



Employer Solutions Annual Report | *Spring 2018*

# Drug Testing Index™

A comprehensive analysis of  
workplace drug use trends



Year Anniversary





### **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).

[QuestDiagnostics.com/DTI](https://www.questdiagnostics.com/DTI)



The Quest Diagnostics Drug Testing Index (DTI) reveals insights into patterns of drug use among the American workforce. **Published annually for 30 years, 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.





# Table of contents

---

## Analysis

|  |   |
|--|---|
| Workforce Drug Positivity at Highest Rate in a Decade,<br>Finds Analysis of More Than 10 Million Drug Test Results | 2 |
|--|---|

---

## Urine Drug Tests

|   |    |
|---|----|
| Positivity by Combined U.S. Workforce                   | 6  |
| Positivity by Testing Category                          | 7  |
| Positivity by Testing Reason                            | 8  |
| Positivity by Drug Category                             | 10 |
| Non-Negativity by Specimen Validity Test (SVT) Category | 13 |

---

## Oral Fluid Tests

|                                |    |
|--------------------------------|----|
| Positivity by Testing Category | 18 |
| Positivity by Testing Reason   | 19 |
| Positivity by Drug Category    | 20 |

---

## Hair Drug Tests

|                                |    |
|--------------------------------|----|
| Positivity by Testing Category | 21 |
| Positivity by Testing Reason   | 22 |
| Positivity by Drug Category    | 23 |

---

## 3-Digit Zip Code Drug Positivity Maps

24

---

## 30 years of the Quest Diagnostics Drug Testing Index™

26

# Workforce Drug Positivity at Highest Rate in a Decade, Finds Analysis of More Than 10 Million Drug Test Results

Driven by increases in cocaine, methamphetamine and marijuana, drug use by the American workforce remains at its highest rate in more than a decade, according to Quest Diagnostics the world's leading provider of diagnostic information services.



Nationally, the positivity rate for the combined U.S. workforce held steady at 4.2 percent in 2017, the same as in 2016, but a dramatic increase over the 3.5 percent positivity rate from 2012, which represented a thirty-year low. The analysis of 2017 data also suggests shifting patterns of drug use, with cocaine and amphetamines positivity surging in some areas of the country and marijuana positivity rising sharply in states with newer recreational use statutes. Prescription opiate positivity rates declined dramatically on a national basis.

The findings were unveiled at the Federal Transit Administration (FTA) Drug and Alcohol Program National Conference in Ft. Lauderdale, Florida. 2018 marks thirty consecutive years of the Quest Diagnostics Drug Testing Index™ (DTI), an analysis of national workplace drug positivity trends based on the company's de-identified laboratory data. The DTI has revealed insights into drug use in the United States since the Drug-Free Workplace Act was signed into law in 1988. In 1988, the DTI analysis found that the overall drug positivity rate among American workers was 13.6 percent.

“It’s unfortunate that we mark 30 years of the Drug-Free Workplace Act with clear evidence that drugs continue to invade the country’s workplaces. Not only have declines appeared to have bottomed out, but also in some drug classes and areas of the country drug positivity rates are increasing,” said Barry Sample, PhD, senior director, science and technology, Quest Diagnostics. “These changing patterns and geographical variations may challenge the ability of employers to anticipate the ‘drug of choice’ for their workforce or where to best focus their drug prevention efforts to ensure a safe and healthy work environment.”

### Cocaine positivity increases overall, jumps sharply in some areas

The positivity rate for cocaine increased for the fifth consecutive year in the general U.S. workforce across every specimen type. In urine testing, the most common drug test specimen type, the positivity rate for cocaine increased seven percent in the general U.S. workforce (0.28% in 2016 versus 0.30% in 2017). Year-over-year increases were also observed in the general U.S. workforce in oral fluid testing (up 16%) and hair testing (19%).

In the federally-mandated, safety-sensitive workforce, for which urine testing is required, cocaine positivity increased by eleven percent (0.28% in 2016 versus 0.31% percent in 2017), representing the third consecutive year of increases in this workforce segment.

A new pattern emerged in this year's analysis, with cocaine positivity in urine testing increasing significantly in certain states among the general U.S. workforce. Double-digit year-over-year increases in at least four of the five past years were seen in the states of Nebraska (91% increase between 2016 and 2017), Idaho (88% increase), Washington (31%), Nevada (25%), Maryland (22% increase), and Wisconsin (13%).

### Methamphetamine positivity skyrockets in Midwest and South regions

An analysis of trends in the general U.S. workforce based on the four U.S. Census regions identified large increases of methamphetamine positivity rates. Between 2013 and 2017, methamphetamine positivity increased: 167 percent in the East North Central division of the Midwest (Illinois, Indiana, Michigan, Ohio, Wisconsin); 160 percent in the East South Central division of the South (Alabama, Kentucky, Mississippi, Tennessee); 150 percent in the



Middle Atlantic division of the Northeast (New Jersey, New York, Pennsylvania); and 140 percent in the South Atlantic division of the South (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia). The percentage increase in these four divisions ranged between nine percent and 25 percent between 2016 and 2017.

“Thirty years in, this year’s results again demonstrate the ever-evolving threat that substance abuse poses to workplace safety. With the prescription opiate crisis filling the headlines, the significant drop in opiate positivity is a promising sign,” said Matt Nieman, General Counsel, Institute for a Drug-Free Workplace and Principal, Jackson Lewis P.C. “Yet, the ten-year high in positivity rates—spurred by nationwide surges in cocaine and methamphetamine positivity as well as double-digit marijuana spikes in states with newly implemented recreational laws—serves as a stark warning that efforts to prevent substance abuse in the workplace are as important today as ever.”

*Cocaine rises by double digits in certain states*

*Heroin declined in the general U.S. workforce to a three-year low*



### **Prescription opiates continue decline in workforce testing data**

“The depth of our large-scale analysis supports the possibility that efforts by policymakers, employers, and the medical community to decrease the availability of opioid prescriptions and curtail the opioid crisis is working to reduce their use, at least among the working public,” said Kim Samano, PhD scientific director, Quest Diagnostics.

Nationally, the positivity rate for opiates in the general U.S. workforce in urine drug testing declined 17 percent between 2016 and 2017 (0.47% versus 0.39%). More notably, oxycodones (oxycodone and/or oxymorphone) positivity declined 12 percent between 2016 and 2017 (0.69% vs. 0.61%), hydrocodone positivity declined 17 percent (0.81% vs. 0.67%); and hydromorphone positivity declined 22% (0.59% vs. 0.46%). Opiates other than codeine were at their lowest positivity rate in more than a decade.

The company’s workforce drug testing services generally test for drugs and metabolites associated with prescription opiates and semi-synthetic opiates. They do not typically test for synthetic opioids, such as fentanyl and its synthetic analogs.

Prescription opiate testing for the federally-mandated, safety-sensitive workforce has not been required until recently. Such testing was implemented in October 2017 for certain U.S. government employees. Preliminary data in the fourth quarter of 2017 from the testing of these workers indicates a positivity rate slightly higher than for the opiate group prior to these new regulations which only included codeine and morphine. Prescription opiate testing for safety-sensitive transportation workers covered under U.S. Department of Transportation (DOT) rules went into effect in January 2018.

According to the Centers for Disease Control (CDC), the overall national opioid prescribing rate in 2017 fell to the lowest it had been in more than 10 years, though rates vary by state and are high in some areas of the country.

Urine drug test results for heroin, indicated by the presence of the 6-acetylmorphine (6-AM) metabolite, also declined in the general U.S. workforce (0.033% positivity, a three-year low and down nearly 11 percent in 2017 compared to 2016). There have been concerns by some public health experts that a reformulation of OxyContin, a popular opioid medication, has led to a corresponding increase in heroin use, which has been reflected in the Drug Testing Index data where 6-AM positivity more than doubled between 2011 and 2015. Data from 2016 and 2017 suggests this may be abating among workers subject to drug testing.





*Marijuana positivity rises considerably in states that recently enacted recreational use statutes*

### **Marijuana positivity is up in states with new legalization statutes**

Overall, marijuana positivity continued its five-year upward trajectory in urine testing for both the general U.S. workforce and the federally-mandated, safety-sensitive workforce. Marijuana positivity increased four percent in the general U.S. workforce (2.5% in 2016 versus 2.6% in 2017) and nearly eight percent in the safety-sensitive workforce (0.78% versus 0.84%).

Increases in positivity rates for marijuana in the general U.S. workforce were most striking in states that have enacted recreational use statutes since 2016. Those states include: Nevada (43%), Massachusetts (14%) and California (11%). These three states also saw significant increases in marijuana positivity in federally-mandated, safety-sensitive workers: Nevada (39%), California (20%), and Massachusetts (11%). Federally-mandated, safety-sensitive workers include pilots, rail, bus and truck drivers, and workers in nuclear

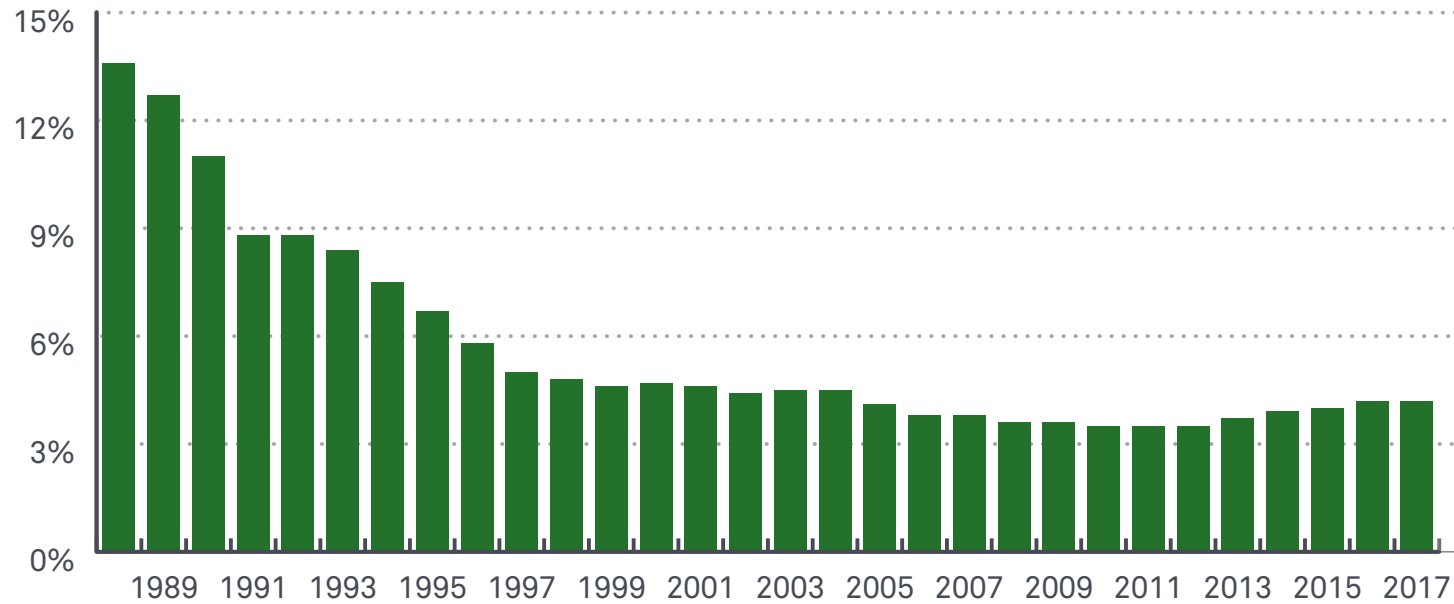
power plants, for whom routine drug testing is required by the DOT.

“These increases are similar to the increases we observed after recreational marijuana use statutes were passed in Washington and Colorado,” said Dr. Sample. “While it is too early to tell if this is a trend, our data suggests that the recreational use of marijuana is spilling into the workforce, including among individuals most responsible for keeping our communities safe. We encourage policy analysts to track these trends closely to determine whether a correlation between the state legalization of marijuana and increased workforce drug use, as suggested by our data, bears out in other research.”

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

# Annual Positivity Rates

Urine Drug Tests - For Combined U.S. Workforce



More than 10 million tests from January to December 2017

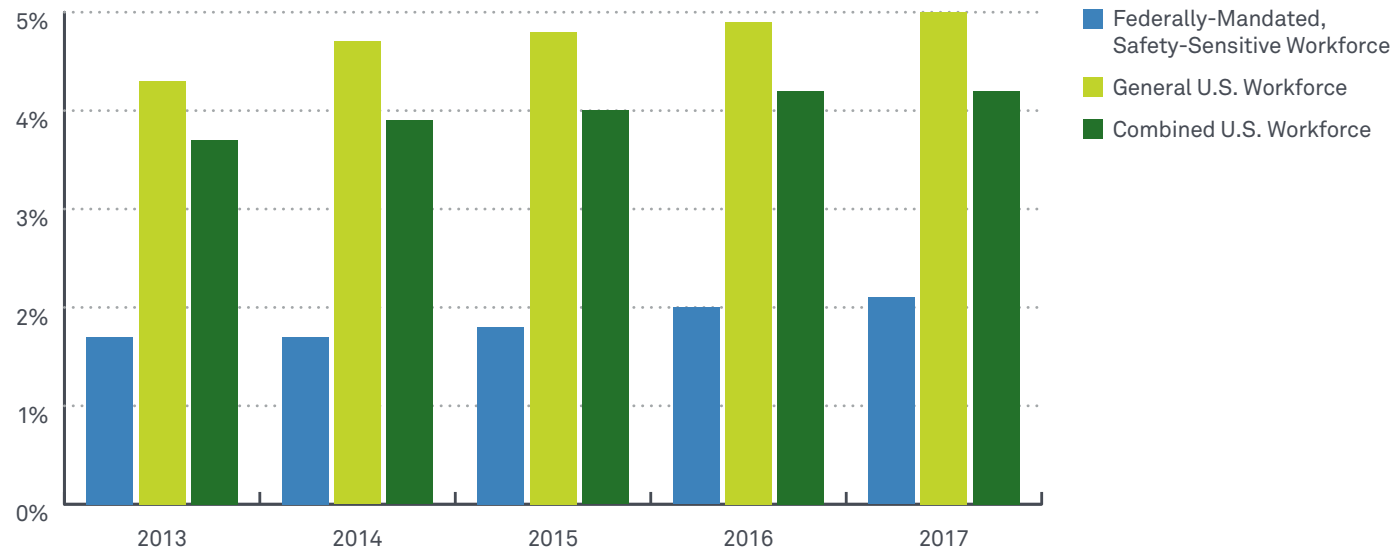
| Year | Drug Positivity Rate |
|------|----------------------|
| 1988 | 13.6%                |
| 1989 | 12.7%                |
| 1990 | 11.0%                |
| 1991 | 8.8%                 |
| 1992 | 8.8%                 |
| 1993 | 8.4%                 |
| 1994 | 7.5%                 |
| 1995 | 6.7%                 |
| 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%                 |

# Positivity Rates by Testing Category

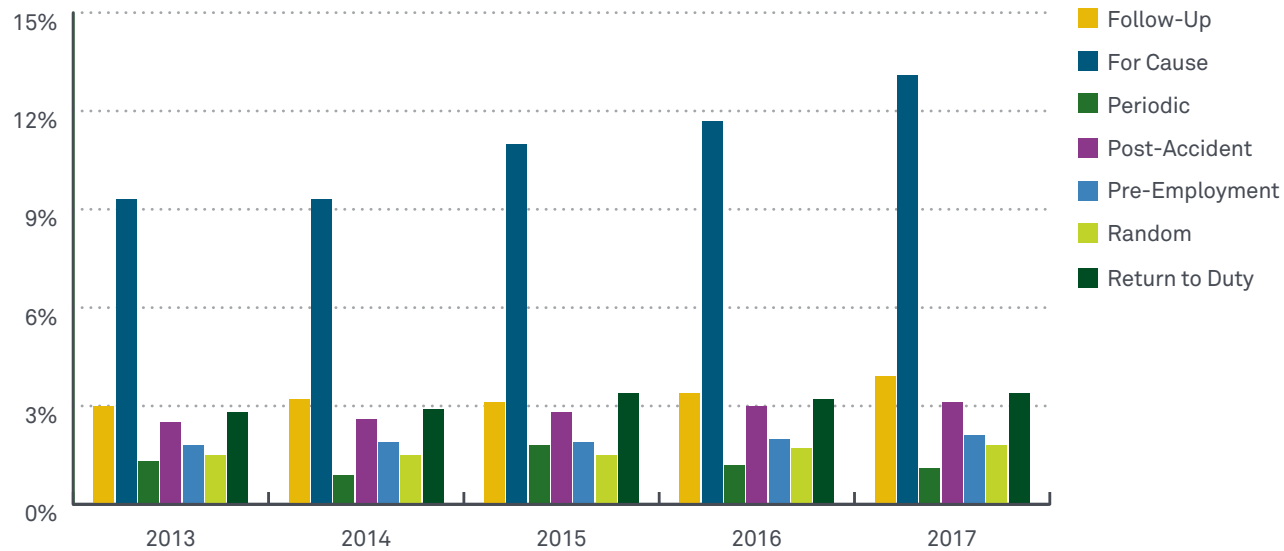
Urine Drug Tests



| Testing Category                               | 2013 | 2014 | 2015 | 2016 | 2017 |
|--|------|------|------|------|------|
| Federally-Mandated, Safety-Sensitive Workforce | 1.7% | 1.7% | 1.8% | 2.0% | 2.1% |
| General U.S. Workforce                         | 4.3% | 4.7% | 4.8% | 4.9% | 5.0% |
| Combined U.S. Workforce                        | 3.7% | 3.9% | 4.0% | 4.2% | 4.2% |

## Positivity Rates by Testing Reason

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

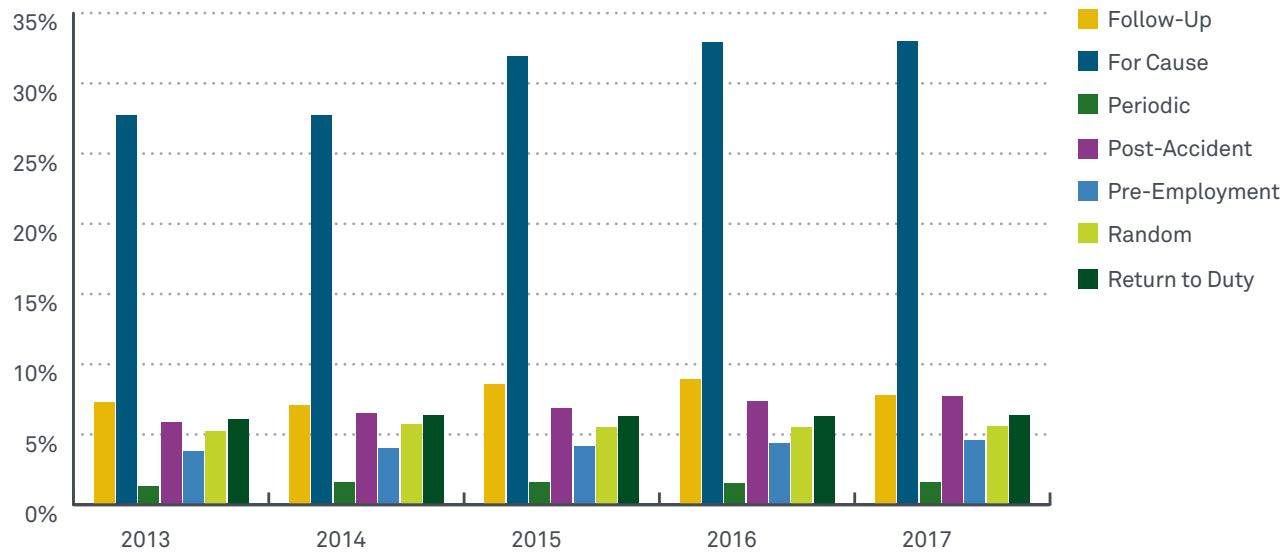


More than 2.2 million tests from January to December 2017

| Testing Reason | 2013 | 2014 | 2015  | 2016  | 2017  |
|----------------|------|------|-------|-------|-------|
| Follow-Up      | 3.0% | 3.2% | 3.1%  | 3.4%  | 3.9%  |
| For Cause      | 9.3% | 9.3% | 11.0% | 11.7% | 13.1% |
| Periodic       | 1.3% | 0.9% | 1.8%  | 1.2%  | 1.1%  |
| Post-Accident  | 2.5% | 2.6% | 2.8%  | 3.0%  | 3.1%  |
| Pre-Employment | 1.8% | 1.9% | 1.9%  | 2.0%  | 2.1%  |
| Random         | 1.5% | 1.5% | 1.5%  | 1.7%  | 1.8%  |
| Return to Duty | 2.8% | 2.9% | 3.4%  | 3.2%  | 3.4%  |

## Positivity Rates by Testing Reason

Urine Drug Tests – For General U.S. Workforce

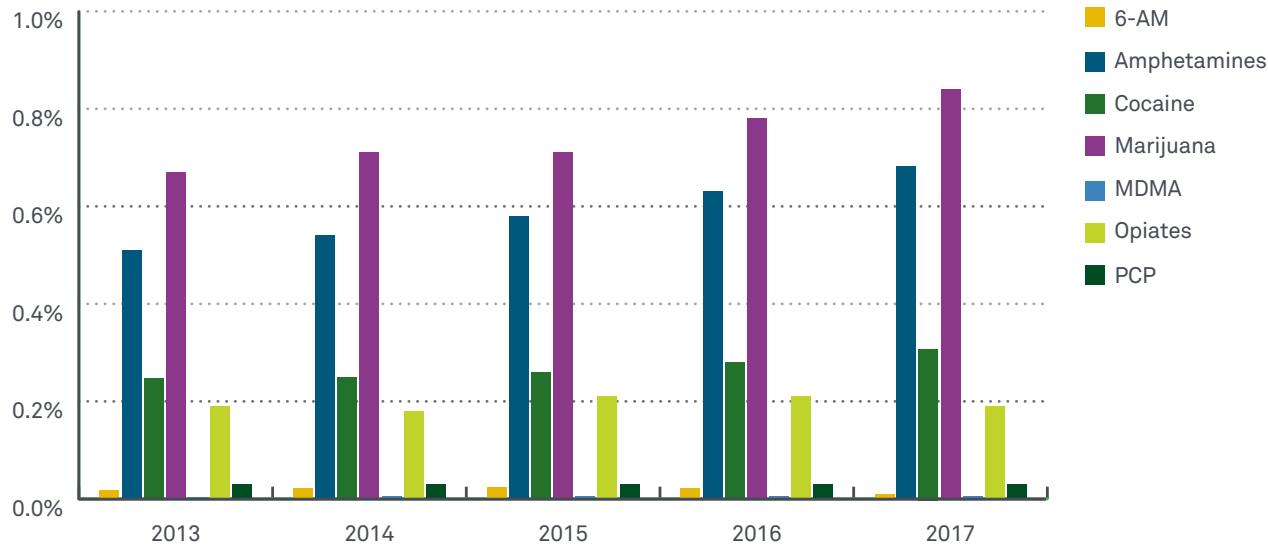


More than 6.2 million tests from January to December 2017

| Testing Reason | 2013  | 2014  | 2015  | 2016  | 2017  |
|----------------|-------|-------|-------|-------|-------|
| Follow-Up      | 7.3%  | 7.1%  | 8.6%  | 8.9%  | 7.8%  |
| For Cause      | 27.7% | 27.7% | 31.9% | 32.9% | 33.0% |
| Periodic       | 1.3%  | 1.6%  | 1.6%  | 1.5%  | 1.6%  |
| Post-Accident  | 5.9%  | 6.5%  | 6.9%  | 7.4%  | 7.7%  |
| Pre-Employment | 3.8%  | 4.0%  | 4.2%  | 4.4%  | 4.6%  |
| Random         | 5.2%  | 5.7%  | 5.5%  | 5.5%  | 5.6%  |
| Return to Duty | 6.1%  | 6.4%  | 6.3%  | 6.3%  | 6.4%  |

## Positivity Rates by Drug Category

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

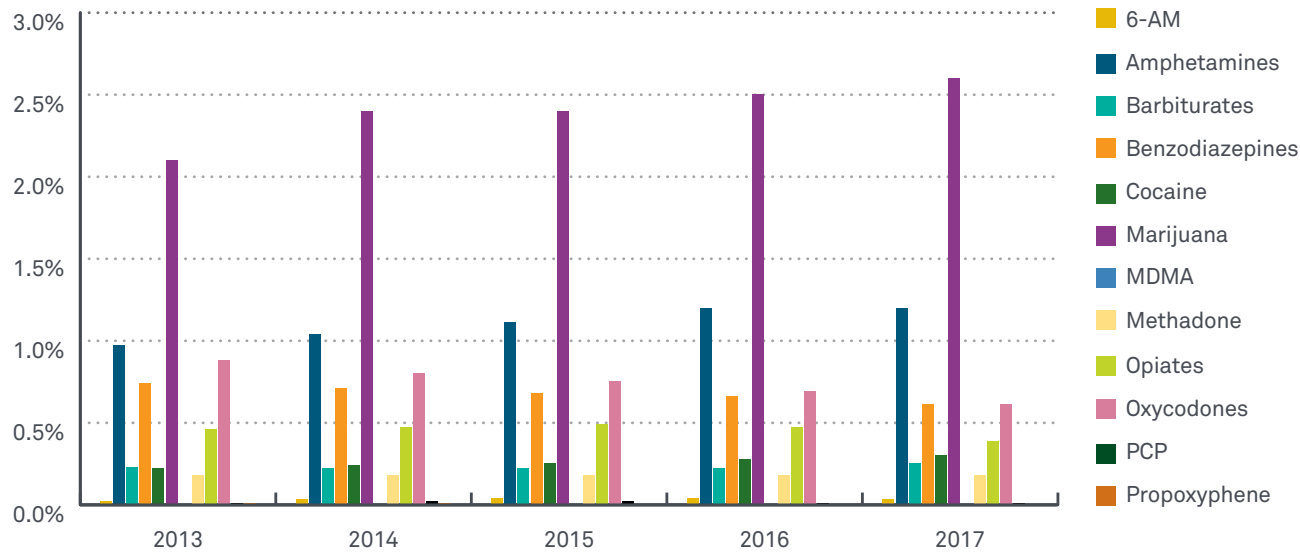


More than 2.2 million tests from January to December 2017

| Drug Category | 2013   | 2014   | 2015   | 2016   | 2017   |
|---------------|--------|--------|--------|--------|--------|
| 6-AM          | 0.017% | 0.022% | 0.023% | 0.021% | 0.019% |
| Amphetamines  | 0.51%  | 0.54%  | 0.58%  | 0.63%  | 0.68%  |
| Cocaine       | 0.26%  | 0.25%  | 0.26%  | 0.28%  | 0.31%  |
| Marijuana     | 0.67%  | 0.71%  | 0.71%  | 0.78%  | 0.84%  |
| MDMA          | 0.004% | 0.005% | 0.005% | 0.005% | 0.005% |
| Opiates       | 0.19%  | 0.18%  | 0.21%  | 0.21%  | 0.19%  |
| PCP           | 0.03%  | 0.03%  | 0.03%  | 0.03%  | 0.03%  |

## Positivity Rates by Drug Category

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



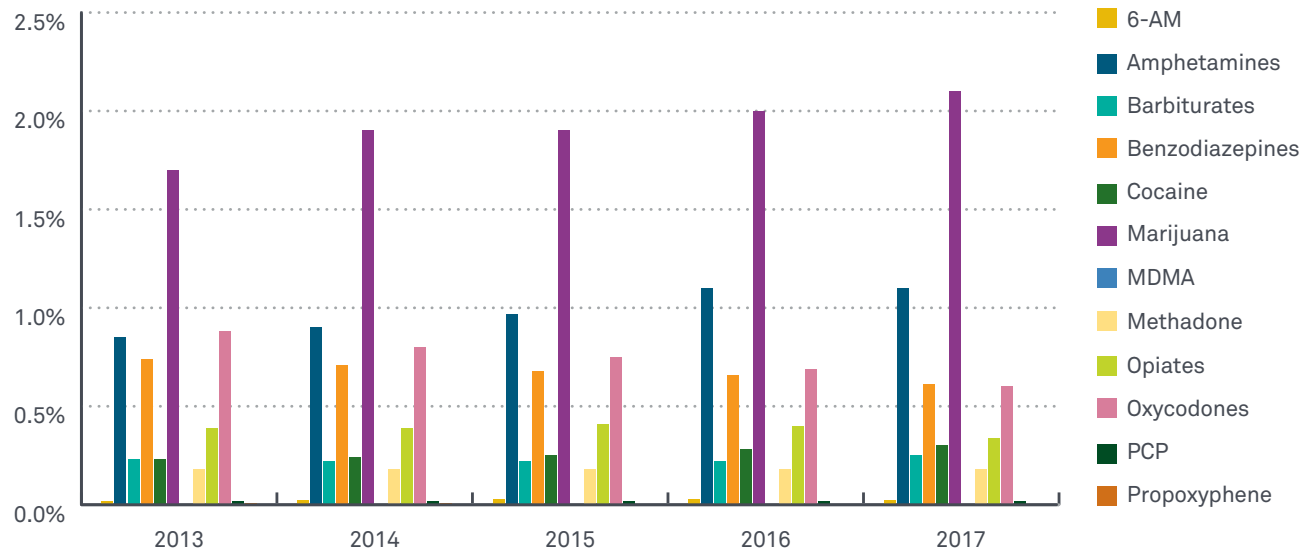
More than 6.2 million tests from January to December 2017

| Drug Category   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------|--------|--------|--------|--------|--------|
| 6-AM            | 0.023% | 0.031% | 0.037% | 0.037% | 0.033% |
| Amphetamines    | 0.97%  | 1.04%  | 1.11%  | 1.20%  | 1.2%   |
| Barbiturates    | 0.23%  | 0.22%  | 0.22%  | 0.22%  | 0.25%  |
| Benzodiazepines | 0.74%  | 0.71%  | 0.68%  | 0.66%  | 0.61%  |
| Cocaine         | 0.22%  | 0.24%  | 0.25%  | 0.28%  | 0.3%   |
| Marijuana       | 2.1%   | 2.4%   | 2.4%   | 2.5%   | 2.6%   |

| Drug Category | 2013   | 2014   | 2015   | 2016   | 2017   |
|---------------|--------|--------|--------|--------|--------|
| MDMA          | 0.002% | 0.003% | 0.005% | 0.004% | 0.005% |
| Methadone     | 0.18%  | 0.18%  | 0.18%  | 0.18%  | 0.18%  |
| Opiates       | 0.46%  | 0.47%  | 0.49%  | 0.47%  | 0.39%  |
| Oxycodones    | 0.88%  | 0.8%   | 0.75%  | 0.69%  | 0.61%  |
| PCP           | 0.01%  | 0.02%  | 0.02%  | 0.01%  | 0.01%  |
| Propoxyphene  | 0.01%  | 0.01%  | 0.000% | 0.000% | 0.000% |

## Positivity Rates by Drug Category

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



More than 10 million tests from January to December 2017

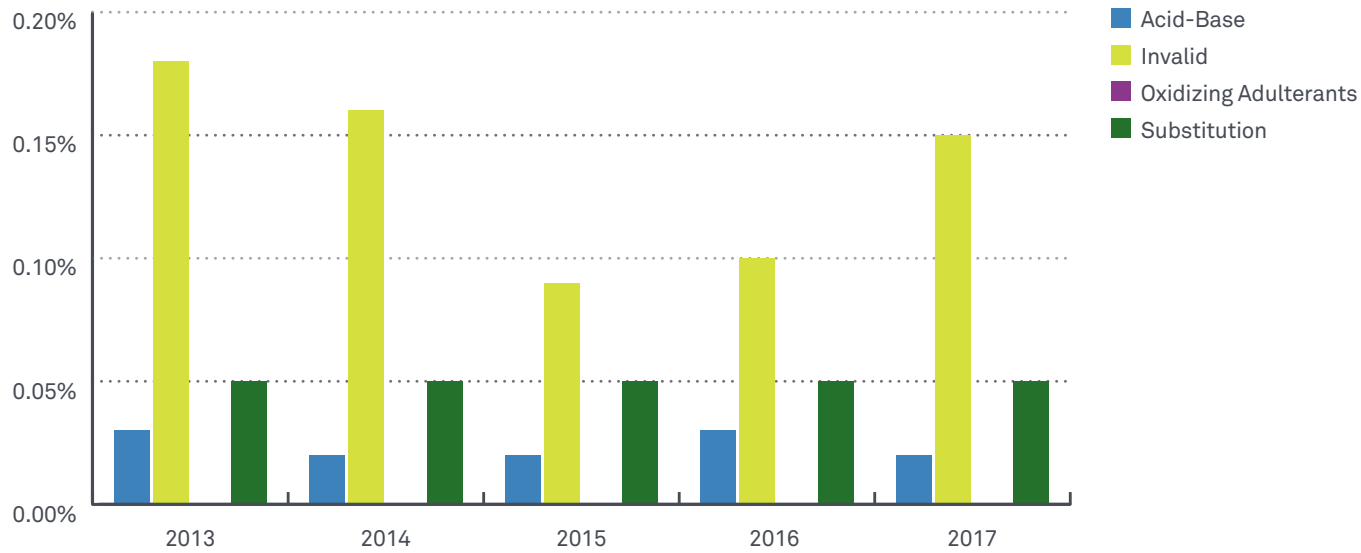
| Drug Category   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------|--------|--------|--------|--------|--------|
| 6-AM            | 0.020% | 0.025% | 0.028% | 0.028% | 0.024% |
| Amphetamines    | 0.85%  | 0.90%  | 0.97%  | 1.10%  | 1.10%  |
| Barbiturates    | 0.23%  | 0.22%  | 0.22%  | 0.22%  | 0.25%  |
| Benzodiazepines | 0.74%  | 0.71%  | 0.68%  | 0.66%  | 0.61%  |
| Cocaine         | 0.23%  | 0.24%  | 0.25%  | 0.28%  | 0.3%   |
| Marijuana       | 1.7%   | 1.9%   | 1.9%   | 2.0%   | 2.1%   |

| Drug Category | 2013   | 2014   | 2015   | 2016   | 2017   |
|---------------|--------|--------|--------|--------|--------|
| MDMA          | 0.003% | 0.004% | 0.005% | 0.004% | 0.005% |
| Methadone     | 0.18%  | 0.18%  | 0.18%  | 0.18%  | 0.18%  |
| Opiates       | 0.39%  | 0.39%  | 0.41%  | 0.4%   | 0.34%  |
| Oxycodones    | 0.88%  | 0.8%   | 0.75%  | 0.69%  | 0.6%   |
| PCP           | 0.02%  | 0.02%  | 0.02%  | 0.02%  | 0.02%  |
| Propoxyphene  | 0.01%  | 0.01%  | 0.000% | 0.000% | 0.000% |



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

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



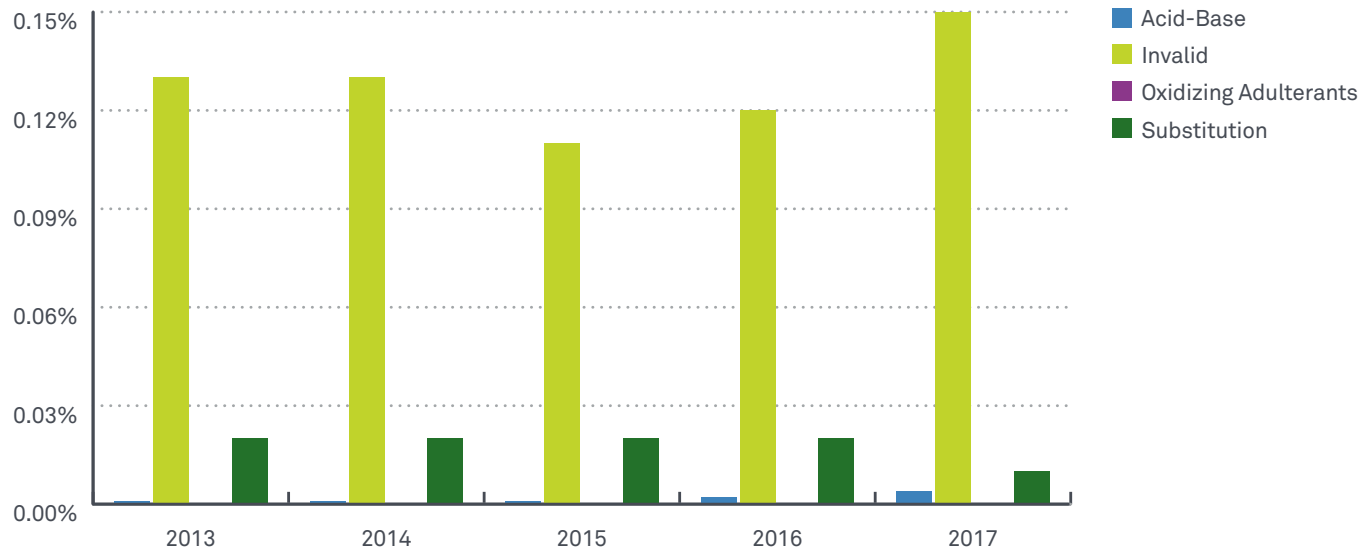
More than 2.2 million tests from January to December 2017

| SVT Category          | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|--------|--------|--------|--------|--------|
| Acid-Base             | 0.03%  | 0.02%  | 0.02%  | 0.03%  | 0.02%  |
| Invalid               | 0.18%  | 0.16%  | 0.09%  | 0.1%   | 0.15%  |
| Oxidizing Adulterants | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| Substitution          | 0.05%  | 0.05%  | 0.05%  | 0.05%  | 0.05%  |

\*Specimen 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

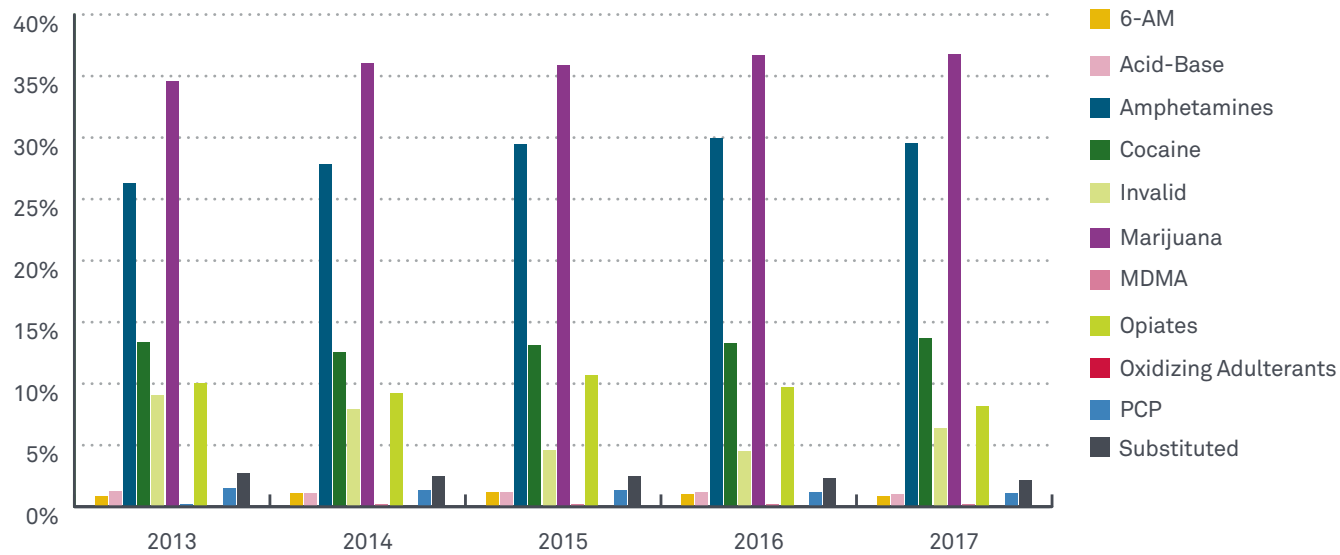


More than 6.2 million tests from January to December 2017

| Drug/SVT Category     | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|--------|--------|--------|--------|--------|
| Acid-Base             | 0.001% | 0.001% | 0.001% | 0.002% | 0.004% |
| Invalid               | 0.13%  | 0.13%  | 0.11%  | 0.12%  | 0.15%  |
| Oxidizing Adulterants | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| Substitution          | 0.02%  | 0.02%  | 0.02%  | 0.02%  | 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



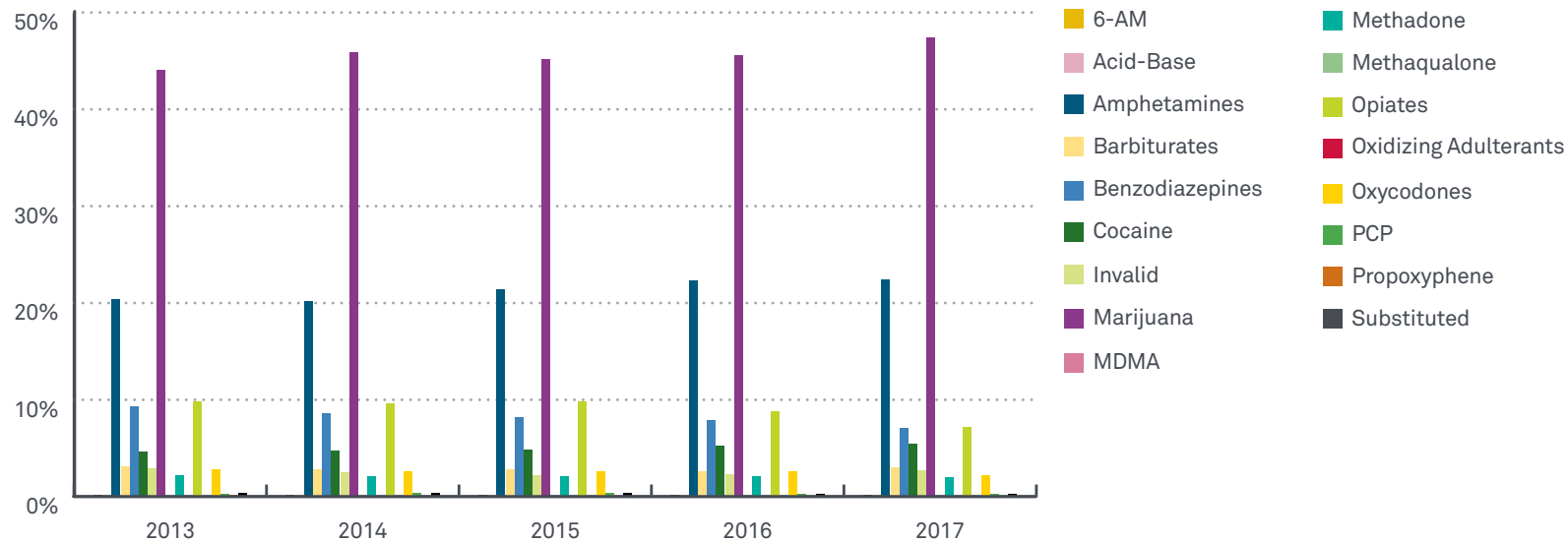
More than 50 thousand non-negative test results from January to December 2017

| Drug/SVT Category | 2013  | 2014   | 2015   | 2016   | 2017   |
|-------------------|-------|--------|--------|--------|--------|
| 6-AM              | 0.87% | 1.12%  | 1.14%  | 0.99%  | 0.82%  |
| Acid-Base         | 1.30% | 1.08%  | 1.14%  | 1.20%  | 1.04%  |
| Amphetamines      | 26.3% | 27.87% | 29.45% | 29.94% | 29.51% |
| Cocaine           | 13.4% | 12.58% | 13.11% | 13.27% | 13.71% |
| Invalid           | 9.1%  | 7.95%  | 4.59%  | 4.49%  | 6.37%  |
| Marijuana         | 34.6% | 36.08% | 35.91% | 36.7%  | 36.8%  |

| Drug/SVT Category     | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|--------|--------|--------|--------|--------|
| MDMA                  | 0.21%  | 0.24%  | 0.24%  | 0.21%  | 0.23%  |
| Opiates               | 10.0%  | 9.24%  | 10.66% | 9.69%  | 8.19%  |
| Oxidizing Adulterants | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| PCP                   | 1.50%  | 1.31%  | 1.31%  | 1.21%  | 1.09%  |
| Substituted           | 2.70%  | 2.51%  | 2.45%  | 2.30%  | 2.15%  |

## Non-Negative Rates by Drug/SVT Category

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



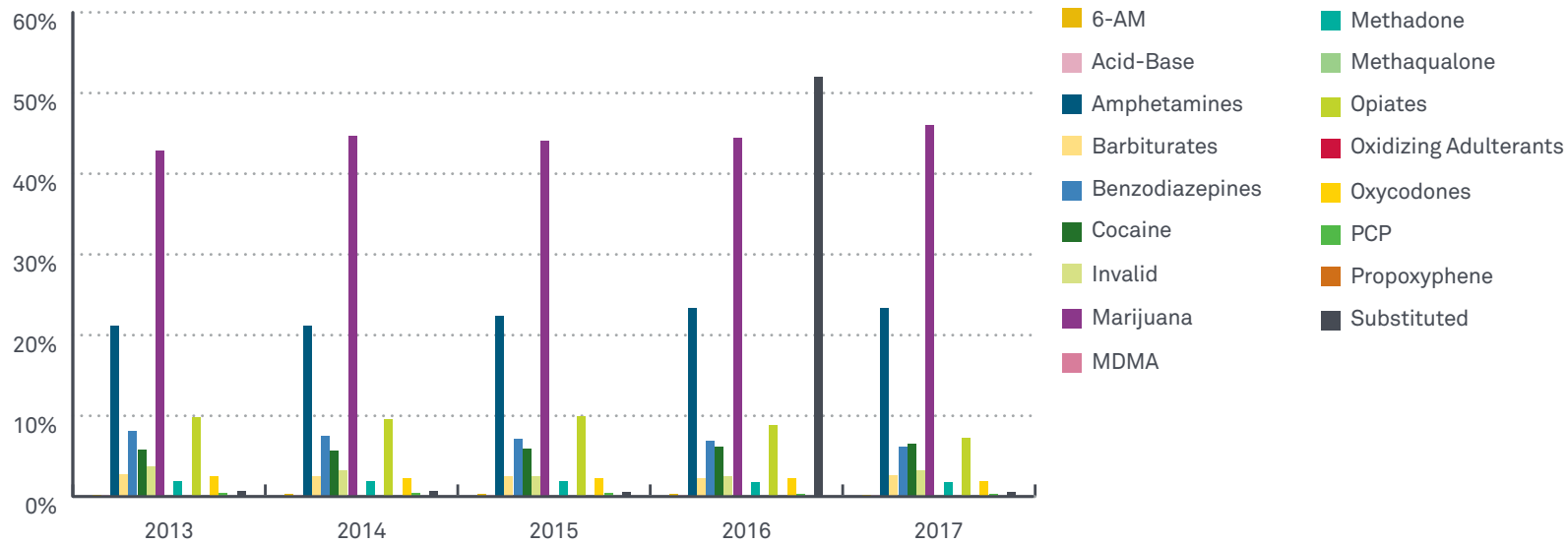
More than 340 thousand non-negative test results from January to December 2017

| Drug/SVT Category | 2013  | 2014   | 2015   | 2016   | 2017   |
|-------------------|-------|--------|--------|--------|--------|
| 6-AM              | 0.11% | 0.14%  | 0.16%  | 0.15%  | 0.12%  |
| Acid-Base         | 0.03% | 0.03%  | 0.03%  | 0.03%  | 0.07%  |
| Amphetamines      | 20.4% | 20.2%  | 21.34% | 22.33% | 22.44% |
| Barbiturates      | 3.10% | 2.84%  | 2.83%  | 2.61%  | 2.96%  |
| Benzodiazepines   | 9.3%  | 8.56%  | 8.21%  | 7.84%  | 7.1%   |
| Cocaine           | 4.60% | 4.70%  | 4.85%  | 5.24%  | 5.45%  |
| Invalid           | 2.90% | 2.53%  | 2.22%  | 2.29%  | 2.69%  |
| Marijuana         | 44.0% | 45.91% | 45.19% | 45.53% | 47.35% |
| MDMA              | 0.01% | 0.02%  | 0.03%  | 0.03%  | 0.03%  |

| Drug/SVT Category     | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|--------|--------|--------|--------|--------|
| Methadone             | 2.20%  | 2.13%  | 2.12%  | 2.05%  | 1.97%  |
| Methaqualone          | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| Opiates               | 9.8%   | 9.63%  | 9.8%   | 8.74%  | 7.16%  |
| Oxidizing Adulterants | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| Oxycodones            | 2.8%   | 2.55%  | 2.57%  | 2.61%  | 2.14%  |
| PCP                   | 0.3%   | 0.36%  | 0.31%  | 0.24%  | 0.24%  |
| Propoxyphene          | 0.11%  | 0.06%  | 0.03%  | 0.02%  | 0.02%  |
| Substituted           | 0.32%  | 0.35%  | 0.32%  | 0.28%  | 0.26%  |

## Non-Negative Rates by Drug/SVT Category

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



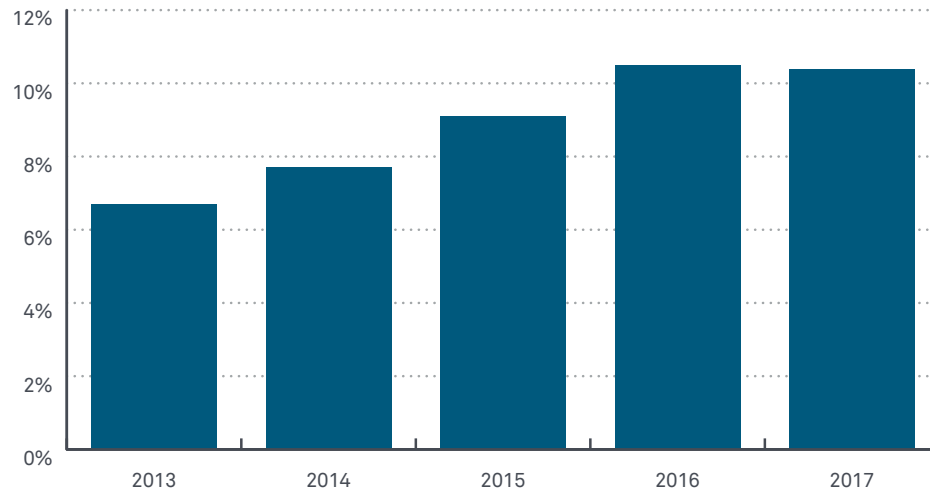
More than 390 thousand non-negative test results from January to December 2017

| Drug/SVT Category | 2013  | 2014   | 2015   | 2016   | 2017   |
|-------------------|-------|--------|--------|--------|--------|
| 6-AM              | 0.2%  | 0.26%  | 0.28%  | 0.25%  | 0.21%  |
| Acid-Base         | 0.19% | 0.16%  | 0.16%  | 0.17%  | 0.2%   |
| Amphetamines      | 21.2% | 21.16% | 22.34% | 23.23% | 23.37% |
| Barbiturates      | 2.7%  | 2.48%  | 2.48%  | 2.3%   | 2.57%  |
| Benzodiazepines   | 8.1%  | 7.48%  | 7.19%  | 6.92%  | 6.16%  |
| Cocaine           | 5.8%  | 5.69%  | 5.87%  | 6.19%  | 6.54%  |
| Invalid           | 3.7%  | 3.21%  | 2.51%  | 2.55%  | 3.18%  |
| Marijuana         | 42.9% | 44.67% | 44.05% | 44.49% | 45.96% |
| MDMA              | 0.04% | 0.05%  | 0.06%  | 0.05%  | 0.06%  |

| Drug/SVT Category     | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|--------|--------|--------|--------|--------|
| Methadone             | 1.9%   | 1.86%  | 1.86%  | 1.81%  | 1.71%  |
| Methaqualone          | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| Opiates               | 9.8%   | 9.59%  | 9.91%  | 8.85%  | 7.29%  |
| Oxidizing Adulterants | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| Oxycodones            | 2.5%   | 2.23%  | 2.25%  | 2.30%  | 1.87%  |
| PCP                   | 0.44%  | 0.48%  | 0.43%  | 0.36%  | 0.35%  |
| Propoxyphene          | 0.1%   | 0.06%  | 0.03%  | 0.02%  | 0.01%  |
| Substituted           | 0.62%  | 0.62%  | 0.58%  | 0.52%  | 0.51%  |

## Positivity Rates by Testing Category

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

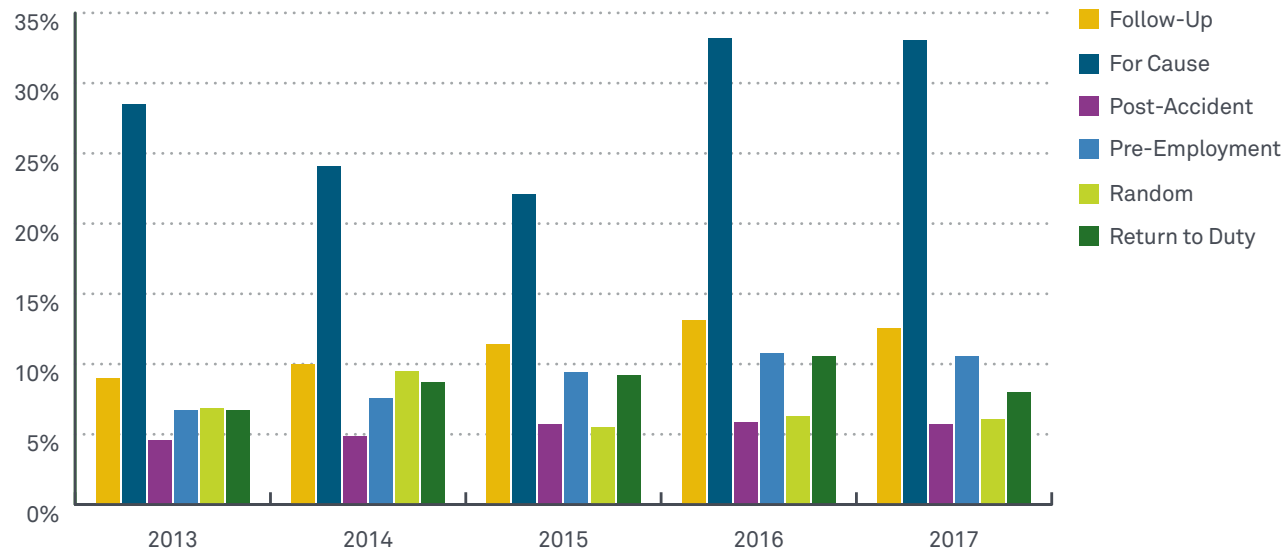


*More than 1.6 million tests from January to December 2017*

| Testing Category       | 2013 | 2014 | 2015 | 2016  | 2017  |
|------------------------|------|------|------|-------|-------|
| General U.S. Workforce | 6.7% | 7.7% | 9.1% | 10.5% | 10.4% |

## Positivity Rates by Testing Reason

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

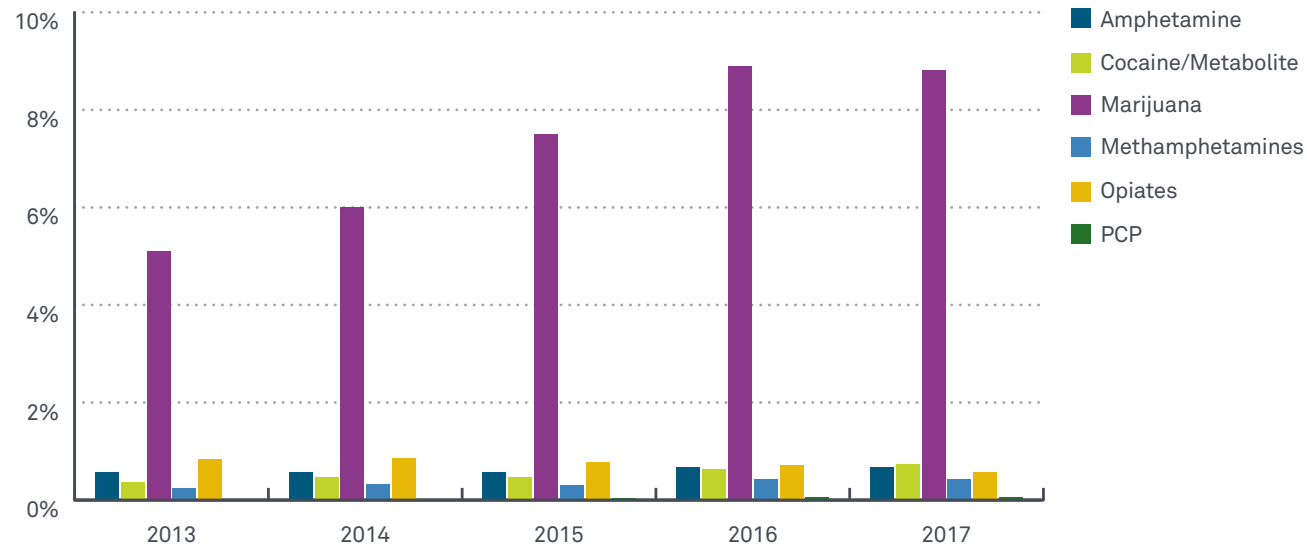


More than 1.6 million tests from January to December 2017

| Testing Reason | 2013  | 2014  | 2015  | 2016  | 2017  |
|----------------|-------|-------|-------|-------|-------|
| Follow-Up      | 9.0%  | 10.0% | 11.4% | 13.1% | 12.6% |
| For Cause      | 28.5% | 24.1% | 22.1% | 33.2% | 33.1% |
| Post-Accident  | 4.6%  | 4.9%  | 5.7%  | 5.9%  | 5.7%  |
| Pre-Employment | 6.7%  | 7.6%  | 9.4%  | 10.8% | 10.6% |
| Random         | 6.9%  | 9.5%  | 5.5%  | 6.3%  | 6.1%  |
| Return to Duty | 6.7%  | 8.7%  | 9.2%  | 10.6% | 8.0%  |

## Positivity Rates by Drug Category

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



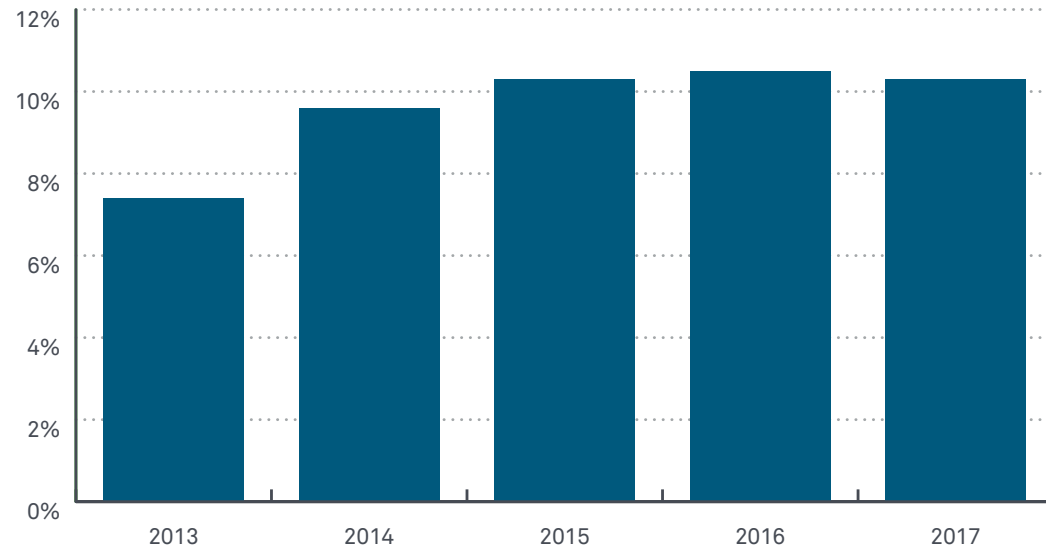
More than 1.6 million tests from January to December 2017

| Drug Category      | 2013  | 2014  | 2015  | 2016  | 2017  |
|--------------------|-------|-------|-------|-------|-------|
| Amphetamine        | 0.57% | 0.57% | 0.56% | 0.66% | 0.66% |
| Cocaine/Metabolite | 0.36% | 0.47% | 0.46% | 0.63% | 0.73% |
| Marijuana          | 5.1%  | 6.0%  | 7.5%  | 8.9%  | 8.8%  |
| Methamphetamines   | 0.24% | 0.33% | 0.29% | 0.42% | 0.43% |
| Opiates            | 0.83% | 0.85% | 0.78% | 0.71% | 0.57% |
| PCP                | 0.02% | 0.02% | 0.04% | 0.05% | 0.06% |



## Positivity Rates by Testing Category

Hair Drug Tests – For General U.S. Workforce

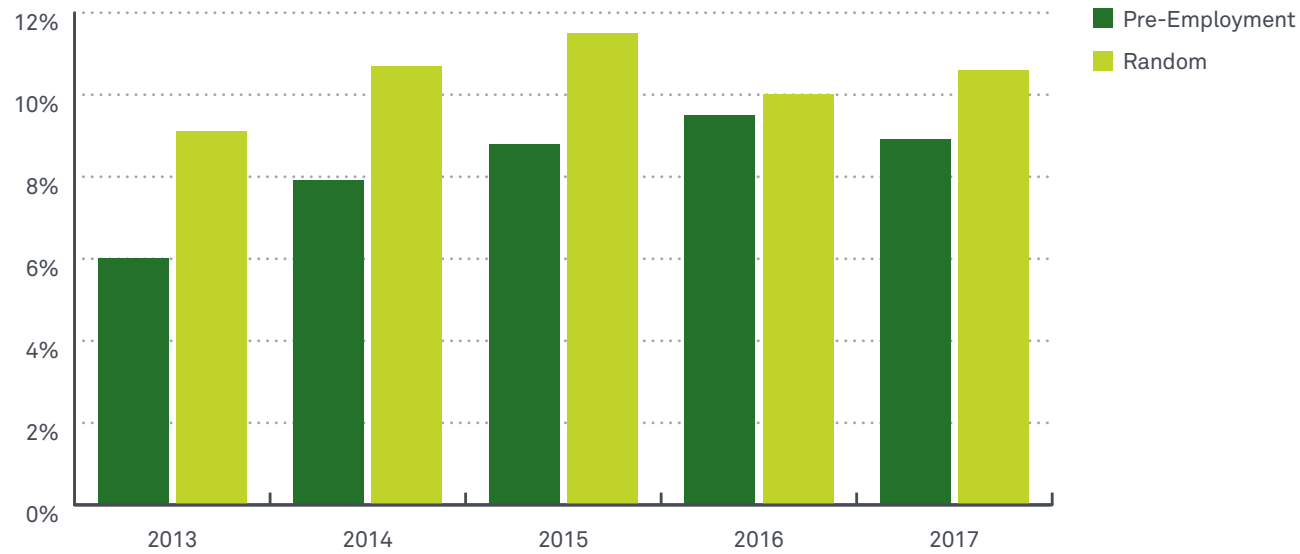


*More than 170 thousand tests from January to December 2017*

| Testing Category       | 2013 | 2014 | 2015  | 2016  | 2017  |
|------------------------|------|------|-------|-------|-------|
| General U.S. Workforce | 7.4% | 9.6% | 10.3% | 10.5% | 10.3% |

## Positivity Rates by Testing Reason

Hair Drug Tests – For General U.S. Workforce

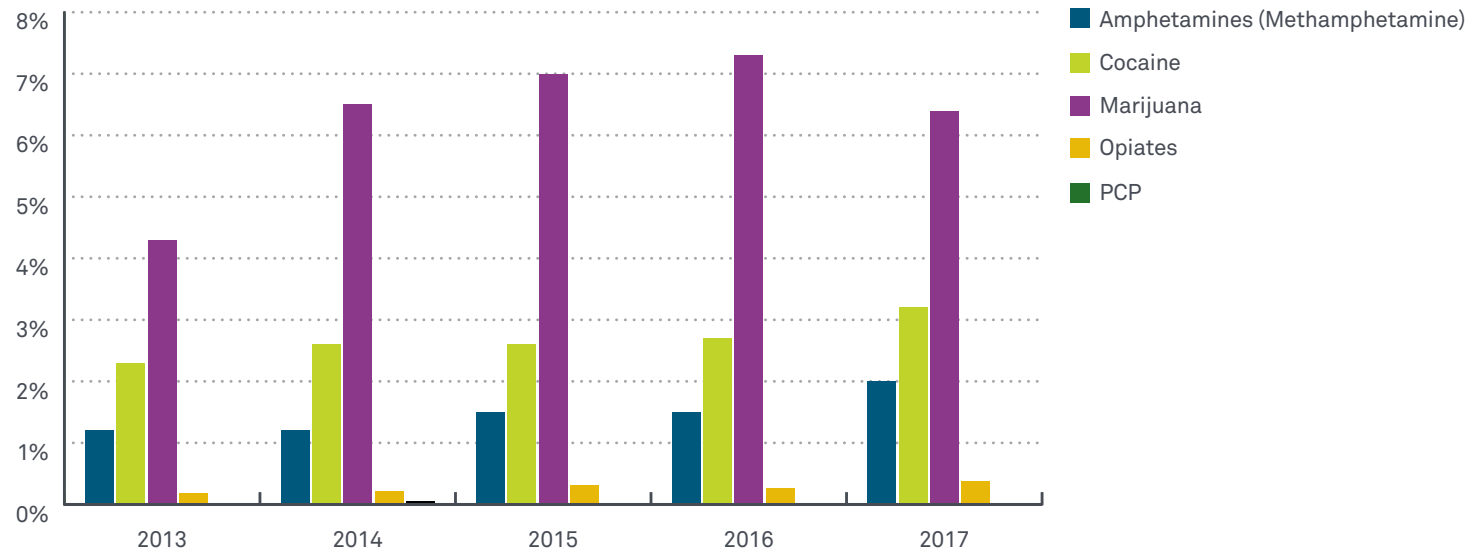


*More than 170 thousand tests from January to December 2017*

| Testing Reason | 2013 | 2014  | 2015  | 2016  | 2017  |
|----------------|------|-------|-------|-------|-------|
| Pre-Employment | 6.0% | 7.9%  | 8.8%  | 9.5%  | 8.9%  |
| Random         | 9.1% | 10.7% | 11.5% | 10.0% | 10.6% |

## Positivity Rates by Drug Category

Hair Drug Tests – For General U.S. Workforce



More than 170 thousand tests from January to December 2017

| Drug Category                  | 2013  | 2014  | 2015  | 2016  | 2017  |
|--------------------------------|-------|-------|-------|-------|-------|
| Amphetamines (Methamphetamine) | 1.2%  | 1.2%  | 1.5%  | 1.5%  | 2.0%  |
| Cocaine                        | 2.3%  | 2.6%  | 2.6%  | 2.7%  | 3.2%  |
| Marijuana                      | 4.3%  | 6.5%  | 7.0%  | 7.3%  | 6.4%  |
| Opiates                        | 0.19% | 0.21% | 0.32% | 0.27% | 0.38% |
| PCP                            | 0.02% | 0.06% | 0.01% | 0.01% | 0.01% |

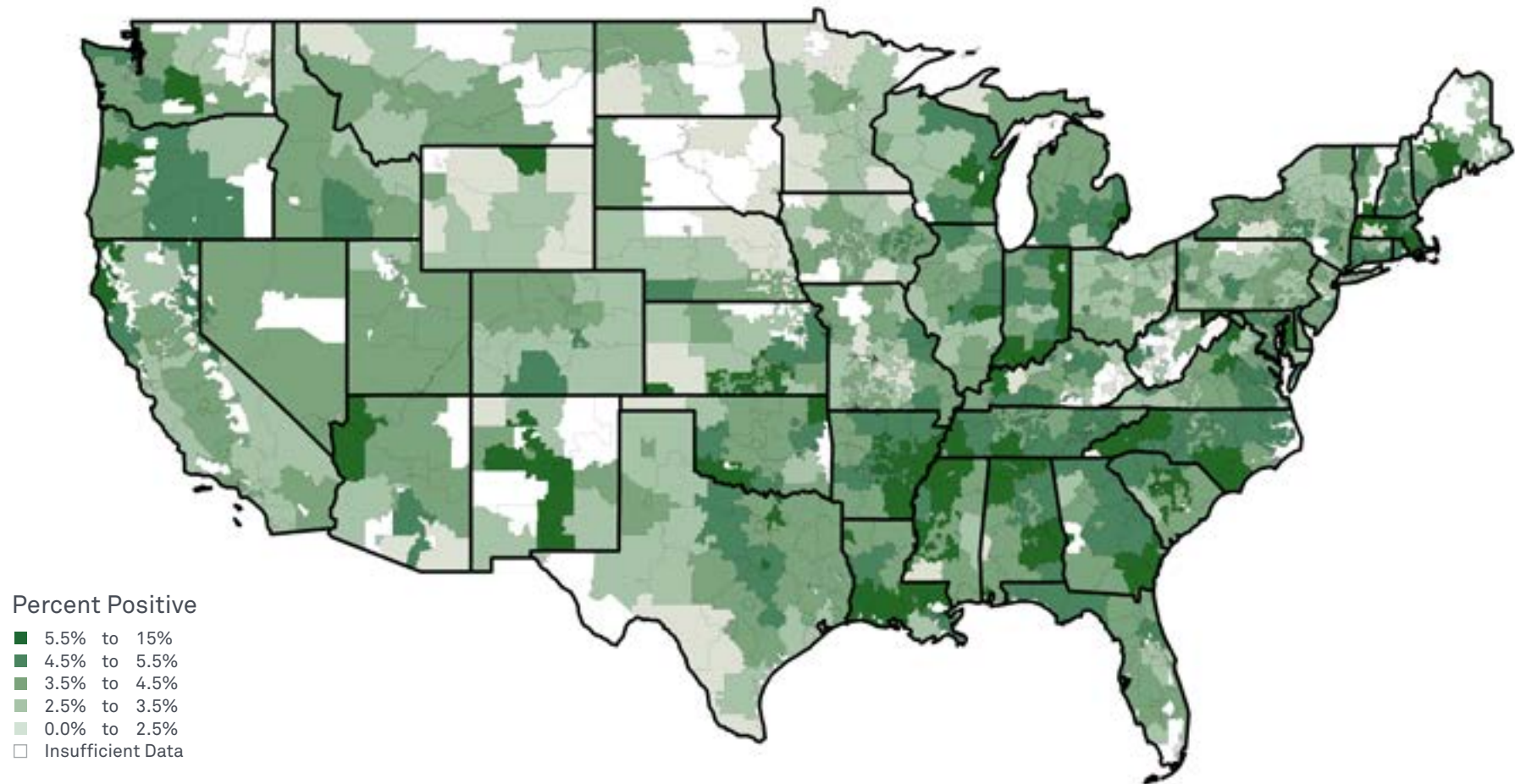
# 3-Digit Zip Code Drug Positivity Maps

## Urine Drug Tests

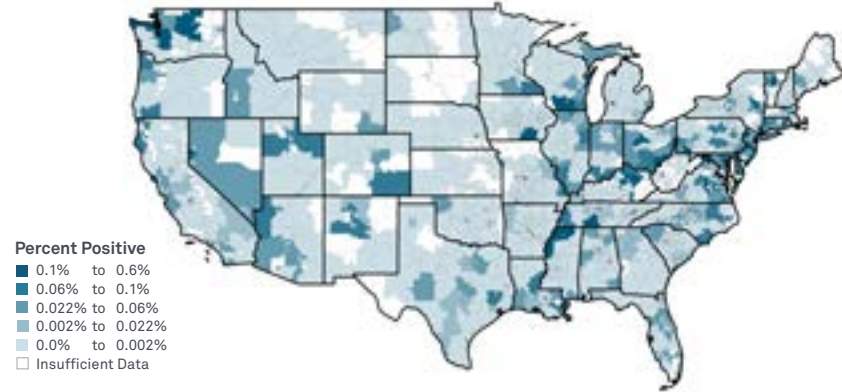
January - December 2017

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

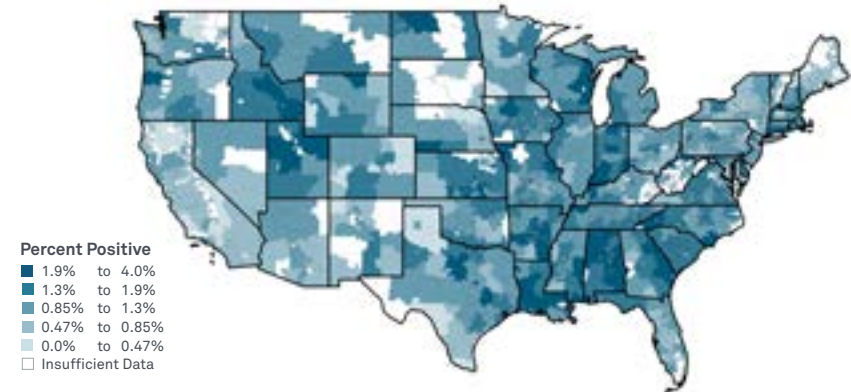
### Overall Positivity



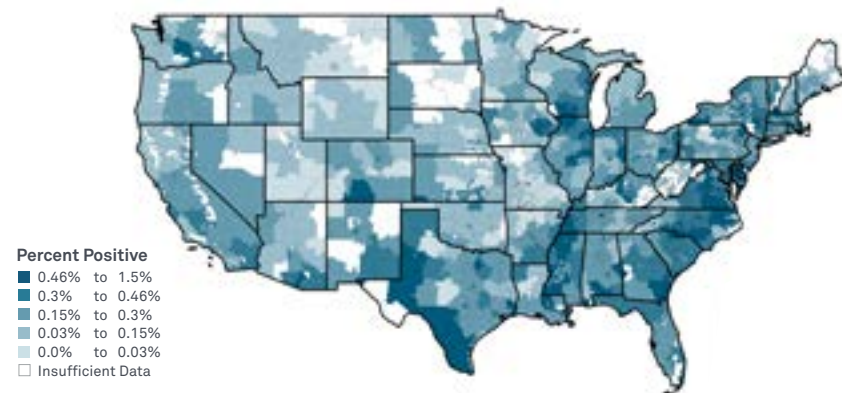
### 6-AM Positivity



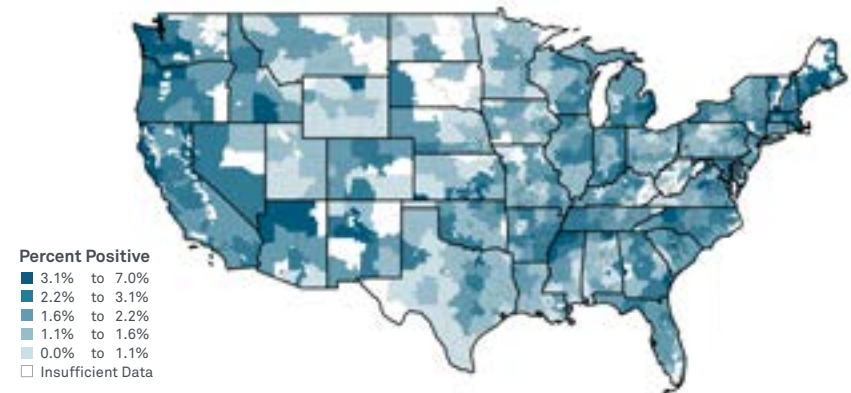
### Amphetamines Positivity



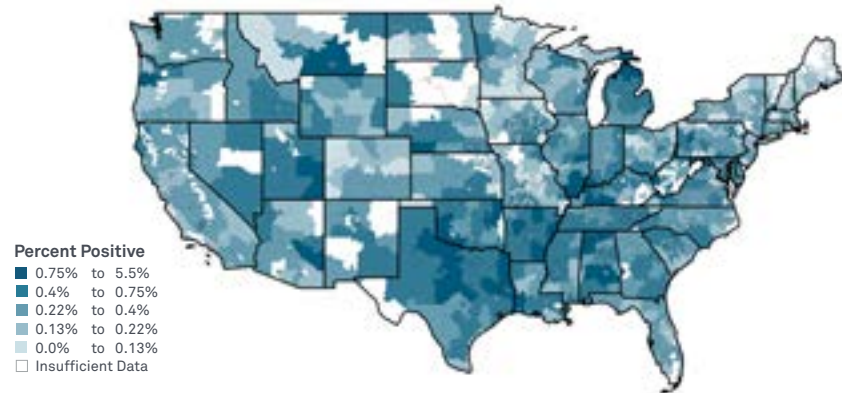
### Cocaine Positivity



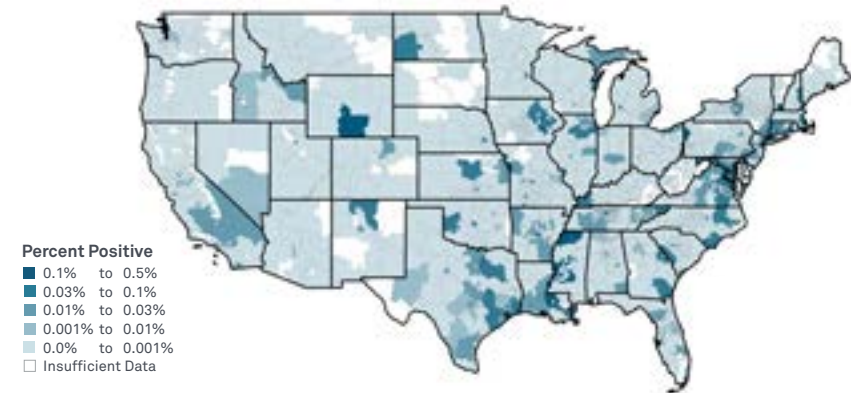
### Marijuana Positivity



### Opiates Positivity



### PCP Positivity



**1988**

13.6%

**January**

The first Quest Diagnostics Drug Testing Index is published

**November**

The Drug-Free Workplace Act is signed into law by President Ronald Reagan on November 18, 1988



Anti-Drug Abuse Act of 1988 is passed

**1990**

11.0%

**January**

**National Collegiate Athletic Association adopts year-round drug testing policy**



**April**

Congress passes the Anabolic Steroids Control Act

**1992**

8.8%

**January**

Drug Testing Index showed 1 of every 6 transportation workers who were tested for reasonable suspicion tested positive



**1994**

7.5%

**January**

**Quest Diagnostics offers hair drug testing**



**September**

Marijuana metabolite screening cutoff is lowered from 100 ng/mL to 50 ng/mL

**December**

Breath alcohol testing added to obtain a commercial driver's license

**1996**

5.8%

**September**

Drug Importer Death Penalty Act is established

**November**

**California legalizes growing and use of marijuana for medical purposes**



**1989**

12.7%

**March**

**Skinner vs. Railway Labor Executives Association upholds the constitutionality of drug testing railroad employees**



**October**

Drug testing policies implemented at major U.S. corporations

**1991**

8.8%

**January**

Congress passes the Omnibus Employee Drug Testing Act



**1993**

8.4%

**November**

Drug-Free Schools and Communities Act Amendment is passed



**1995**

6.7%

**March**

Marijuana remains America's favorite illicit drug

**June**

**Vernonia School District 47J vs. Acton upholds random testing of student athletes**



**1997**

5.0%

**January**

Drug Testing Index enhanced its reporting, allowing for specimen type and regional trends



**Year  
Month**

**Positivity rates**

Annual positivity rates for the combined U.S. workforce

# 30 years of the Quest Diagnostics Drug Testing Index™

**1998**

4.8%

**January**  
Drug Enforcement Administration focuses on drug eradication

**December**  
Opiate cutoff was raised from 300 ng/mL to 2000 ng/mL for fewer positive results reported



**2000**

4.7%

**October**  
Drug Addiction Treatment Act is introduced



**December**  
Transportation workers get greater drug test protection

**2002**

4.4%

**June**  
Drug Testing Index finds workplace drug use decreased after 9/11



**2004**

4.5%

**January**  
Illegal drug use increases to 200 million people worldwide according to the United Nations



**2006**

3.8%

**January**  
Mexican government cracks down on drug trafficking

**March**  
Combat Methamphetamine Epidemic Act is established



**2008**

3.6%

**March**  
Workplace drug use is at its lowest level since 1988



**August**  
U.S. Department of Transportation publishes final rules on specimen validity testing, making it harder to cheat a urine drug test

**1999**

4.6%

**November**  
Michigan begins random drug testing on welfare recipients

World Anti-Doping Agency is established



**2001**

4.6%

**January**  
U.S. Health and Human Services provides regulatory guidance for specimen validity testing



**2003**

4.5%

**January**  
Drug Testing Index finds the incidence of amphetamine positivity has grown by 70% over the past five years



**2005**

4.1%

**May**  
President Bush moves to shut down National Drug Intelligence Center



**2007**

3.8%

**August**  
Drug Testing Index finds cocaine use at a 10-year low among U.S. workers



4.2%

## 2016

### May

The Occupational Safety and Health Administration published a rule about electronic reporting of workplace injuries causing confusion about post-accident testing

### June

**Drug Enforcement Agency alerts the public of threat of heroin in the U.S.**



### August

Marijuana remains a Schedule I controlled substance after two petitions to reschedule the drug are denied

## 2018

### May

Quest Diagnostics Drug Testing Index celebrates its 30th anniversary



3.5%

## 2012

### January

Substance Abuse and Mental Health Services Administration accepts Drug Testing Advisory Board recommendations to add oral fluid and expanded opiate testing to regulated testing

### November

**Colorado and Washington are the first U.S. states to legalize the recreational use of marijuana**



3.9%

## 2014

### February

Drug overdose is the leading cause of accidental death in the U.S.



3.5%

## 2010

### January

**Drug Testing Index shows post-accident tests find opiates up to four times more than pre-employment tests**



### October

Cocaine and amphetamine cutoff changes added to federally-mandated drug testing panel

4.2%

## 2017

### May

Drug Testing Index reports that drug positivity has hit a 12-year high

### October

**Opioid crisis is declared a national public health emergency by the Trump Administration**



4.0%

## 2015

### April

Electronic Custody and Control Form (eCCF) is approved for regulated drug testing



3.7%

## 2013

### August

The Cole Memo states that the Obama Administration will not challenge state marijuana laws as long as states maintain strict rules involving sales and distribution of marijuana



3.5%

## 2011

### January

Quest Diagnostics creates Drug Testing ROI Calculator

### October

**Quest Diagnostics introduces Oral-Eze® Oral Fluid Collection System**



3.6%

## 2009

### October

First large-scale study of same-donor hair and urine results presented by Dr. Barry Sample at the Society of Forensic Toxicologists meeting



3.6%





**Year Anniversary**

**The Quest Diagnostics Drug Testing Index (DTI) has been recognized in the industry as a benchmark for drug testing trends spanning three decades.**

See our 30th anniversary timeline at [QuestDiagnostics.com/DTI](https://www.questdiagnostics.com/DTI).

QuestDiagnostics.com

Quest, Quest Diagnostics, any associated logos, and all associated Quest Diagnostics registered or unregistered trademarks are the property of Quest Diagnostics.  
All third party marks - ® and ™ - are the property of their respective owners. © 2018 Quest Diagnostics Incorporated. All rights reserved. MI7633 05/2018