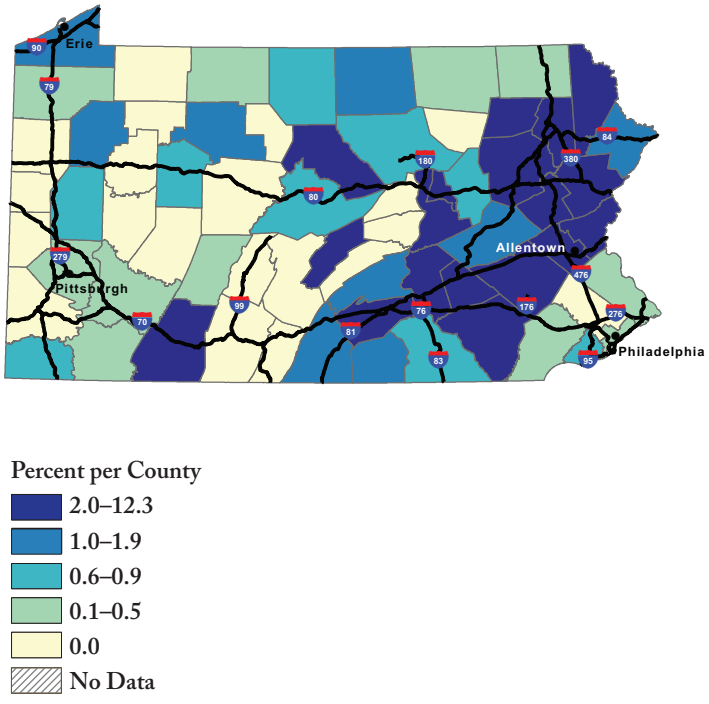


Figure 3.8 Percentage of total drug reports identified as AB-CHMINACA in Pennsylvania, by county, 2015[1]



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

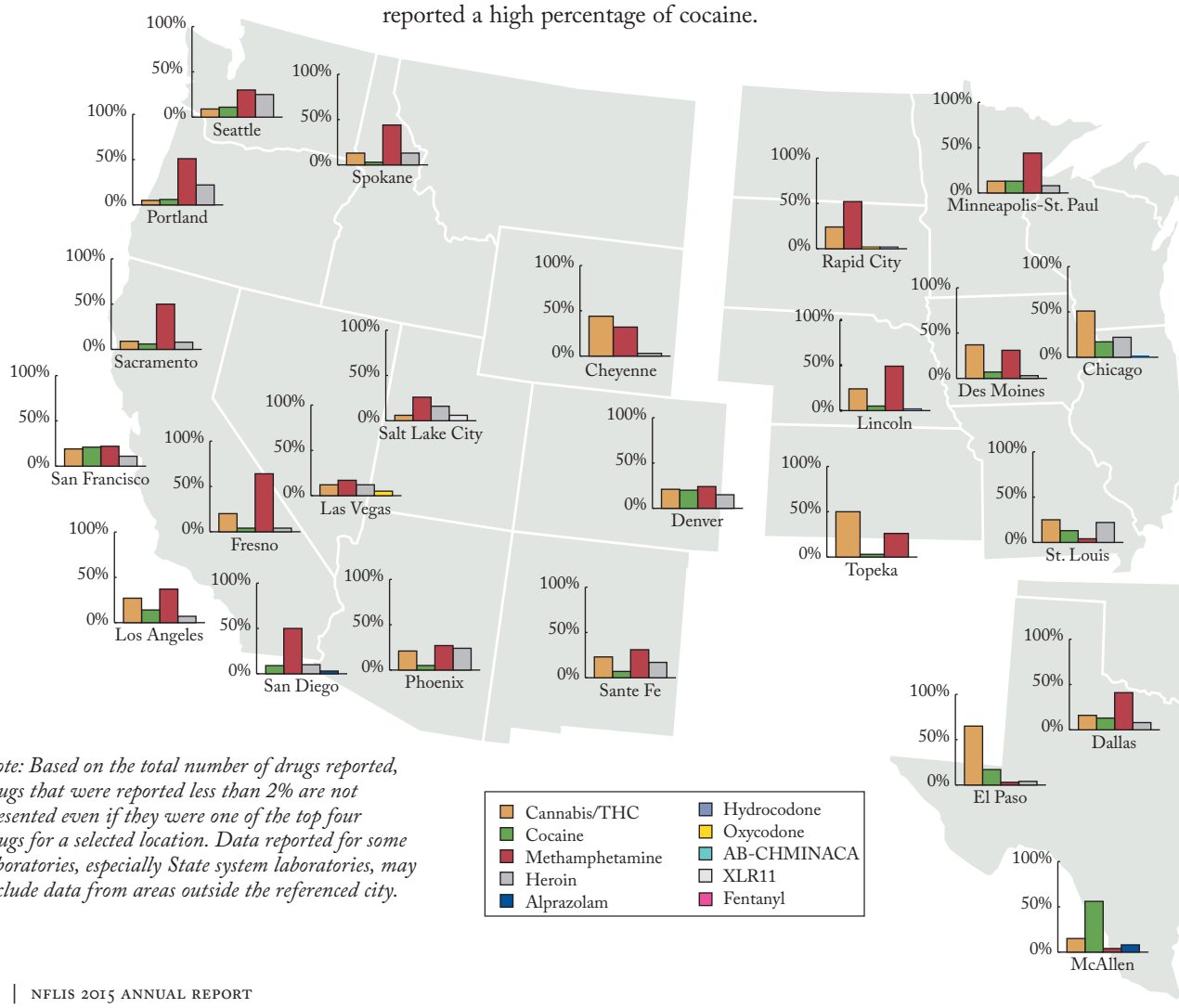
Section 4

DRUGS IDENTIFIED BY LABORATORIES IN SELECTED U.S. CITIES

NFLIS 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 (up to three per laboratory item) submitted to State and local laboratories during 2015 and analyzed by March 31, 2016.

This section presents data for the four most common drugs reported by NFLIS 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, 14% of all drugs in NFLIS were identified as cocaine (Table 1.1). Laboratories representing cities in the South and Northeast reported the highest levels of cocaine, including McAllen (56%), Miami (48%), Orlando (34%), New York City (31%), Baltimore (27%), Philadelphia (27%), Augusta (24%), Columbia (23%), and Tampa (22%). Cities in the West, such as San Francisco (21%) and Denver (20%), also reported a high percentage of cocaine.

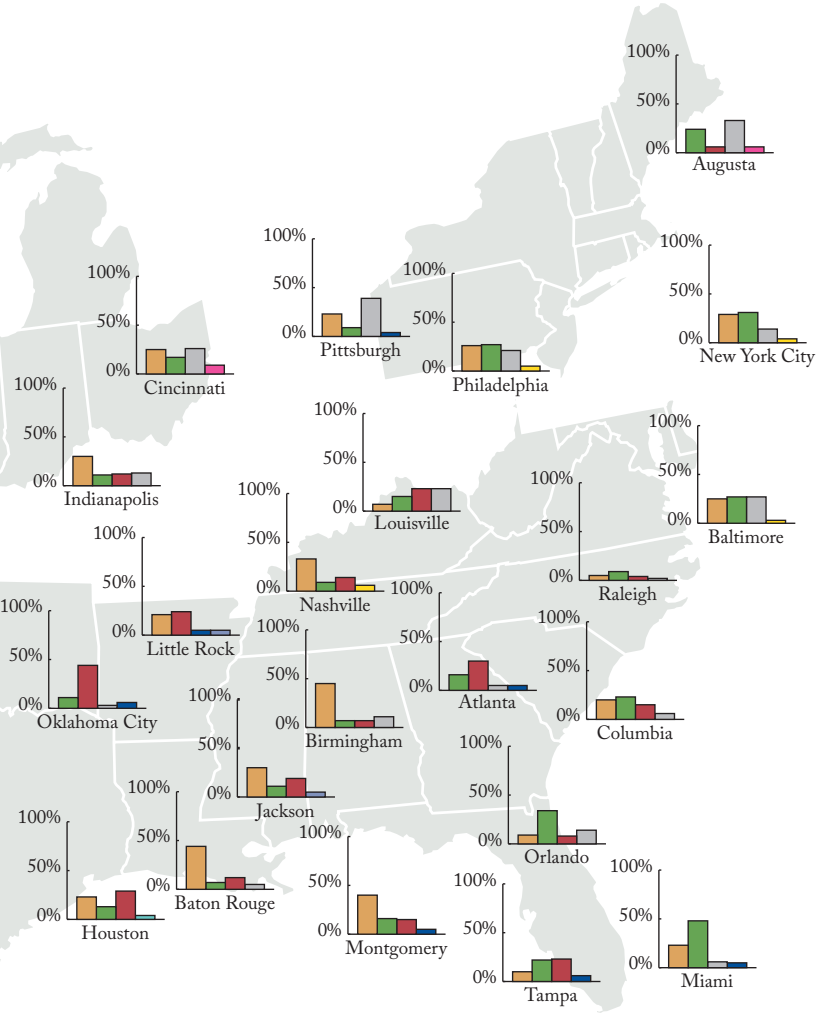


Note: Based on the total number of drugs reported, drugs that were reported less than 2% are not presented even if they were one of the top four drugs for a selected location. Data reported for some laboratories, especially State system laboratories, may include data from areas outside the referenced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

The highest percentages of methamphetamine were reported by laboratories representing cities in the West and Midwest, such as Fresno (64%), Rapid City (52%), Portland (51%), Sacramento (50%), San Diego (50%), Lincoln (49%), Spokane (44%), Minneapolis-St. Paul (44%), Los Angeles (37%), Des Moines (31%), and Santa Fe (31%). Cities in the South, such as Dallas (41%), Oklahoma City (38%), and Atlanta (30%), also reported a high percentage of drugs identified as methamphetamine. Nationally, 18% of drugs in NFLIS were identified as methamphetamine.

The highest percentages of heroin were reported by laboratories representing the Northeastern cities of Pittsburgh (39%) and Augusta (33%); the Midwestern cities of Cincinnati (26%), St. Louis (22%), and Chicago (22%); the Southern cities of Baltimore (27%) and Louisville (23%); and the Western cities of Seattle (25%), Phoenix (24%), and Portland (22%). Nationally, 12% of all drugs in NFLIS were identified as heroin.

Among controlled prescription drugs, Nashville (6%) reported the highest percentage of oxycodone, followed by Las Vegas (5%) and Philadelphia (5%). Nationally, 3% of drugs in NFLIS were identified as oxycodone. Little Rock (5%) and Jackson (5%) reported the highest percentages of hydrocodone. Nationally, 2% of drugs in NFLIS were identified as hydrocodone. McAllen (8%) and Tampa (6%) reported the highest percentages of alprazolam. Nationally, 3% of drugs in NFLIS were identified as alprazolam. Cincinnati (9%) and Augusta (6%) reported the highest percentages of fentanyl, while Salt Lake City (6%) reported the highest percentage of XLR11. Less than 1% of drugs in NFLIS were identified as fentanyl or XLR11.



Selected Laboratories
Atlanta (Georgia State Bureau of Investigation—Decatur Laboratory)
Augusta (Maine Department of 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 Medical Examiner's Office)
Indianapolis (Indianapolis-Marion County Forensic Laboratory)
Jackson (Mississippi Department of Public Safety—Jackson Laboratory and Jackson Police Department Crime Laboratory)
Las Vegas (Las Vegas Metropolitan Police Crime Laboratory)
Lincoln (Nebraska State Patrol Criminalistics Laboratory—Lincoln Laboratory)
Little Rock (Arkansas State Crime Laboratory)
Los Angeles (Los Angeles Police Department and Los Angeles County Sheriff's Department)
Louisville (Kentucky State Police—Louisville Laboratory)
McAllen (Texas Department of Public Safety—McAllen Laboratory)
Miami (Miami-Dade Police Department Crime Laboratory)
Minneapolis-St. Paul (Minnesota Bureau of Criminal Apprehension—Minneapolis Laboratory)
Montgomery (Alabama Department of Forensic Sciences—Montgomery Laboratory)
Nashville (Tennessee Bureau of Investigation—Nashville Laboratory)
New York City (New York City Police Department Crime Laboratory)
Oklahoma City (Oklahoma State Bureau of Investigation—Oklahoma City Laboratory)
Orlando (Florida Department of Law Enforcement—Orlando Laboratory)
Philadelphia (Philadelphia Police Department Forensic Science Laboratory)
Phoenix (Phoenix Police Department)
Pittsburgh (Allegheny County Coroner's Office)
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 State Crime Laboratory—Salt Lake City 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 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 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 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 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 laboratories).

Estimates appearing in this publication are based on cases and items *submitted* to laboratories between January 1, 2015, and December 31, 2015, and *analyzed* by March 31, 2016. 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).

For each drug item (or exhibit) analyzed by a laboratory in the NFLIS program, up to three drugs can be reported to NFLIS and counted in the estimation process. A drug-specific case is one for which the specific drug was identified as the first, second, or third drug report for any item associated with the case. A drug-specific report is the total number of reports of the specific drug.

Currently, laboratories representing more than 97% of the national drug caseload participate in NFLIS, with about 94% of the national caseload reported during 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 publications before 2011, data reported by nonsampled laboratories were not used in national or regional estimates.[ix] However, as the number of nonsampled laboratories reporting to NFLIS increased,[x] it began to make sense to consider ways to use 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 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. Imputation 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.

[ix] The case and item loads for the nonsampled laboratories were used in calculating the weights.

[x] In the current reporting period, for example, out of 112 nonsampled laboratories and laboratory systems, 80 (or 72%) 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 were produced for the similarly sized laboratories, and these drug-specific ratios were then used to adjust the drug report counts for the relevant laboratories.

NEAR weighting procedures

Each NFLIS reporting laboratory was assigned a weight to be used in calculating design-consistent, nonresponse-adjusted estimates. Two weights were created: one for estimating cases and one for estimating drug reports. The weight used for case estimation was based on the caseload for every laboratory in the NFLIS population, and the weight used for drug reports' estimation was based on the item load for every laboratory in the NFLIS population. For reporting laboratories, the caseload and item load used in weighting were the reported totals. For nonreporting laboratories, the caseload and item load used in weighting were obtained from an updated laboratory survey administered in 2013.

When the NFLIS sample was originally drawn, two stratifying variables were used: (1) type of laboratory (State system or municipal or county laboratory) and (2) determination of "certainty" laboratory status. To ensure that the NFLIS 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 sample because they were deemed critically important to the calculation of reliable estimates. These laboratories are called "certainty laboratories." 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).

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 universe[xi] 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.[xii]

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.

Certainty laboratories were assigned a design weight of one.[xiii]

[xi] See the Introduction of this publication for a description of the NFLIS universe.

[xii] Lohr, S. L. (2010). *Sampling: Design and analysis* (2nd ed., pp. 231-234). Boston, MA: Brooks/Cole.

[xiii] 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.

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 were sampled and reporting.

Because volunteer laboratories represent only themselves, they were 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.[xiv] 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 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, unsampled 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.

[xiv] See footnote xiii.

Statistical Techniques for Trend Analysis

Two types of analyses to compare estimates across years were used. The first is called *prior-year comparisons* and compared national and regional estimates from January 2014 through December 2014 with those from January 2015 through December 2015. The second is called *long-term trends* and examined trends in the annual national and regional estimates from January 2001 through December 2015. 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 publications. Both types of trend analyses are described below. For the region-level prior-year comparisons and long-term trends, the estimated drug reports were 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 compared estimates in Table 1.1 of this publication with estimates in Table 1.1 of the 2014 Annual Report. The specific test examined whether the difference between any two estimates was significantly different from zero. A standard *t*-test was completed using the statistic,

$$t_{df} = \frac{a\hat{T}_{2015} - b\hat{T}_{2014}}{\sqrt{a^2 \operatorname{var}(\hat{T}_{2015}) + b^2 \operatorname{var}(\hat{T}_{2014}) - 2ab \operatorname{cov}(\hat{T}_{2014}, \hat{T}_{2015})}}$$

where

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

$\hat{T}_{2015}$ = estimated total number of reports for the given drug for January 2015 through December 2015;

$\hat{T}_{2014}$ = estimated total number of reports for the given drug for January 2014 through December 2014;

$\operatorname{var}(\hat{T}_{2015})$ = variance of $\hat{T}_{2015}$;

$\operatorname{var}(\hat{T}_{2014})$ = variance of $\hat{T}_{2014}$; and

$\operatorname{cov}(\hat{T}_{2014}, \hat{T}_{2015})$ = covariance between $\hat{T}_{2014}$ and $\hat{T}_{2015}$.

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 2015, and b = 100,000 divided by the regional population total for 2014.

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

Long-term trends

A long-term regression trends analysis was performed on the January 2001 through December 2015 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,

$$\mathbf{Y}^T \equiv (Y_1, Y_2, \ldots, Y_{15}),$$

and for the estimates,

$$\hat{\mathbf{Y}}^T \equiv (\hat{Y}_1, \hat{Y}_2, \ldots, \hat{Y}_{15})$$

the regression model is

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

where

$\eta = \hat{\mathbf{Y}} - \mathbf{Y}$ is a 15 × 1 vector of errors due to the probability sample, and

ε = 15 × 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

$$Y_t = \alpha_0 + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3 + \varepsilon_t \qquad t = 1, \ldots, T,$$

where

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

ε_t = one of a set of 15 independent normal variates with a mean of zero and a variance of σ^2.

The model allows for a variety of trend types: linear (straight-line), quadratic (U-shaped), and cubic (S-shaped). 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 were obtained for all 15 annual periods beginning with the January to December 2001 period and ending with the January to December 2015 period. Sampling standard errors were estimated as the full sampling variance-covariance matrix $\mathbf{S}$ over these 15 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.

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

$$Y_t = \beta_0 X_0(t) + \beta_1 X_1(t) + \beta_2 X_2(t) + \beta_3 X_3(t) + \varepsilon_t,$$

where

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

$X_1(t), X_2(t), X_3(t)$ provide contributions for the first-order (linear), second-order (quadratic), and third-order (cubic) polynomials, respectively.

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 was further constrained to have regression residuals sum to zero, a constraint that is not guaranteed by theory for these models but was considered to improve model fit due to an approximation required to estimate $\mathbf{S}$. Standard errors of the regression trend estimates were obtained by simulation.

Final models were selected after testing for the significance of coefficients at the $\alpha = 0.05$ level ($p < .05$), which means that if the trend of interest (linear, quadratic, cubic) 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

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	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 (7 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 (7 sites)	✓
MN	State	Minnesota Bureau of Criminal Apprehension (2 sites)	✓
MO	State	Missouri State Highway Patrol (8 sites)	✓
	Local	Independence Police Department	
	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	Iredell County Sheriff's Office Crime Laboratory (Statesville)	✓
ND	State	North Dakota Crime Laboratory Division	✓
NE	State	Nebraska State Patrol Criminalistics Laboratory (2 sites)	✓
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 (3 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 (5 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	Fort Worth Police Department Criminalistics Laboratory	✓
	Local	Harris County Institute of Forensic Sciences Crime Laboratory (Houston)	✓
	Local	Houston Forensic Science Local Governance Corporation	✓
	Local	Institute of Forensic Sciences (Dallas)	
	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 as of July 20, 2016.

*These laboratories are not currently conducting drug chemistry analysis. Cases for the agencies they serve 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 Benefits and Limitations

Benefits

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

Specifically, NFLIS 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 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 participants—including State and local laboratories, the DEA, and other Federal drug control agencies—to run customized queries on the NFLIS 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 has limitations that must be considered when interpreting findings generated from the database.

- Currently, NFLIS 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 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.

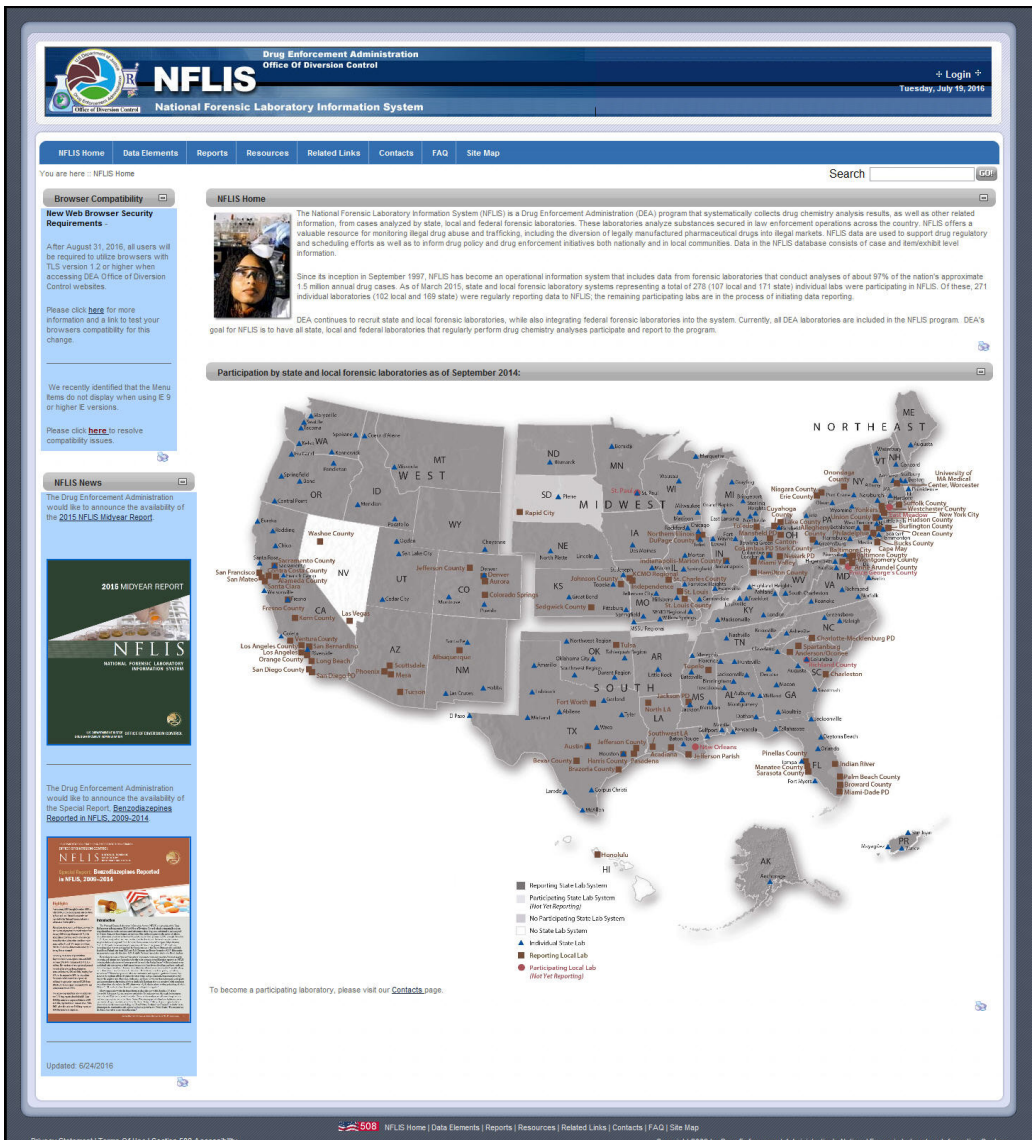
Appendix D NFLIS Website and Data Query System (DQS)

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

The public site is frequently updated with NFLIS-related news, including information relevant to drug control efforts and DEA participation in conferences. Also available are downloadable versions of published NFLIS reports, links to other websites, and contact information for key NFLIS 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 Data Entry Application, and DQS. The DQS is a distinct resource for NFLIS 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 participation or the DQS, please visit the NFLIS website at https://www.nflis.deadiversion.usdoj.gov/.



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