



Drug Testing Index™

A comprehensive analysis of
workplace drug use trends





The Quest Diagnostics Drug Testing Index (DTI) reveals insights into patterns of drug use among the American workforce. Published annually since 1988, the Drug Testing Index examines positivity rates for workplace drugs tested by the company on behalf of employers. Quest Diagnostics publishes these findings as a public service for government, employers, policymakers, and the general public.



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Workforce Drug Testing Positivity Climbs to Highest Rate Since 2004, According to New Quest Diagnostics Analysis

The rate of workforce drug positivity hit a fourteen-year high in 2018, according to a new analysis released today by Quest Diagnostics, the world's leading provider of diagnostic information services. Positivity rates in the combined U.S. workforce increased nearly five percent in urine drug tests (4.2% in 2017 versus 4.4% in 2018), climbing to the highest level since 2004 (4.5%) and are now more than 25 percent higher than the thirty-year low of 3.5 percent recorded between 2010 and 2012.

Analysis of more than ten million workplace drug test results shows increases in marijuana positivity across nearly all employee testing categories

“Our in-depth analysis shows that marijuana is not only present in our workforce, but use continues to increase,” said Barry Sample, PhD, senior director, science and technology, Quest Diagnostics. “As marijuana policy changes, and employers consider strategies to protect their employees, customers and general public, employers should weigh the risks that drug use, including marijuana, poses to their business.”

Marijuana dominates in general U.S. workforce; opiate positivity declines

Marijuana continues to top the list of the most commonly detected illicit substances across all workforce categories (general U.S. workforce; federally mandated, safety-sensitive workforce; and combined U.S. workforce, which includes the prior two populations) and specimen types (urine, oral fluid, and hair).

The rate of marijuana positivity increased in nearly all workforce categories. In the general U.S. workforce, marijuana positivity increased nearly eight percent in urine testing (2.6% in 2017 versus 2.8% in 2018) and almost 17 percent since 2014 (2.4%). For the federally mandated, safety-sensitive workforce, which utilizes only urine testing, marijuana positivity grew nearly five percent between 2017 (0.84%) and 2018 (0.88%) and nearly 24 percent since 2014 (0.71%).



In the general U.S. workforce, the positivity rate for opiates in urine drug testing declined across all opiate categories. Among the general workforce screening for opiates (mostly codeine and morphine), positivity declined nearly 21 percent between 2017 and 2018 (0.39% versus 0.31%), the largest drop in three years and nearly 37 percent decrease since the peak in 2015 (0.49%). Among the more specific tests for other prescription opiates, the positivity for the semi-synthetic opiates (hydrocodone and/or hydromorphone) declined two percent between 2017 and 2018 (0.51% vs. 0.50%) and 43 percent since the five-year high in 2014 (0.88%). Similarly, the positivity for oxycodones (oxycodone and/or oxymorphone) declined more than 29 percent between 2017 and 2018 (0.61% vs. 0.43%) and more than 46 percent since the five-year high in 2014 (0.80%).

“Our in-depth analysis shows that marijuana is not only present in our workforce, but use continues to increase,” said Barry Sample, PhD, senior director, science and technology, Quest Diagnostics.



Positivity rates for both heroin and cocaine declined in general and federally mandated, safety-sensitive U.S. workforce testing

Urine drug test results for the general U.S. workforce for heroin, indicated by the presence of the 6-acetylmorphine (6-AM) metabolite, declined six percent (0.033% in 2017 versus 0.031% in 2018) and more than 16 percent since its peak in 2015 and 2016 (0.037%). Cocaine positivity declined nearly seven percent in urine and more than 19 percent in oral fluid testing, but increased slightly year-over-year (6.3%) in hair testing.

Both heroin and cocaine positivity in the federally mandated, safety-sensitive workforce showed large declines between 2017 and 2018. Heroin positivity declined nearly 32 percent between 2017 and 2018 (0.019% versus 0.013%), with a decrease of more than

43 percent since 2015 (0.023%). 2018 positivity for cocaine declined nearly ten percent compared with 2017 (0.31% versus 0.28%), when the positivity rate was the highest in more than five years.

New Federal rules for opioid testing drive increase in safety-sensitive workforce positivity

Changes to Federal rules for drug testing the federally mandated, safety-sensitive workforce went into effect in January 2018. The addition of four semi-synthetic opiates contributed to the large increases in year-over-year positivity among those workers. In 2018, testing for semi-synthetic opiates (hydrocodone and/or hydromorphone) and for oxycodones (oxycodone and/or oxymorphone), the positivity rate was 0.45 percent and 0.34 percent, respectively. These positivity rates are both slightly less than general U.S. workforce testing.

Increases in post-accident positivity occur in both the federally mandated, safety-sensitive and general U.S. workforce

In the federally mandated, safety-sensitive workforce, positivity for post-accident urine testing jumped more than 51 percent year-over-year (3.1% in 2017 versus 4.7% in 2018) and increased by nearly 81 percent between 2014 and 2018. The jump in 2018 was largely driven by the addition of prescription opiates to the panel where the post-accident positivity for the semi-synthetic opiates (hydrocodone and/or hydromorphone) and for oxycodones (oxycodone and/or oxymorphone) was 1.1 percent and 0.77 percent, respectively. Post-accident positivity in the general U.S. workforce climbed nine percent year-over-year (7.7% in 2017 versus 8.4% in 2018), and 29 percent over five years. The post-accident positivity



Increases in post-accident positivity in the general U.S. workforce outpace those for all other testing reasons, including pre-employment screening

rate has risen annually since 2011 in the general U.S. workforce and since 2010 in the federally mandated, safety-sensitive workforce.

“Increases in post-accident positivity among safety-sensitive workers should serve as a warning to employers that employee drug use may increase the risk of workforce accidents or injuries” said Kimberly Samano, PhD, scientific director, Quest Diagnostics. “Our analysis suggests that employers committed to creating a safe, drug-free work environment should incorporate strategies that monitor drug use above and beyond pre-employment drug screening.”

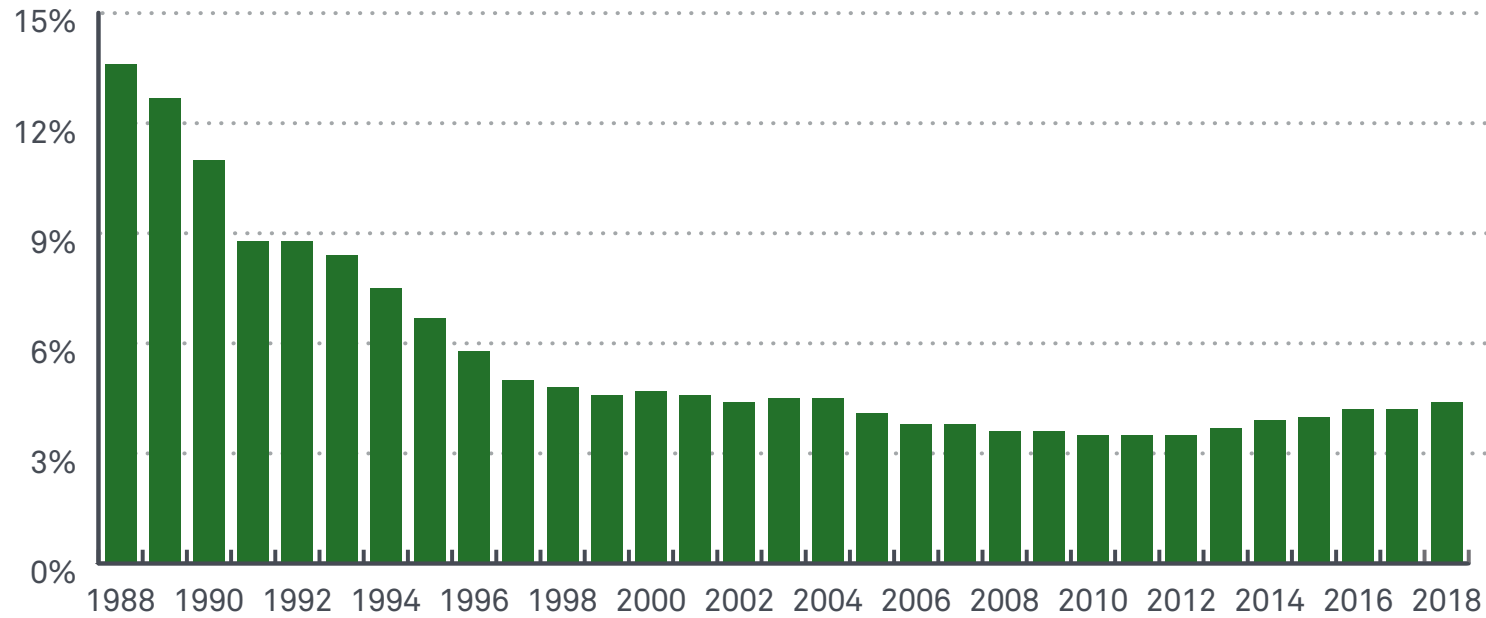
For more information about the Quest Diagnostics Drug Testing Index, visit [QuestDiagnostics.com/DTI](https://www.questdiagnostics.com/DTI).

Rise in urine specimens reported as invalid suggests more efforts to “cheat the test”

Findings show an increased percentage of urine specimens in both the federally mandated, safety-sensitive and general U.S. workforces reported as invalid due to inconsistency with normal human urine, suggesting attempts at specimen adulteration or substitution. Between 2017 and 2018, the percentage of invalid results in the federally mandated, safety-sensitive workforce jumped 80 percent (0.15% versus 0.27%), and 40 percent in the general U.S. workforce (0.15% versus 0.21%).

Annual Positivity Rates

Urine Drug Tests - For Combined U.S. Workforce



Nearly 9 million tests from January to December 2018

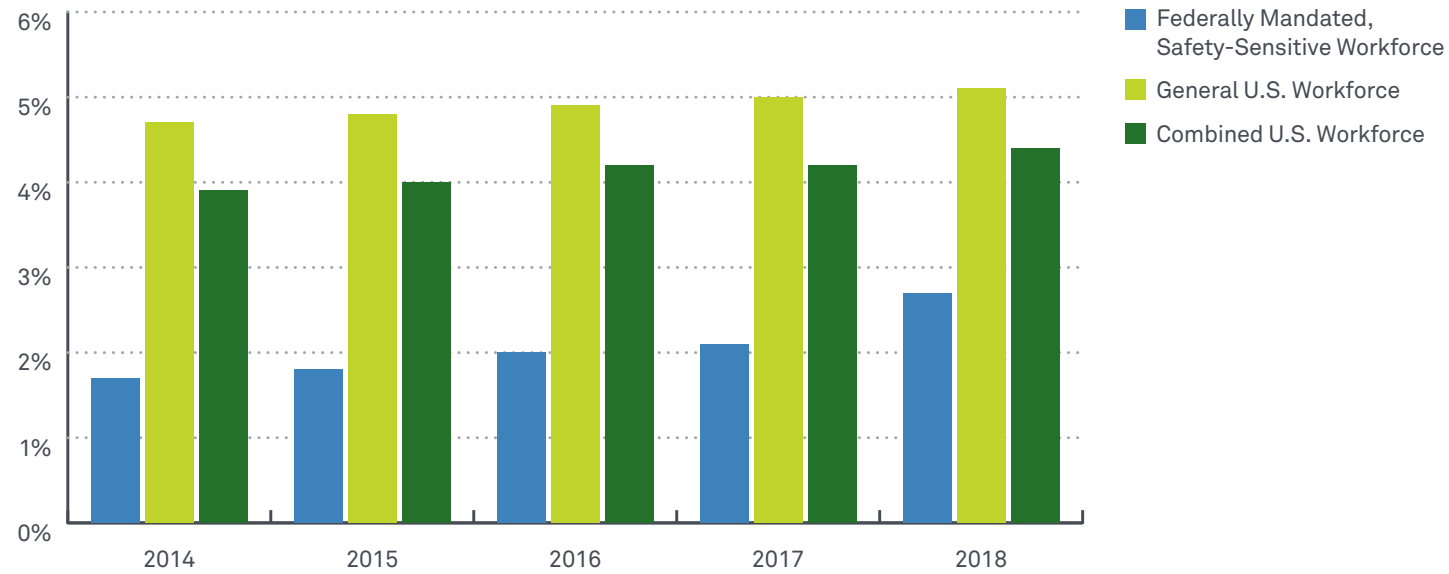
Year	Drug Positivity Rate
1988	13.6%
1989	12.7%
1990	11.0%
1991	8.8%
1992	8.8%
1993	8.4%
1994	7.5%
1995	6.7%
1996	5.8%
1997	5.0%

Year	Drug Positivity Rate
1998	4.8%
1999	4.6%
2000	4.7%
2001	4.6%
2002	4.4%
2003	4.5%
2004	4.5%
2005	4.1%
2006	3.8%
2007	3.8%

Year	Drug Positivity Rate
2008	3.6%
2009	3.6%
2010	3.5%
2011	3.5%
2012	3.5%
2013	3.7%
2014	3.9%
2015	4.0%
2016	4.2%
2017	4.2%
2018	4.4%

Positivity Rates by Testing Category

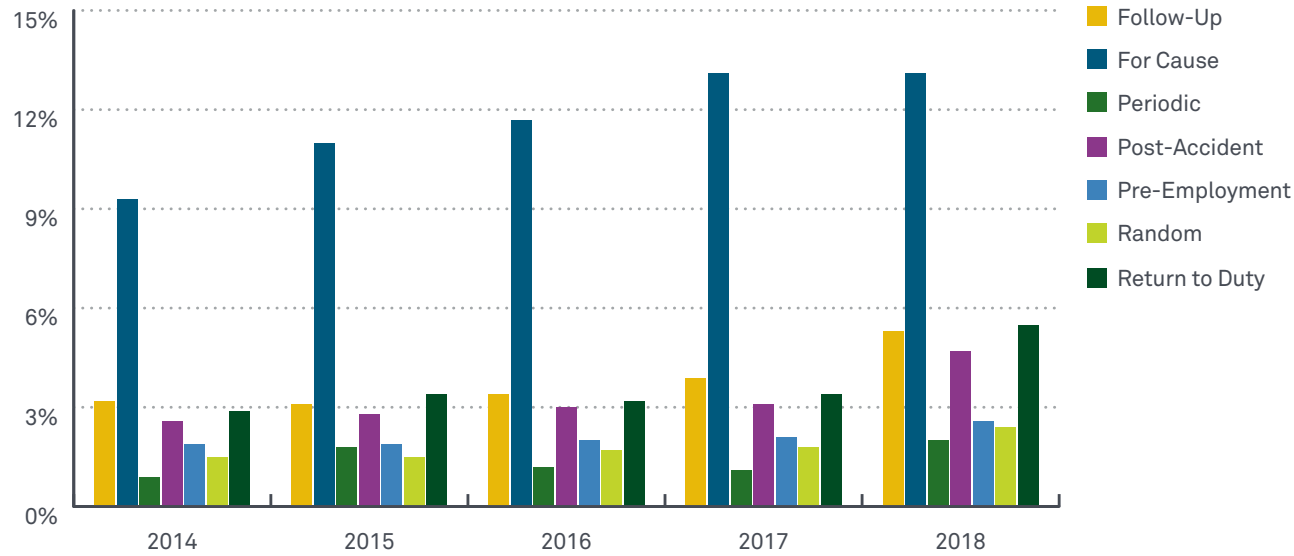
Urine Drug Tests



Testing Category	2014	2015	2016	2017	2018
Federally Mandated, Safety-Sensitive Workforce	1.7%	1.8%	2.0%	2.1%	2.7%
General U.S. Workforce	4.7%	4.8%	4.9%	5.0%	5.1%
Combined U.S. Workforce	3.9%	4.0%	4.2%	4.2%	4.4%

Positivity Rates by Testing Reason

Urine Drug Tests – For Federally Mandated, Safety-Sensitive Workforce

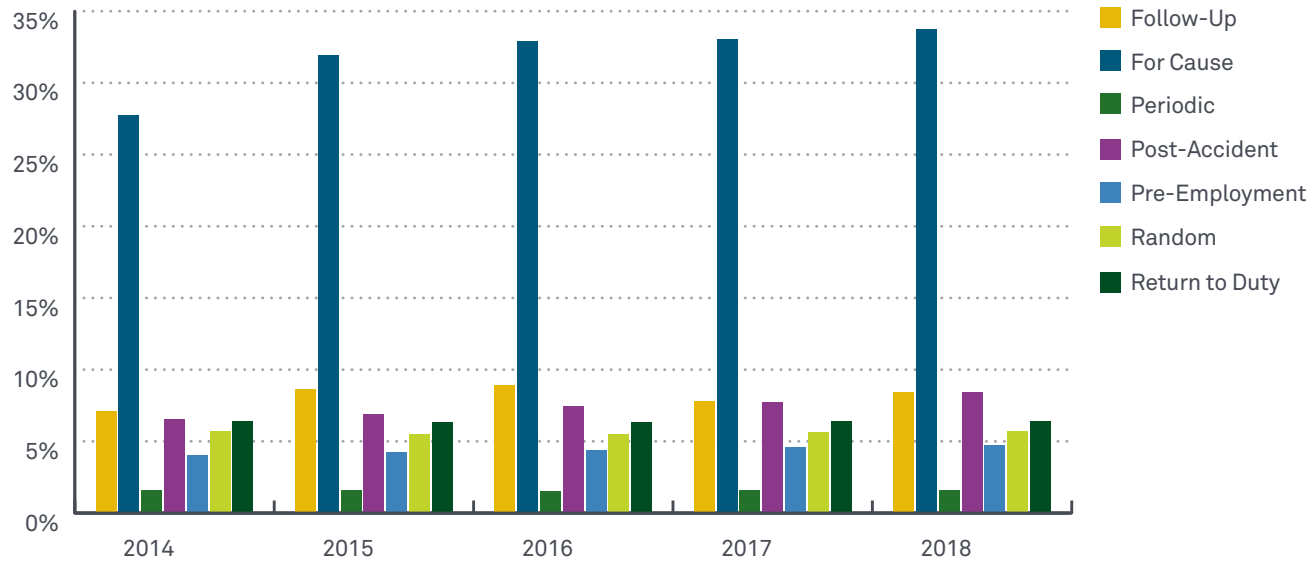


More than 2.4 million tests from January to December 2018

Testing Reason	2014	2015	2016	2017	2018
Follow-Up	3.2%	3.1%	3.4%	3.9%	5.3%
For Cause	9.3%	11.0%	11.7%	13.1%	13.1%
Periodic	0.9%	1.8%	1.2%	1.1%	2.0%
Post-Accident	2.6%	2.8%	3.0%	3.1%	4.7%
Pre-Employment	1.9%	1.9%	2.0%	2.1%	2.6%
Random	1.5%	1.5%	1.7%	1.8%	2.4%
Return to Duty	2.9%	3.4%	3.2%	3.4%	5.5%

Positivity Rates by Testing Reason

Urine Drug Tests – For General U.S. Workforce

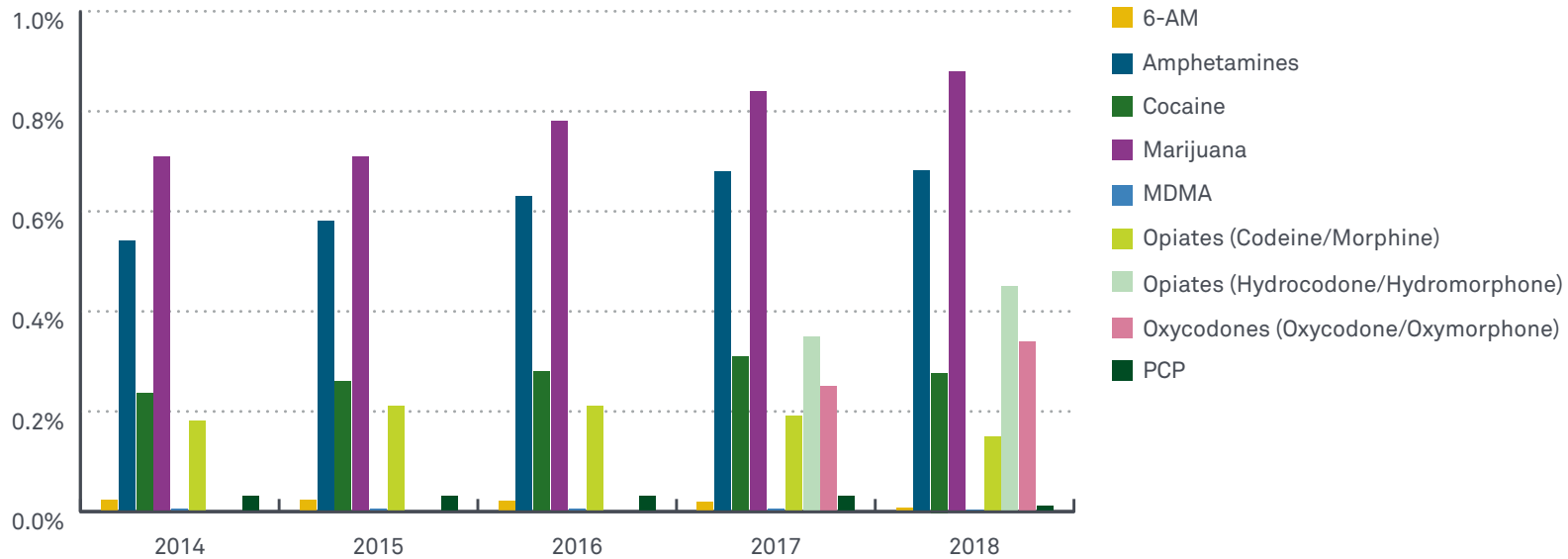


More than 6.5 million tests from January to December 2018

Testing Reason	2014	2015	2016	2017	2018
Follow-Up	7.1%	8.6%	8.9%	7.8%	8.4%
For Cause	27.7%	31.9%	32.9%	33.0%	33.7%
Periodic	1.6%	1.6%	1.5%	1.6%	1.6%
Post-Accident	6.5%	6.9%	7.4%	7.7%	8.4%
Pre-Employment	4.0%	4.2%	4.4%	4.6%	4.7%
Random	5.7%	5.5%	5.5%	5.6%	5.7%
Return to Duty	6.4%	6.3%	6.3%	6.4%	6.4%

Positivity Rates by Drug Category

Urine Drug Tests – For Federally Mandated, Safety-Sensitive Workforce, as a Percentage of All Such Tests



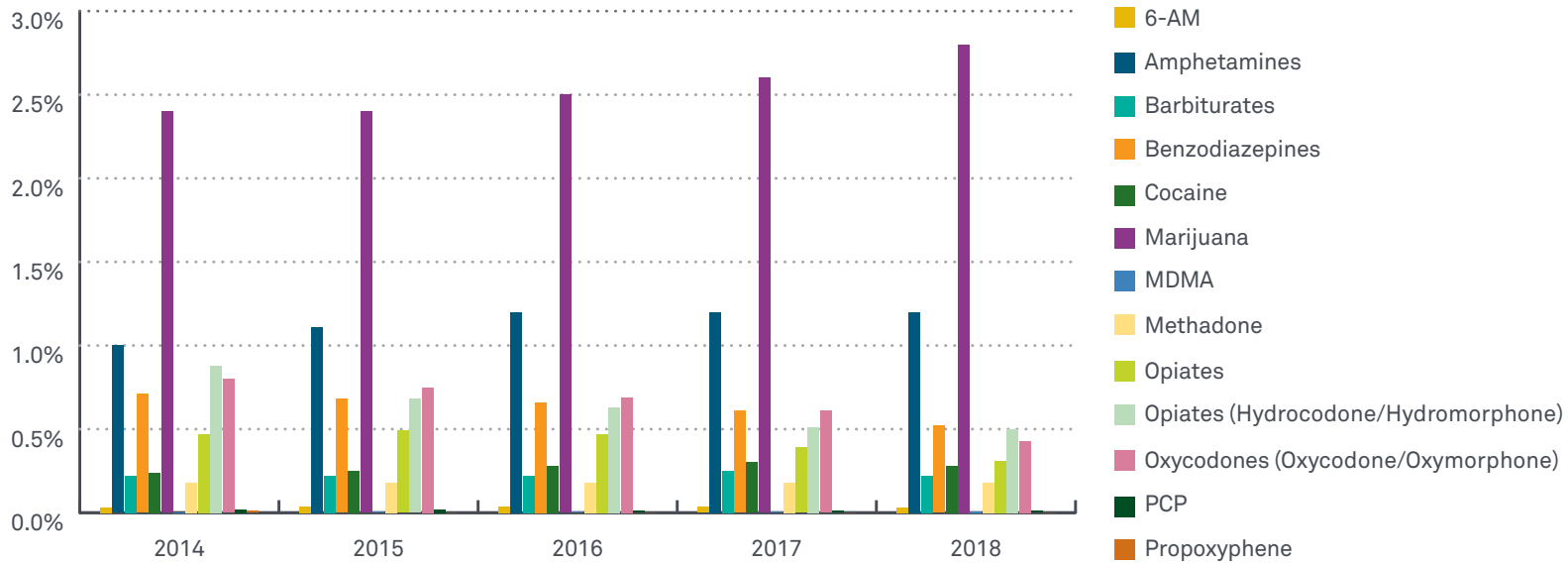
More than 2.4 million tests from January to December 2018

Drug Category	2014	2015	2016	2017	2018
6-AM	0.022%	0.023%	0.021%	0.019%	0.013%
Amphetamines	0.54%	0.58%	0.63%	0.68%	0.68%
Cocaine	0.25%	0.26%	0.28%	0.31%	0.28%
Marijuana	0.71%	0.71%	0.78%	0.84%	0.88%
MDMA	0.005%	0.005%	0.005%	0.005%	0.003%
Opiates (Codeine/Morphine)	0.18%	0.21%	0.21%	0.19%	0.15%
Opiates (Hydrocodone/Hydromorphone)	-	-	-	0.35% ¹	0.45%
Oxycodones (Oxycodone/Oxymorphone)	-	-	-	0.25% ¹	0.34%
PCP	0.03%	0.03%	0.03%	0.03%	0.01%

¹2017 Federal employee testing October through December

Positivity Rates by Drug Category

Urine Drug Tests – For General U.S. Workforce, as a Percentage of All Such Tests



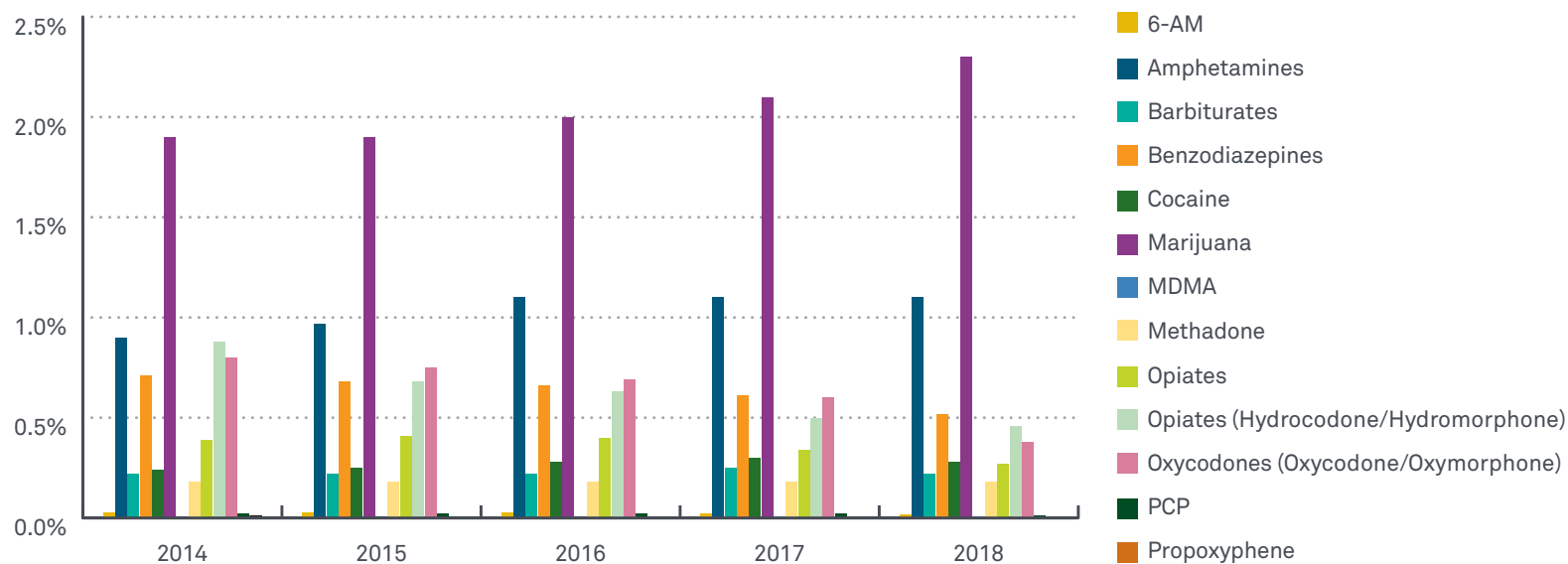
More than 6.5 million tests from January to December 2018

Drug Category	2014	2015	2016	2017	2018
6-AM	0.031%	0.037%	0.037%	0.033%	0.031%
Amphetamines	1.0%	1.1%	1.2%	1.2%	1.2%
Barbiturates	0.22%	0.22%	0.22%	0.25%	0.22%
Benzodiazepines	0.71%	0.68%	0.66%	0.61%	0.52%
Cocaine	0.24%	0.25%	0.28%	0.30%	0.28%
Marijuana	2.4%	2.4%	2.5%	2.6%	2.8%
MDMA	0.003%	0.005%	0.004%	0.005%	0.006%
Methadone	0.18%	0.18%	0.18%	0.18%	0.18%

Drug Category	2014	2015	2016	2017	2018
Opiates	0.47%	0.49%	0.47%	0.39%	0.31%
Opiates (Hydrocodone/Hydromorphone)	0.88%	0.68%	0.63%	0.51%	0.50%
Oxycodones (Oxycodone/Oxymorphone)	0.80%	0.75%	0.69%	0.61%	0.43%
PCP	0.02%	0.02%	0.01%	0.01%	0.01%
Propoxyphene	0.01%	0.00%	0.00%	0.00%	0.00%

Positivity Rates by Drug Category

Urine Drug Tests – For Combined U.S. Workforce, as a Percentage of All Such Tests



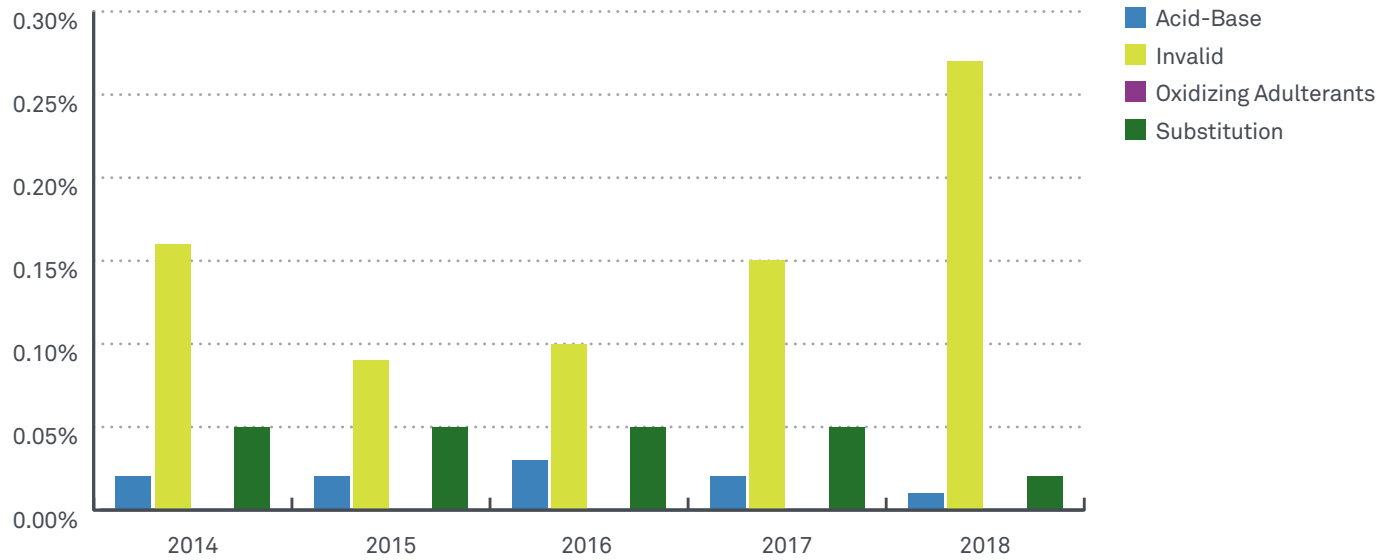
Nearly 9 million tests from January to December 2018

Drug Category	2014	2015	2016	2017	2018
6-AM	0.025%	0.028%	0.028%	0.024%	0.019%
Amphetamines	0.90%	0.97%	1.1%	1.1%	1.1%
Barbiturates	0.22%	0.22%	0.22%	0.25%	0.22%
Benzodiazepines	0.71%	0.68%	0.66%	0.61%	0.52%
Cocaine	0.24%	0.25%	0.28%	0.30%	0.28%
Marijuana	1.9%	1.9%	2.0%	2.1%	2.3%
MDMA	0.004%	0.005%	0.004%	0.005%	0.005%
Methadone	0.18%	0.18%	0.18%	0.18%	0.18%

Drug Category	2014	2015	2016	2017	2018
Opiates	0.39%	0.41%	0.40%	0.34%	0.27%
Opiates (Hydrocodone/Hydromorphone)	0.88%	0.68%	0.63%	0.50%	0.46%
Oxycodones (Oxycodone/Oxymorphone)	0.80%	0.75%	0.69%	0.60%	0.38%
PCP	0.02%	0.02%	0.02%	0.02%	0.01%
Propoxyphene	0.01%	0.00%	0.00%	0.00%	0.00%

Non-Negative Rates by Specimen Validity Test (SVT)² Category

Urine Drug Tests – For Federally Mandated, Safety-Sensitive Workforce, as a Percentage of All Such Tests



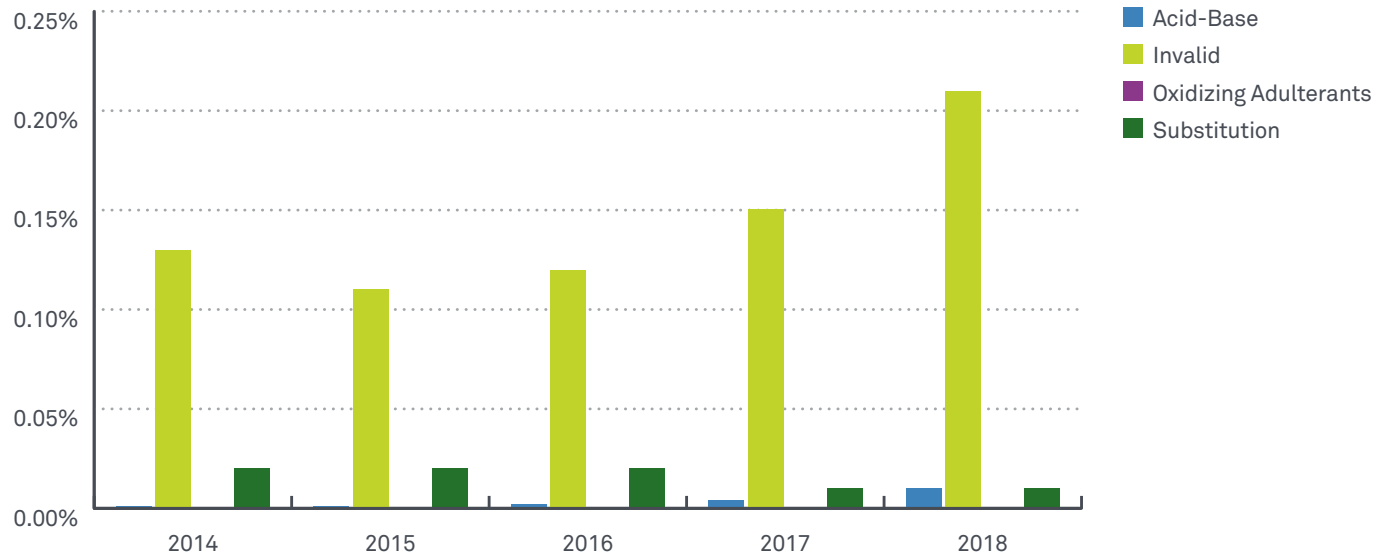
More than 2.4 million tests from January to December 2018

SVT Category	2014	2015	2016	2017	2018
Acid-Base	0.02%	0.02%	0.03%	0.02%	0.01%
Invalid	0.16%	0.09%	0.10%	0.15%	0.27%
Oxidizing Adulterants	0.000%	0.000%	0.000%	0.000%	0.000%
Substitution	0.05%	0.05%	0.05%	0.05%	0.02%

²Specimen validity testing is the evaluation of a specimen to determine if it is consistent with a normal human specimen. Tests for specimen validity include tests to determine whether a specimen is adulterated or substituted.

Non-Negative Rates by Specimen Validity Test (SVT) Category

Urine Drug Tests – For General U.S. Workforce, as a Percentage of All Such Tests

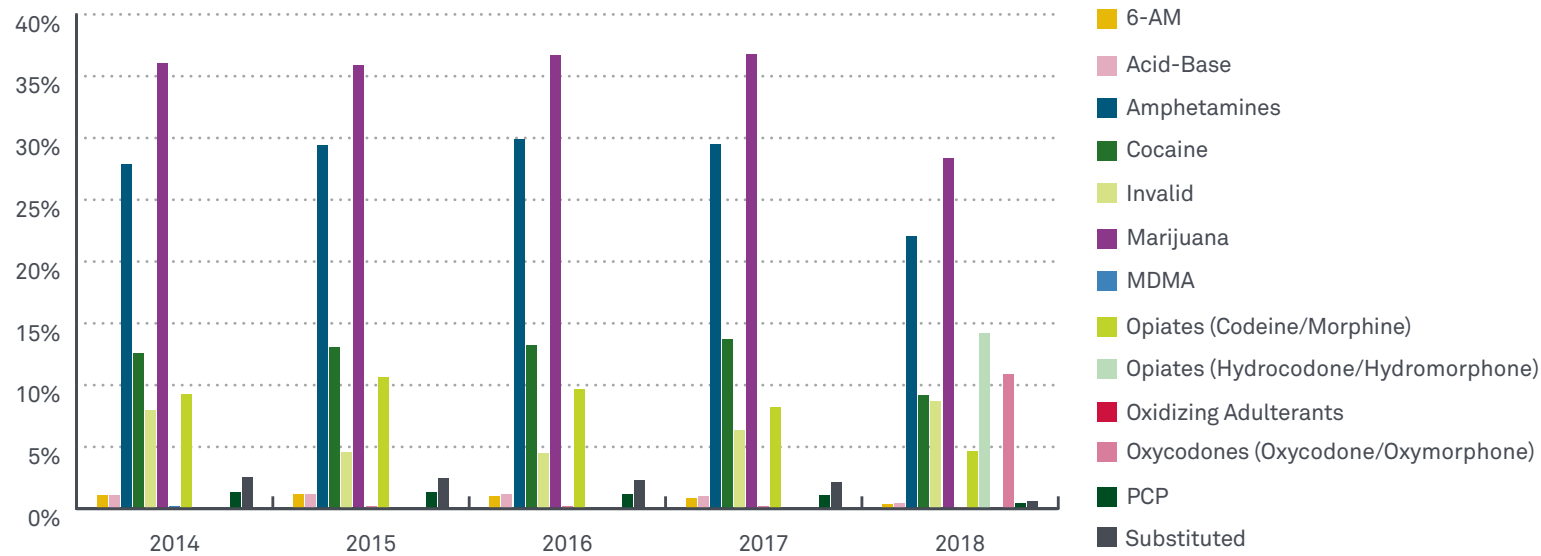


More than 6.5 million tests from January to December 2018

Drug/SVT Category	2014	2015	2016	2017	2018
Acid-Base	0.001%	0.001%	0.002%	0.004%	0.010%
Invalid	0.13%	0.11%	0.12%	0.15%	0.21%
Oxidizing Adulterants	0.000%	0.000%	0.000%	0.000%	0.000%
Substitution	0.02%	0.02%	0.02%	0.01%	0.01%

Non-Negative Rates by Drug/SVT Category

Urine Drug Tests – For Federally Mandated, Safety-Sensitive Workforce, as a Percentage of All Non-Negatives



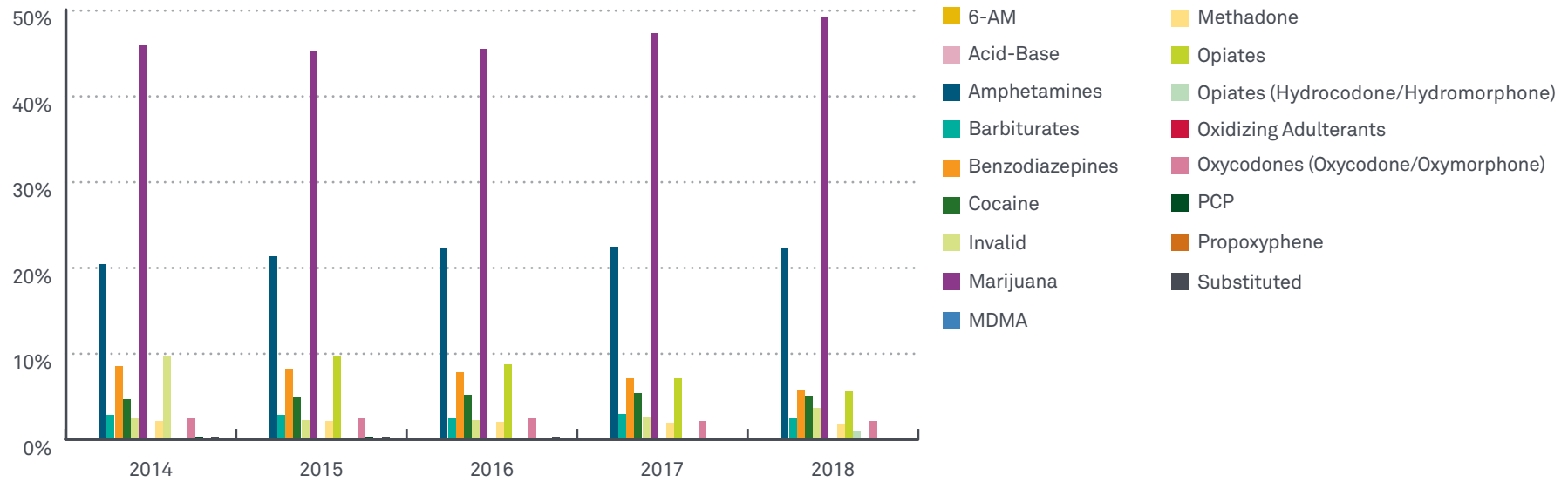
More than 70 thousand non-negative test results from January to December 2018

Drug/SVT Category	2014	2015	2016	2017	2018
6-AM	1.1%	1.1%	0.99%	0.82%	0.40%
Acid-Base	1.1%	1.1%	1.2%	1.0%	0.41%
Amphetamines	27.9%	29.5%	29.9%	29.5%	22.1%
Cocaine	12.6%	13.1%	13.3%	13.7%	9.2%
Invalid	8.0%	4.6%	4.5%	6.4%	8.7%
Marijuana	36.1%	35.9%	36.7%	36.8%	28.4%
MDMA	0.24%	0.24%	0.21%	0.23%	0.09%
Opiates (Codeine/Morphine)	9.2%	10.7%	9.7%	8.2%	4.7%

Drug/SVT Category	2014	2015	2016	2017	2018
Opiates (Hydrocodone/Hydromorphone)	-	-	-	-	14.2%
Oxidizing Adulterants	0.000%	0.000%	0.000%	0.000%	0.000%
Oxycodones (Oxycodone/Oxymorphone)	-	-	-	-	10.9%
PCP	1.3%	1.3%	1.2%	1.1%	0.41%
Substituted	2.5%	2.5%	2.3%	2.2%	0.62%

Non-Negative Rates by Drug/SVT Category

Urine Drug Tests – For General U.S. Workforce, as a Percentage of All Non-Negatives



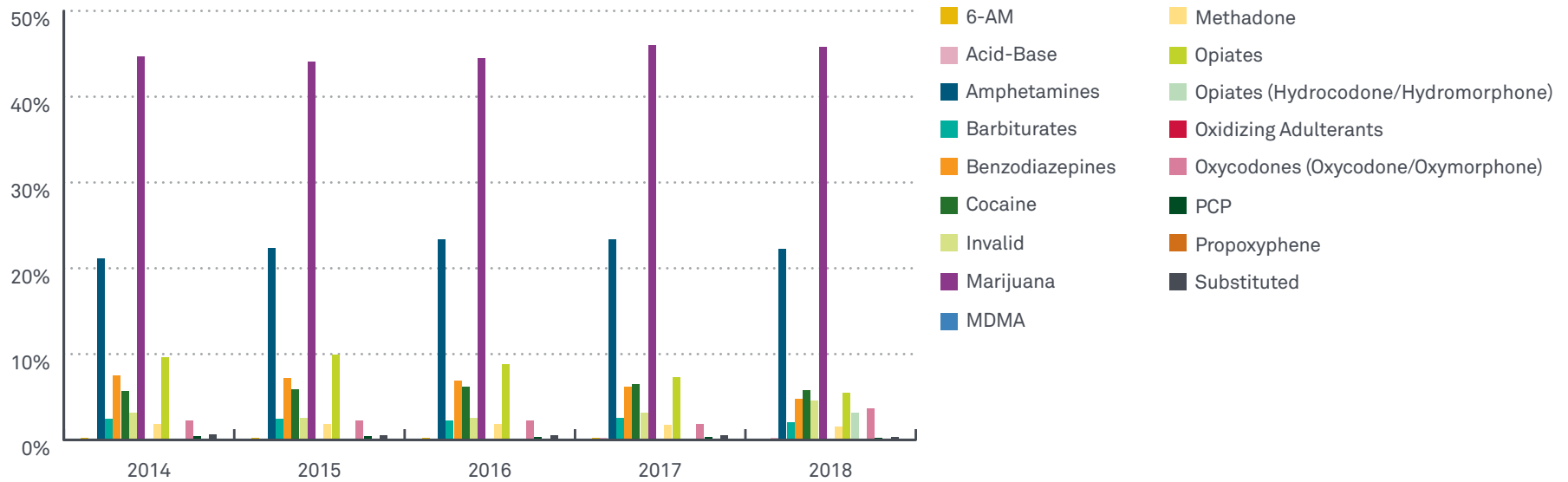
More than 360 thousand non-negative test results from January to December 2018

Drug/SVT Category	2014	2015	2016	2017	2018
6-AM	0.14%	0.16%	0.15%	0.12%	0.12%
Acid-Base	0.03%	0.03%	0.03%	0.07%	0.17%
Amphetamines	20.2%	21.3%	22.3%	22.4%	22.3%
Barbiturates	2.8%	2.8%	2.6%	3.0%	2.5%
Benzodiazepines	8.6%	8.2%	7.8%	7.1%	5.8%
Cocaine	4.7%	4.9%	5.2%	5.5%	5.1%
Invalid	2.5%	2.2%	2.3%	2.7%	3.7%
Marijuana	45.9%	45.2%	45.5%	47.4%	49.3%
MDMA	0.02%	0.03%	0.03%	0.03%	0.04%
Methadone	2.1%	2.1%	2.1%	2.0%	1.9%

Drug/SVT Category	2014	2015	2016	2017	2018
Opiates	9.6%	9.8%	8.7%	7.2%	5.6%
Opiates (Hydrocodone/Hydromorphone)	-	-	-	-	0.91%
Oxidizing Adulterants	0.000%	0.000%	0.000%	0.000%	0.000%
Oxycodones (Oxycodone/Oxymorphone)	2.6%	2.6%	2.6%	2.1%	2.2%
PCP	0.36%	0.31%	0.24%	0.24%	0.20%
Propoxyphene	0.06%	0.03%	0.02%	0.02%	0.01%
Substituted	0.35%	0.32%	0.28%	0.26%	0.24%

Non-Negative Rates by Drug/SVT Category

Urine Drug Tests – For Combined U.S. Workforce, as a Percentage of All Non-Negatives



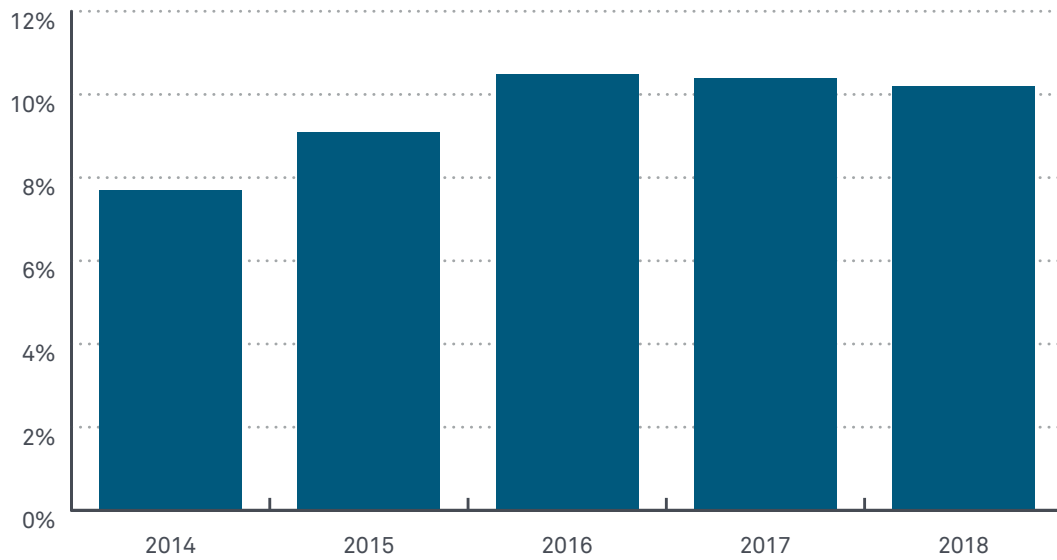
More than 430 thousand non-negative test results from January to December 2018

Drug/SVT Category	2014	2015	2016	2017	2018
6-AM	0.26%	0.28%	0.25%	0.21%	0.17%
Acid-Base	0.16%	0.16%	0.17%	0.20%	0.21%
Amphetamines	21.2%	22.3%	23.2%	23.4%	22.3%
Barbiturates	2.5%	2.5%	2.3%	2.6%	2.0%
Benzodiazepines	7.5%	7.2%	6.9%	6.2%	4.8%
Cocaine	5.7%	5.9%	6.2%	6.5%	5.8%
Invalid	3.2%	2.5%	2.6%	3.2%	4.5%
Marijuana	44.7%	44.1%	44.5%	46.0%	45.8%
MDMA	0.05%	0.06%	0.05%	0.06%	0.05%
Methadone	1.9%	1.9%	1.8%	1.7%	1.6%

Drug/SVT Category	2014	2015	2016	2017	2018
Opiates	9.6%	9.9%	8.9%	7.3%	5.5%
Opiates (Hydrocodone/Hydromorphone)	-	-	-	-	3.2%
Oxidizing Adulterants	0.000%	0.000%	0.000%	0.000%	0.000%
Oxycodones (Oxycodone/Oxymorphone)	2.2%	2.3%	2.3%	1.9%	3.7%
PCP	0.48%	0.43%	0.36%	0.35%	0.24%
Propoxyphene	0.06%	0.03%	0.02%	0.01%	0.01%
Substituted	0.62%	0.58%	0.52%	0.51%	0.31%

Positivity Rates by Testing Category

Oral Fluid Drug Tests – For General U.S. Workforce

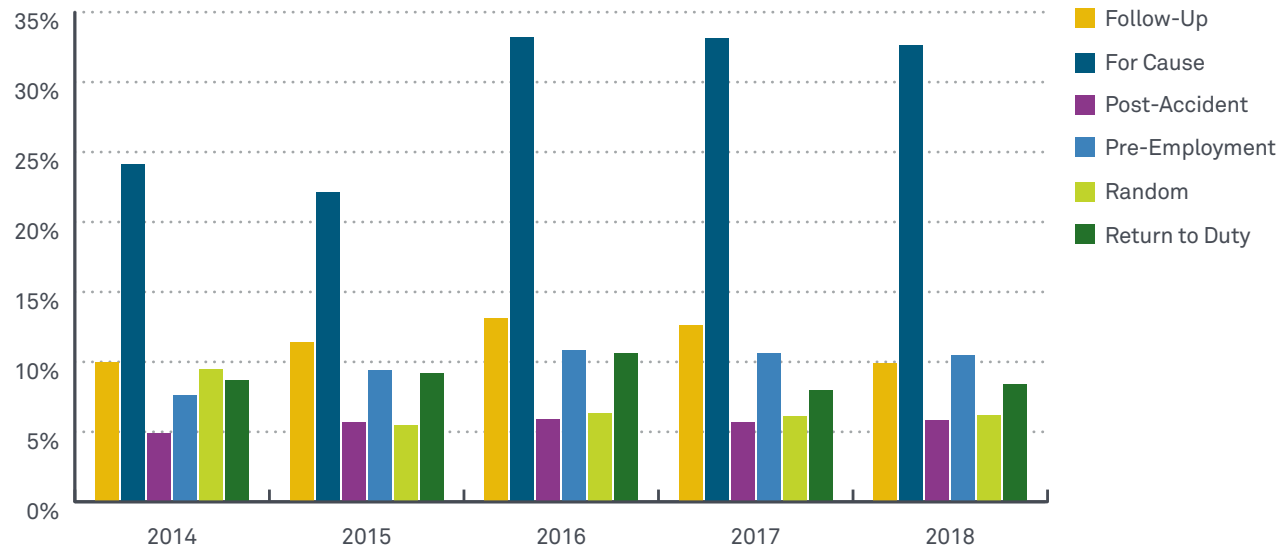


More than 1.3 million tests from January to December 2018

Testing Category	2014	2015	2016	2017	2018
General U.S. Workforce	7.7%	9.1%	10.5%	10.4%	10.2%

Positivity Rates by Testing Reason

Oral Fluid Drug Tests – For General U.S. Workforce

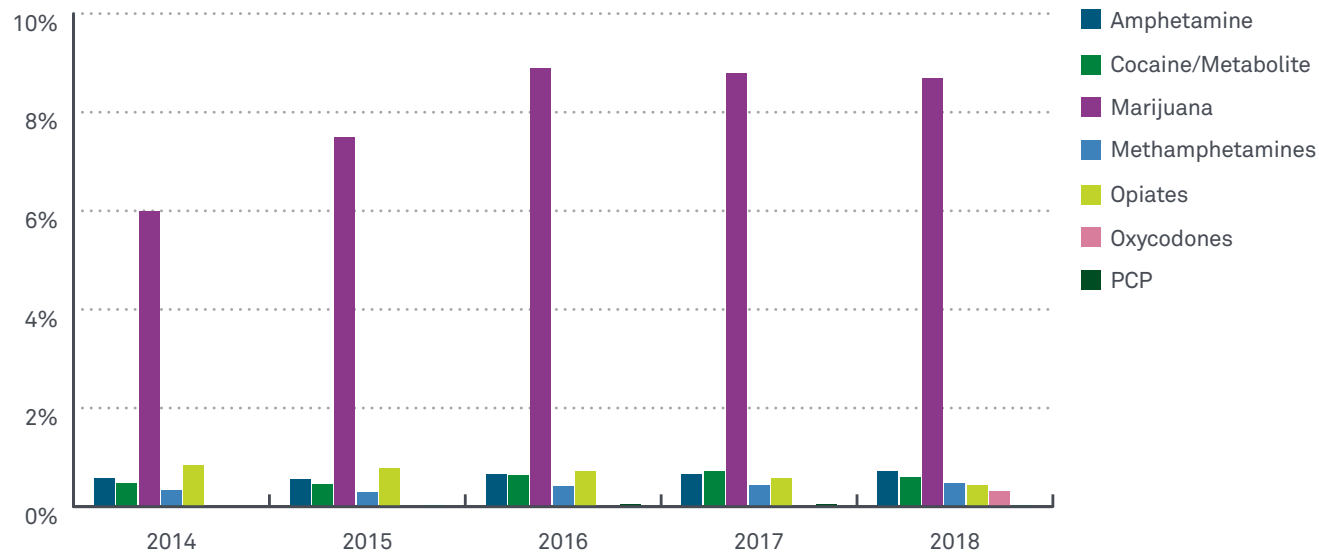


More than 1.3 million tests from January to December 2018

Testing Reason	2014	2015	2016	2017	2018
Follow-Up	10.0%	11.4%	13.1%	12.6%	9.9%
For Cause	24.1%	22.1%	33.2%	33.1%	32.6%
Post-Accident	4.9%	5.7%	5.9%	5.7%	5.8%
Pre-Employment	7.6%	9.4%	10.8%	10.6%	10.5%
Random	9.5%	5.5%	6.3%	6.1%	6.2%
Return to Duty	8.7%	9.2%	10.6%	8.0%	8.4%

Positivity Rates by Drug Category

Oral Fluid Drug Tests – For General U.S. Workforce

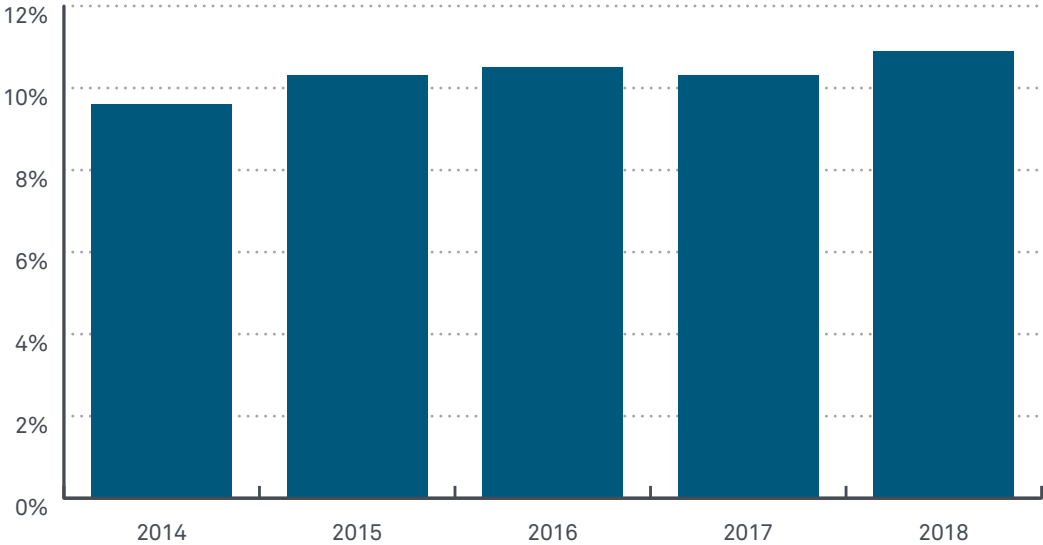


More than 1.3 million tests from January to December 2018

Drug Category	2014	2015	2016	2017	2018
Amphetamine	0.57%	0.56%	0.66%	0.66%	0.73%
Cocaine/Metabolite	0.47%	0.46%	0.63%	0.73%	0.59%
Marijuana	6.0%	7.5%	8.9%	8.8%	8.7%
Methamphetamines	0.33%	0.29%	0.42%	0.43%	0.47%
Opiates	0.85%	0.78%	0.71%	0.57%	0.44%
Oxycodones	-	-	-	-	0.31%
PCP	0.02%	0.04%	0.05%	0.06%	0.04%

Positivity Rates by Testing Category

Hair Drug Tests – For General U.S. Workforce

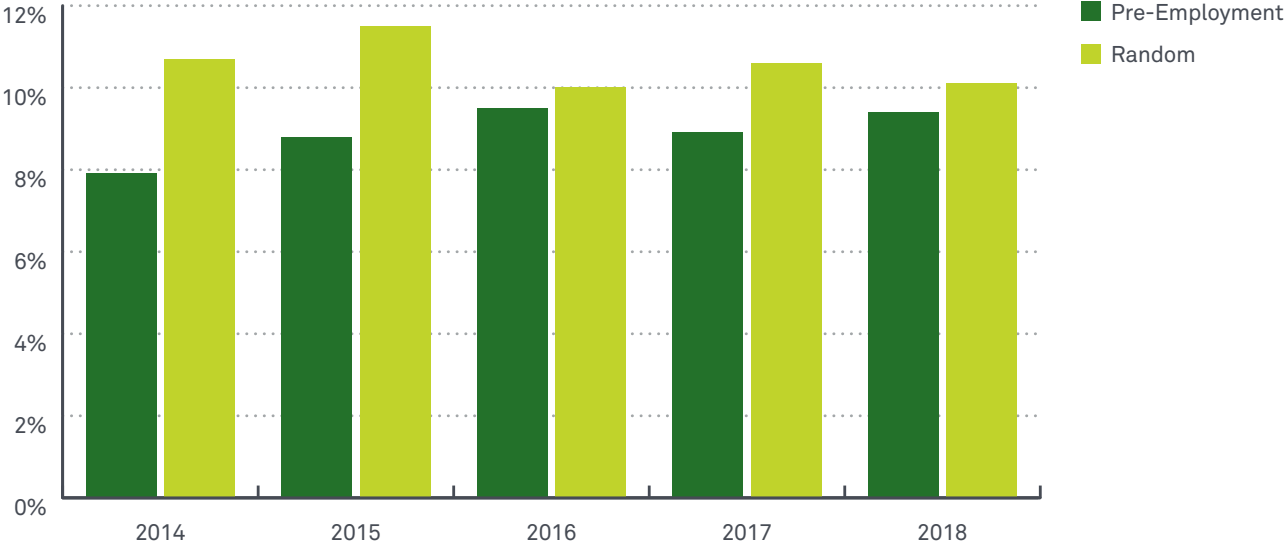


More than 160 thousand tests from January to December 2018

Testing Category	2014	2015	2016	2017	2018
General U.S. Workforce	9.6%	10.3%	10.5%	10.3%	10.9%

Positivity Rates by Testing Reason

Hair Drug Tests – For General U.S. Workforce

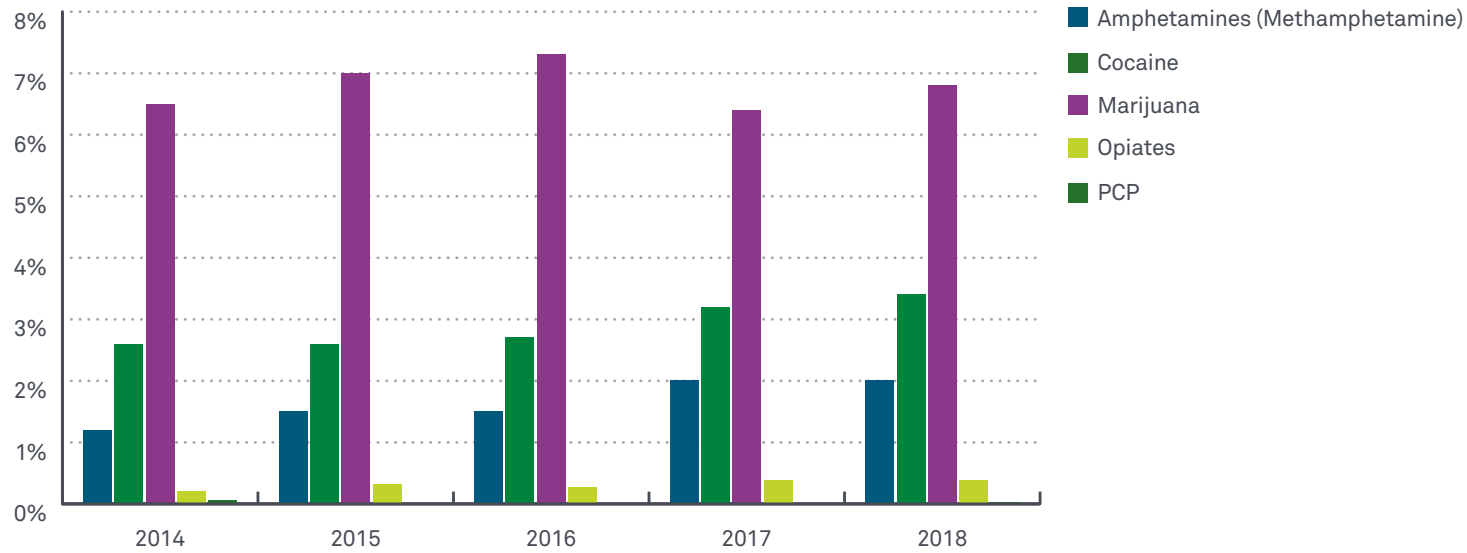


More than 160 thousand tests from January to December 2018

Testing Reason	2014	2015	2016	2017	2018
Pre-Employment	7.9%	8.8%	9.5%	8.9%	9.4%
Random	10.7%	11.5%	10.0%	10.6%	10.1%

Positivity Rates by Drug Category

Hair Drug Tests – For General U.S. Workforce



More than 160 thousand tests from January to December 2018

Drug Category	2014	2015	2016	2017	2018
Amphetamines (Methamphetamine)	1.2%	1.5%	1.5%	2.0%	2.0%
Cocaine	2.6%	2.6%	2.7%	3.2%	3.4%
Marijuana	6.5%	7.0%	7.3%	6.4%	6.8%
Opiates	0.21%	0.32%	0.27%	0.38%	0.39%
PCP	0.06%	0.01%	0.01%	0.01%	0.02%

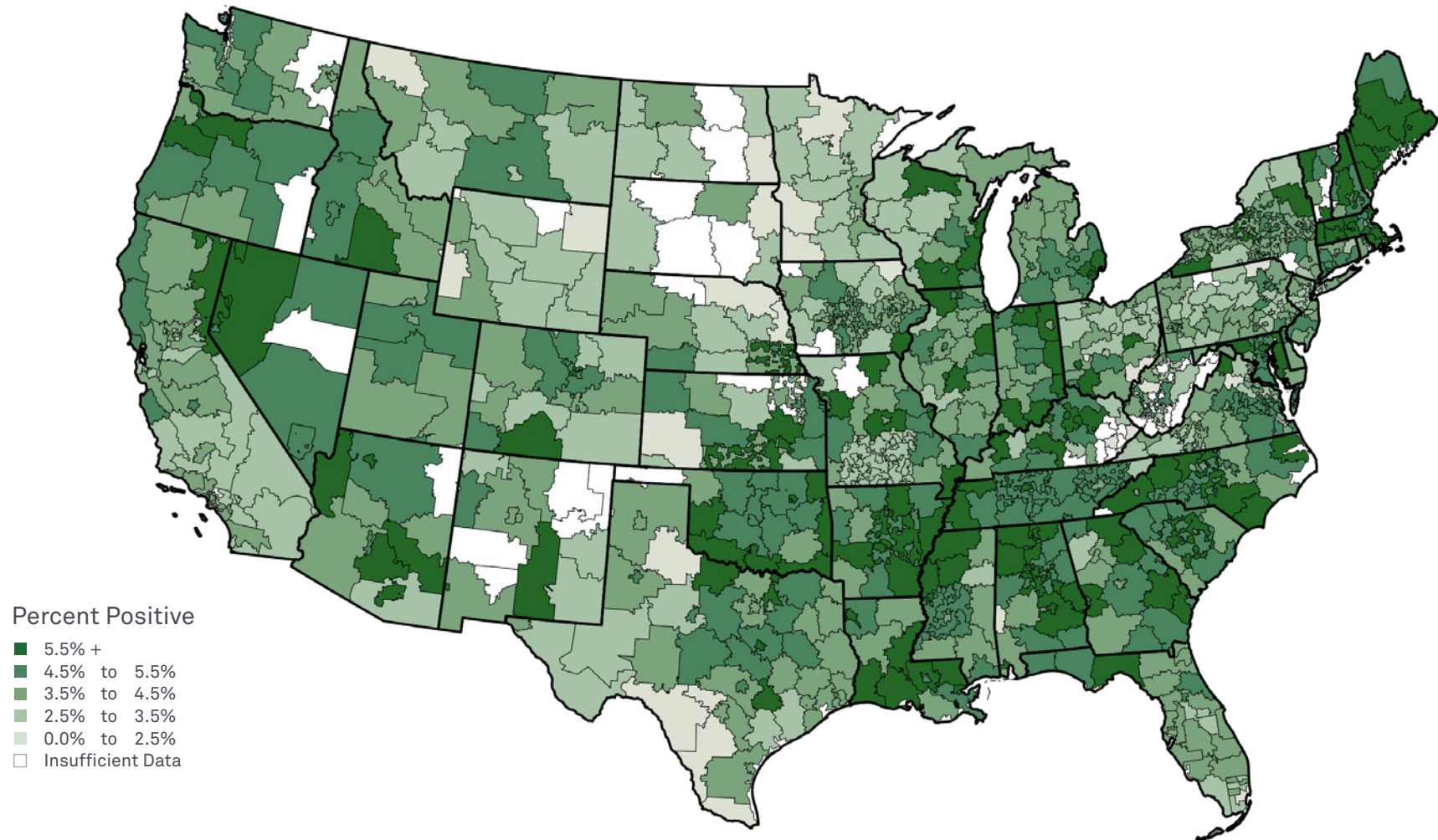
3-Digit Zip Code Drug Positivity Maps

Urine Drug Tests – For Combined U.S. Workforce

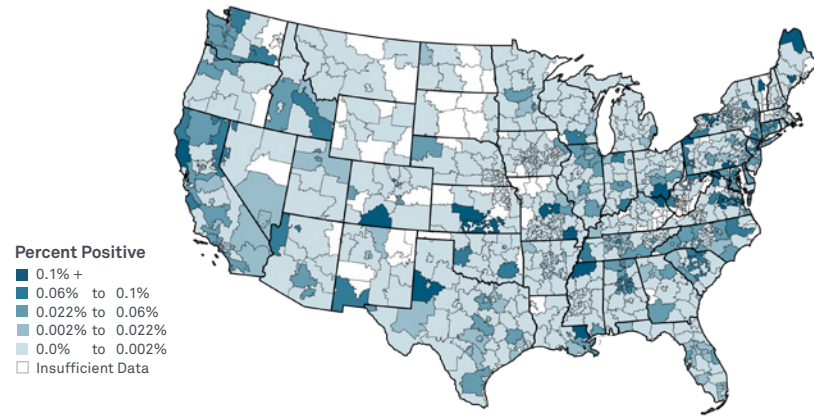
January - December 2018

For an interactive map with positivity rates and trend lines by three-digit zip code in the United States, visit [QuestDiagnostics.com/DrugMap](https://www.questdiagnostics.com/DrugMap).

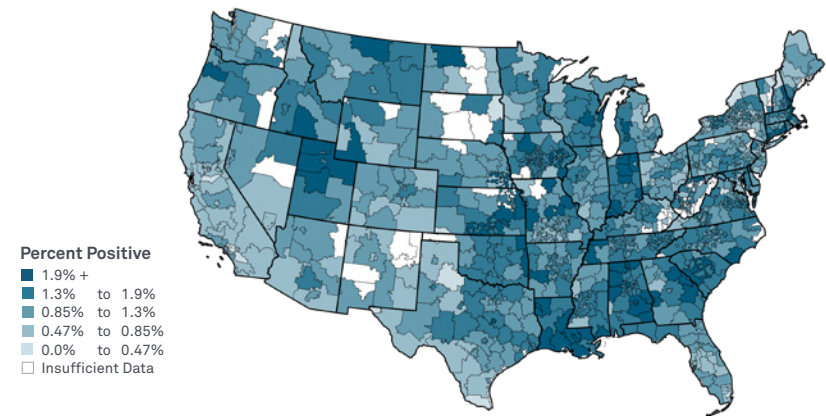
Overall Positivity



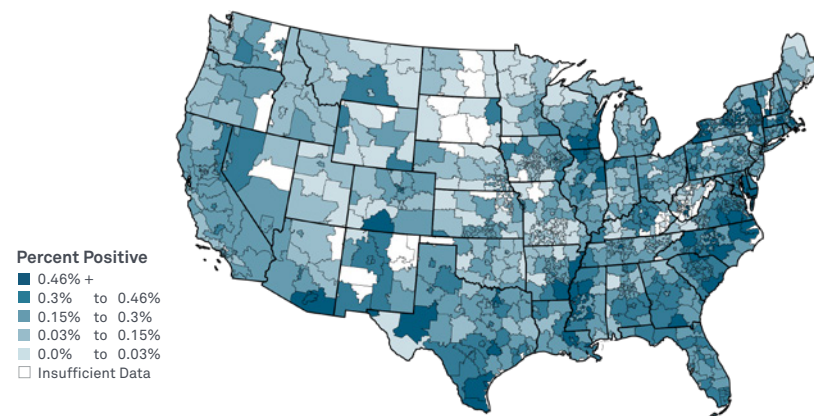
6-AM Positivity



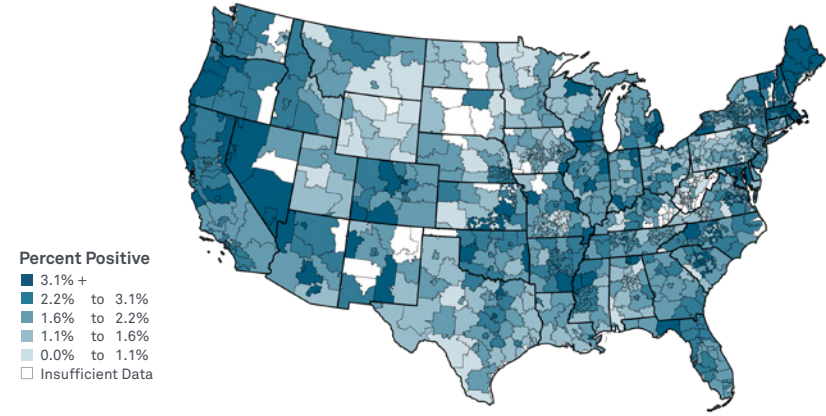
Amphetamines Positivity



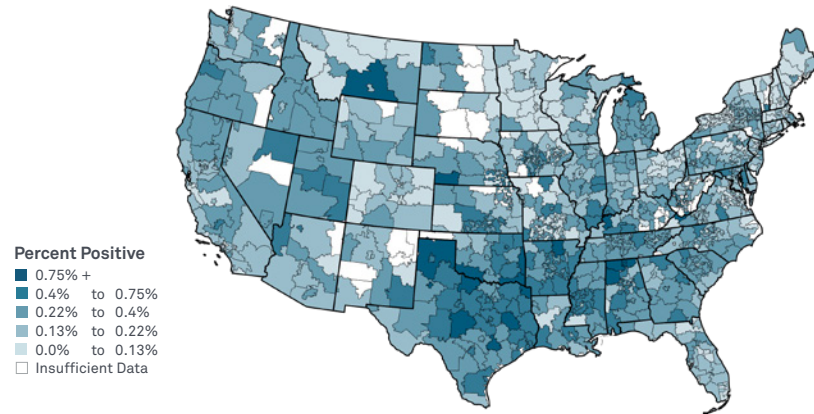
Cocaine Positivity



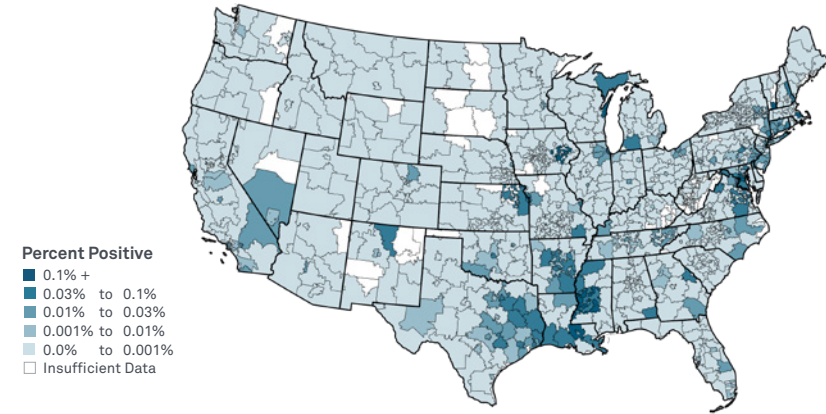
Marijuana Positivity



Opiates Positivity



PCP Positivity



About Quest Diagnostics

Quest Diagnostics helps empower people to take action to improve health outcomes. Derived from the world's largest database of clinical lab results, our diagnostic insights reveal new avenues to identify and treat disease, inspire healthy behaviors, and improve healthcare management. Quest annually serves one in three adult Americans and half the physicians and hospitals in the United States, and our 45,000 employees understand that, in the right hands and with the right context, our diagnostic insights can inspire actions that transform lives. [QuestDiagnostics.com](https://www.questdiagnostics.com).

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