

WHITE PAPER

Spotlight on National Behavioral Health Trends

A 10-Year Window into Key Mental Health and Substance Abuse Indicators

A FAIR Health White Paper, May 2019



Summary

In the past decade, there has been widespread concern about evidence of a nationwide increase in behavioral health disorders, including both mental health and substance use disorders. At the same time, access to behavioral healthcare may have been increased by the passage of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (Mental Health Parity Act). To shed light on behavioral health trends and patterns in this period, FAIR Health analyzed 2007-2017 data in our database of over 28 billion private healthcare claim records. These are some of the findings, all for the period 2007 to 2017 unless otherwise noted:

- Claim lines with behavioral health diagnoses increased 108 percent, rising from 1.3 percent to 2.7 percent of all medical claim lines.
- In 2007 and 2017, major depressive disorder (MDD) was the most common diagnosis in the distribution of claim lines with mental health diagnoses, but its share of the distribution fell from 28 percent in 2007 to 26 percent in 2017.
- In the same years, claim lines with generalized anxiety disorder (GAD) became much more common, rising from 12 percent to 22 percent of the distribution of mental health claim lines.
- Of mental health diagnoses with over 0.1 percent of all medical claim lines, GAD had the greatest increase in claim lines. GAD increased 217 percent from 0.168 percent to 0.523 percent of all medical claim lines.
- Claim lines for several eating disorders grew, particularly anorexia with an increase of 156 percent, increasing from 0.007 percent to 0.02 percent of all medical claim lines.
- The pediatric population, defined as ages 0-22 to include young adults of college age, was disproportionately represented in the increase in claim lines with mental health diagnoses.
 - For adjustment disorders, claim lines for individuals aged 11-18 rose 54 percent, increasing from 0.57 percent to 0.89 percent of all medical claim lines for this age cohort.
 - The pediatric share of claim lines with MDD increased from 15 percent to 23 percent.
 - Claim lines for individuals aged 19-22 (college age) increased in their share of the pediatric MDD distribution, from 29 percent to 36 percent.
 - For GAD, claim lines for individuals of college age and high school age (14-18) rose by greater percentages than any adult group. Claim lines for college-age individuals increased 441 percent, growing from 0.62 percent to 3.16 percent of all medical claim lines for the age cohort. For high school-age individuals, GAD claim lines increased 389 percent, rising from 0.4 percent to 1.77 percent of all medical claim lines for that age group.
- Claim lines associated with MDD and GAD became more common by comparison to claim lines for all medical diagnoses in most parts of the country, with the exception of the South.
- Opioid dependence overtook alcohol dependence to occupy the largest share of claim lines with substance use disorder diagnoses. Yet, although opioid dependence claim lines increased overall from 2007 to 2017 (1,180 percent, growing from 0.016 percent to 0.252 percent of all medical claim lines), they fell 50 percent from 2015 to 2017 (from 0.479 percent to 0.252 percent of all medical claim lines).
- “Other stimulant dependence” (dependence on stimulants other than cocaine) was the substance use disorder diagnosis with the greatest increase in claim lines from 2007 to 2017 (3,490 percent)—despite constituting a relatively small percentage of all medical claim lines, increasing from 0.001 percent to 0.03 percent of all medical claim lines.
- Individuals 0-18 years of age had a higher share of cannabis abuse claim lines (32 percent) in 2017 than any other age group.
- In the 23-30 age group in 2017, more claim lines for “other stimulant use” were submitted for females (56 percent) than males (44 percent).

Background

There is widespread concern about evidence of a nationwide increase in behavioral health disorders, including both mental health and substance use disorders. According to the Centers for Disease Control

and Prevention, suicide rates rose steadily from 1999 to 2014.¹ A large-scale study based on data from the National Survey on Drug Use and Health concluded that major depression increased in prevalence from 2005 to 2015.² From 2005 to 2014, the total number of hospital stays for mental health/substance use disorders rose 12.2 percent—the only category of hospitalization that increased in that period.³

Young Americans are bearing much of the burden of the increase in mental health disorders. While major depression prevalence increased overall from 2005 to 2015, the rate of increase was faster in youth.⁴ Children’s hospital encounters for suicidal ideation or suicide attempts more than doubled as a percentage of all encounters at these facilities from 2008 to 2015.⁵ The rate of mental health treatment among college students increased from 19 percent in 2007 to 34 percent in 2017.⁶ From 2011 to 2015, psychiatric emergency department visits among Americans aged 6 to 24 increased 28 percent.⁷ More US adolescents and young adults in the late 2010s, as compared to the mid-2000s, had serious psychological distress, depression and suicidal ideation, and more attempted or completed suicide—trends found to be weaker among adults aged 26 and older.⁸

Substance use disorders also have been increasing. From 2002 to 2013, past-month illicit drug use rose from 8.3 percent to 9.4 percent of the population.⁹ More than 72,000 Americans died from drug overdoses in 2017, double the number a decade earlier.¹⁰ The deaths included those related to illicit drugs and prescription opioids. FAIR Health has investigated different aspects of the national opioid crisis and published the results in four previous white papers.^{11,12,13,14}

¹ Sally C. Curtin, Margaret Warner and Holly Hedegaard, *Increase in Suicide in the United States, 1999-2014*, NCHS Data Brief, no. 241 (Hyattsville, MD: National Center for Health Statistics, 2016), <https://www.cdc.gov/nchs/products/databriefs/db241.htm>.

² Andrea H. Weinberger et al., “Trends in Depression Prevalence in the USA from 2005 to 2015: Widening Disparities in Vulnerable Groups,” *Psychol Med* 48, no. 8 (2018): 1308-15, <https://doi.org/10.1017/S0033291717002781>.

³ Kimberly W. McDermott, Anne Elixhauser and Ruirui Sun, *Trends in Hospital Inpatient Stays in the United States, 2005-2014*, Healthcare Cost and Utilization Project Statistical Brief, no. 225 (Rockville, MD: Agency for Healthcare Research and Quality, 2017), <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb225-Inpatient-US-Stays-Trends.pdf>.

⁴ Weinberger, “Trends in Depression Prevalence.”

⁵ Gregory Plemmons et al., “Hospitalization for Suicide Ideation or Attempt: 2008-2015,” *Pediatrics* 141, no. 6 (2018), <https://doi.org/10.1542/peds.2017-2426>.

⁶ Sarah Ketchen Lipson, Emily G. Lattie and Daniel Eisenberg, “Increased Rates of Mental Health Service Utilization by U.S. College Students: 10-Year Population-Level Trends (2007-2017),” *Psychiatr Serv* (November 5, 2018), <https://doi.org/10.1176/appi.ps.201800332>.

⁷ Luther G. Kalb et al., “Trends in Psychiatric Emergency Department Visits among Youth and Young Adults in the US,” *Pediatrics* 143, no. 4 (2019), <https://doi.org/10.1542/peds.2018-2192>.

⁸ Jean M. Twenge et al., “Age, Period, and Cohort Trends in Mood Disorder Indicators and Suicide-Related Outcomes in a Nationally Representative Dataset, 2005–2017,” *J Abnorm Psychol* 128, no. 3 (2019): 185-99, <https://doi.org/10.1037/abn0000410>.

⁹ “DrugFacts—Nationwide Trends,” National Institute on Drug Abuse, revised June 2015, <https://www.drugabuse.gov/publications/drugfacts/nationwide-trends>.

¹⁰ “Overdose Death Rates,” National Institute on Drug Abuse, revised August 2018, <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>.

¹¹ FAIR Health, *Opioid Abuse and Dependence: A National Tapestry of Care and Cost with a State-by-State Analysis*, A FAIR Health White Paper, August 2018, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/Opioid%20Abuse%20and%20Dependence%20-%20A%20FAIR%20Health%20White%20Paper%20August%202018.pdf>.

¹² FAIR Health, *Peeling Back the Curtain on Regional Variation in the Opioid Crisis: Spotlight on Five Key Urban Centers and Their Respective States*, A FAIR Health White Paper, June 2017, https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20White%20Paper%20-%20Peeling%20Back%20the%20Curtain%20on%20Regional_Variation%20in%20the%20Opioid%20Crisis%20-%20June%202017-5972405d4efee.pdf.

¹³ FAIR Health, *The Impact of the Opioid Crisis on the Healthcare System: A Study of Privately Billed Services*, A FAIR Health White Paper, September 2016, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20White%20Paper%20-%20The%20Impact%20of%20the%20Opioid%20Crisis%20on%20the%20Healthcare%20System%20-%20Sept%202016-5972407510d1f.pdf>.

¹⁴ FAIR Health, *The Opioid Crisis among the Privately Insured: The Opioid Abuse Epidemic as Documented in Private Claims Data*, A FAIR Health White Paper, July 2016,

Part of the increase in behavioral health diagnoses may stem from increased access to mental health services since the passage of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (Mental Health Parity Act).¹⁵ Before passage of the Mental Health Parity Act, many insurance plans covered behavioral health treatment at lower levels than nonbehavioral care, for example, by requiring higher cost sharing or limiting treatment to a specific number of days or visits. After passage of the Mental Health Parity Act, a plan's coverage for behavioral health treatment was required to be at parity with its coverage for medical-surgical treatment.¹⁶ Originally the Mental Health Parity Act applied only to larger employer-sponsored group health plans. In 2010 it was amended by the Affordable Care Act (ACA) to apply also to new small group and individual plans.¹⁷ Plans subject to the ACA are required to cover essential health benefits, which that law defined to include behavioral health.

Similarly, the disproportionate increase in behavioral health diagnoses for young adults may in part be due to the ACA policy, implemented in 2010, of enabling young people to remain as dependents on their parents' private insurance until age 26. In a study using data from two nationally representative surveys, in the first year after the policy's implementation, the chance of having private coverage increased by 5.1 percentage points more for those aged 19-25 than for a control group of those aged 26-34.¹⁸

There has not been a comprehensive analysis of behavioral health services across the country in the period prior to and since the passage of the Mental Health Parity Act. With this white paper, FAIR Health, a national, independent, nonprofit organization dedicated to bringing transparency to healthcare costs and health insurance information, helps fill that gap. By studying 2007-2017 data in our database of more than 28 billion privately billed healthcare claim records dating back to 2002—the largest such repository in the country—FAIR Health has been able to analyze national trends and patterns in both mental health and substance use disorders. This study includes overall utilization of behavioral health services, prevalence of diagnoses, demographic distribution (by age and gender) and state-by-state geographic patterns.

Methodology

Using the International Classification of Diseases (ICD-9-CM and ICD-10-CM) diagnostic codes reported on claims in the FAIR Health dataset, FAIR Health examined claims that were indicative of a mental health condition (e.g., ICD-9-CM 296.20, major depressive disorder, single episode, unspecified, and ICD-10-CM F50.00, anorexia nervosa, unspecified) or substance use, abuse or dependence (e.g., ICD-9-CM 305.60, cocaine abuse, unspecified, and ICD-10-CM F12.20, cannabis dependence, uncomplicated).

Data were then evaluated by stratifying them by gender, age, type of mental health or substance-related condition and the state in which the service was performed. FAIR Health also analyzed the changes in geographic regions over time to identify increases and/or decreases of various conditions in particular regions.

<https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20White%20Paper%20-%20The%20Opioid%20Crisis%20among%20the%20Privately%20Insured%20-%20July%202016-5972409963cf3.pdf>.

¹⁵ Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008, § 512, Public Law No. 110-343, <https://www.congress.gov/110/plaws/publ343/PLAW-110publ343.pdf>.

¹⁶ Amber Gayle Thalmayer et al., "The Mental Health Parity and Addiction Equity Act (MHPAEA) Evaluation Study: Impact on Quantitative Treatment Limits," *Psychiatr Serv* 68, no. 5 (2016): 435-42, <https://doi.org/10.1176/appi.ps.201600110>.

¹⁷ "The Mental Health Parity and Addiction Equity Act (MHPAEA)," Center for Consumer Information & Insurance Oversight, Centers for Medicare & Medicaid Services, accessed January 25, 2019, https://www.cms.gov/ccio/programs-and-initiatives/other-insurance-protections/mhpaea_factsheet.html.

¹⁸ Benjamin D. Sommers et al., 2013, "The Affordable Care Act Has Led to Significant Gains in Health Insurance and Access to Care for Young Adults," *Health Affairs* 32, no. 1 (2013): 165-74 <https://www.healthaffairs.org/doi/10.1377/hlthaff.2012.0552>.

In the graphical representations below, the term “claim lines” refers to the individual procedures or services listed on an insurance claim. A single claim for one patient may have multiple claim lines. “Percent of claim lines” is the percentage of all claim lines associated with a given grouping of diagnosis codes in the specified time period. Some graphs present “Percent of all medical claim lines.” In this case, the number of claim lines for the cohort of diagnoses being evaluated is presented as a percentage of all claim lines within our database that are designated as medical claim lines (not including dental or pharmacy claim lines).

“Mental health” in this paper refers to behavioral health diagnoses not related to substance use disorders. “Substance use disorders” includes diagnoses of substance use, abuse and dependence.

All information is based on data in the FAIR Health repository, which includes claim records contributed by payors and administrators who insure or process claims for private insurance plans covering more than 150 million individuals.

Limitations

The FAIR Health data repository used in this study includes only private insurance claim records, and therefore may not be generalizable to the uninsured or those with public insurance such as Medicaid or traditional Medicare. The database does, however, include data on Medicare Advantage enrollees.

FAIR Health does not obtain data from all private payors or third-party administrators but only those who voluntarily contribute data. However, FAIR Health data represent approximately 75 percent of the privately insured US market. As part of the requirements for being certified as a Qualified Entity by the Centers for Medicare & Medicaid Services (CMS), FAIR Health demonstrated to CMS that FAIR Health’s private claims data were representative of the populations in each of the 50 states and the District of Columbia.

The number of claim lines in FAIR Health’s database fluctuates over time due to natural changes within plan data, such as the closing of a major retailer and the loss of those members, or the addition of a major employer to a plan from which FAIR Health receives data, which would create a net influx of data from those members. To normalize the data and avoid such fluctuations, FAIR Health calculates each data point in a trend chart as a percentage of the total number of medical claim lines rather than as a raw number of claim lines.

Overview of Behavioral Health

Claim lines with behavioral health diagnoses increased 108 percent from 2007 to 2017, going from 1.3 percent to 2.7 percent of all medical claim lines (figure 1). Mental health diagnoses, as a component of behavioral health diagnoses, increased 86 percent, rising from 1.2 percent to 2.3 percent of all medical claim lines. Substance abuse and dependence increased 405 percent, changing from 0.1 percent to 0.5 percent of all medical claim lines.

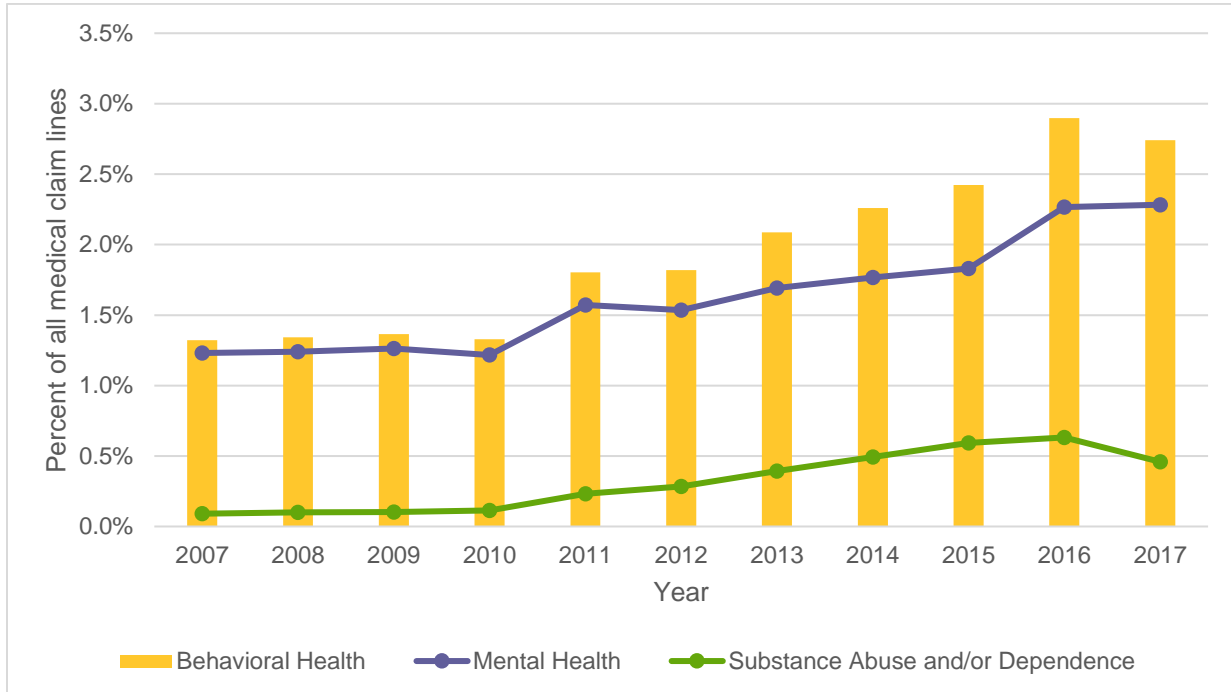


Figure 1. Claim lines with behavioral health diagnoses, by mental health, substance abuse and/or dependence and total behavioral health, as a percentage of all medical claim lines, 2007-2017

Mental Health

Major depressive disorder (MDD) was the most common diagnosis in the distribution of claim lines with mental health diagnoses in both 2007 and 2017, though its share of the total distribution fell in 2017 (figure 2). Claim lines associated with MDD represented 28 percent of mental health claim lines in 2007 and declined to 26 percent in 2017. In the same years, claim lines with generalized anxiety disorder (GAD) became much more common, rising from 12 percent to 22 percent of claim lines. This may reflect a national trend toward growing anxiety seen in other research. A national poll by the American Psychiatric Association indicated that self-reported anxiety levels rose from 2017 to 2018, a five-point increase to an “anxiety score” of 51 on a scale of 0-100.¹⁹

Claim lines associated with attention-deficit/hyperactivity disorder (ADHD) also increased in their share of the distribution of claim lines with mental health diagnoses, from seven percent in 2007 to nine percent in 2017.

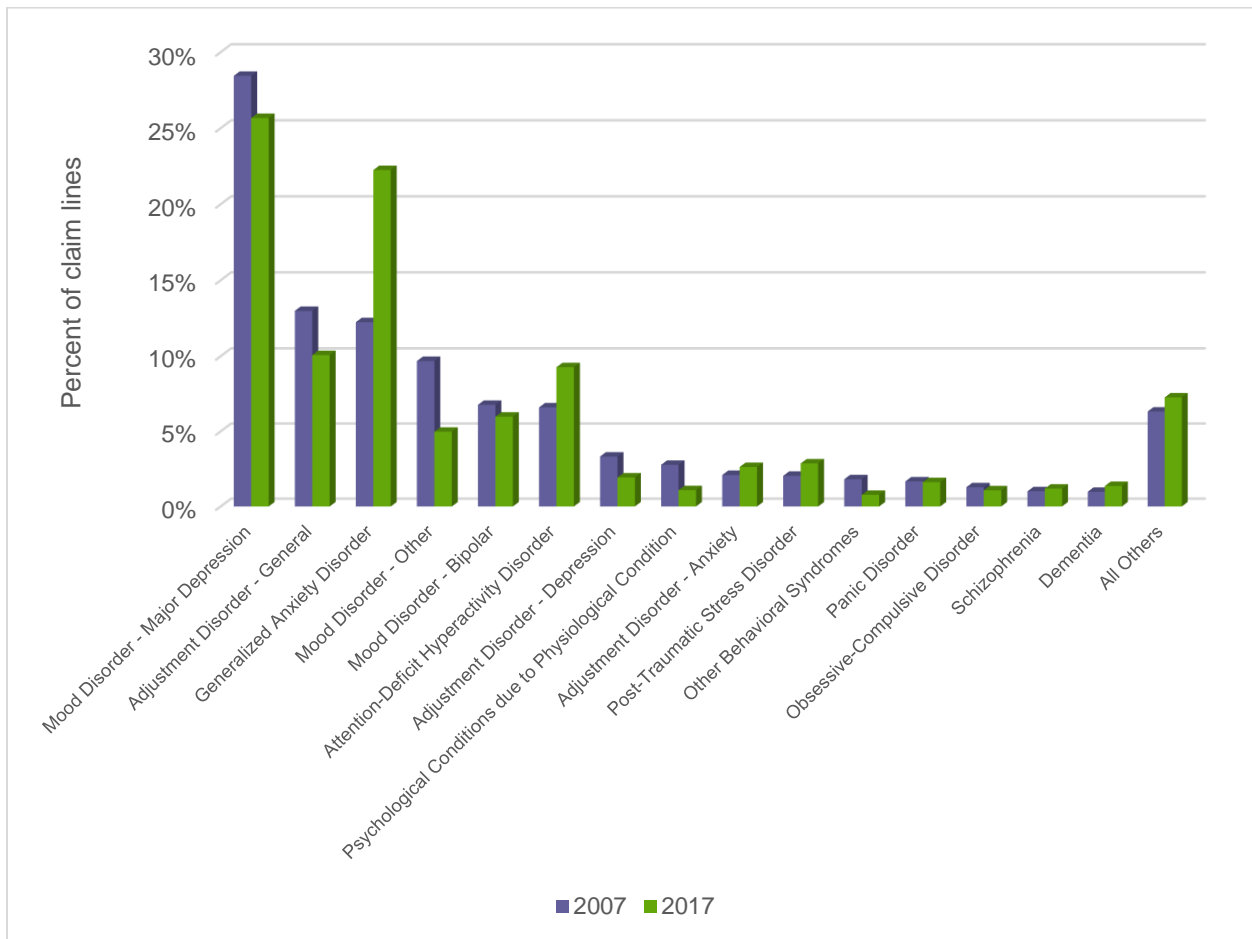


Figure 2. Distribution of claim lines with mental health diagnoses, 2007 and 2017

¹⁹ “Americans Say They Are More Anxious Than a Year Ago; Baby Boomers Report Greatest Increase in Anxiety,” American Psychiatric Association, May 7, 2018, <https://www.psychiatry.org/newsroom/news-releases/americans-say-they-are-more-anxious-than-a-year-ago-baby-boomers-report-greatest-increase-in-anxiety>.

Of mental health diagnoses with over 0.1 percent of all medical claim lines, generalized anxiety disorder had the greatest increase in claim lines from 2007 to 2017 (figure 3). GAD increased 217 percent from 0.168 percent of all medical claim lines in 2007 to 0.523 percent of all medical claim lines in 2017. Attention-deficit/hyperactivity disorder had the second greatest increase in this category of mental health diagnoses, increasing 151 percent from 0.09 percent to 0.22 percent of all medical claim lines.

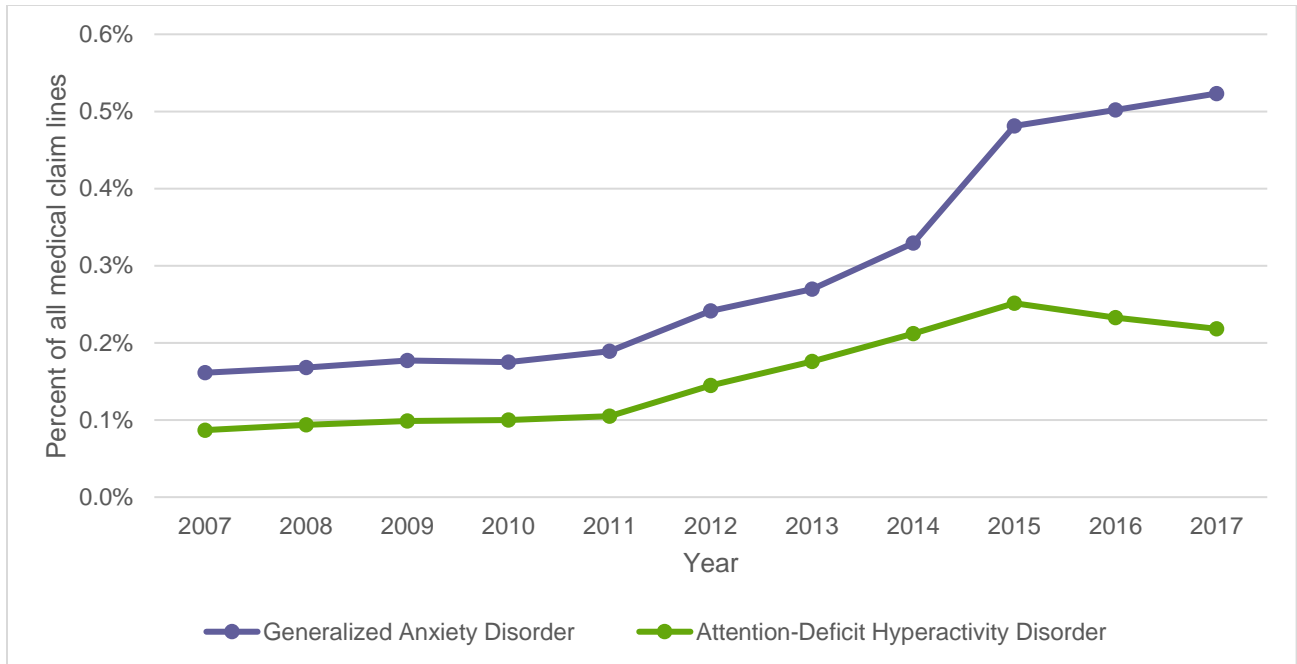


Figure 3. Mental health diagnoses with over 0.1 percent of all medical claim lines and the greatest increase in claim lines, 2007-2017

Of mental health diagnoses with less than 0.1 percent of all medical claim lines, those with the greatest increase in claim lines from 2007 to 2017 are shown in figure 4. Of those diagnoses with such an increase, post-traumatic stress disorder represented the largest share of medical claim lines. It rose 151 percent from 0.027 percent of all medical claim lines in 2007 to 0.067 percent of all medical claim lines in 2017.

Although representing a smaller share of medical claim lines, borderline personality disorder, with an increase of 372 percent, showed the greatest growth in claim lines for all mental health diagnoses from 2007 to 2017. It rose from 0.001 percent to 0.004 percent of all medical claim lines in that period. Claim lines for “mood disorder–manic,” had the second greatest growth, increasing 256 percent in the same period (from 0.0005 percent to 0.002 percent), followed by conduct disorders (223 percent), which rose from 0.005 percent to 0.018 percent of all medical claim lines.

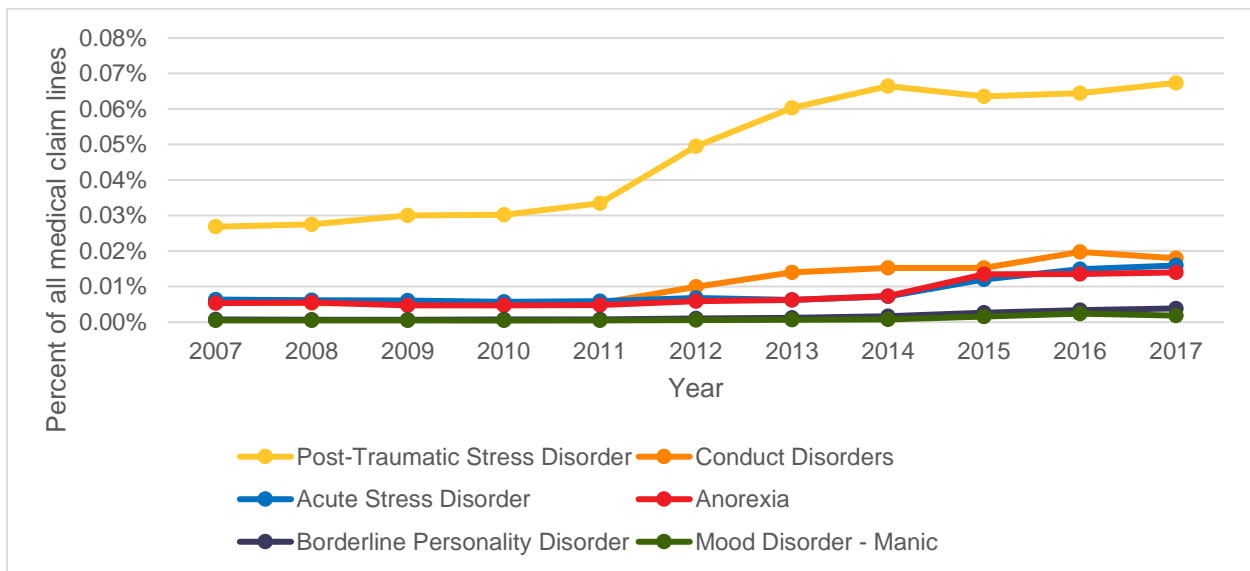


Figure 4. Mental health diagnoses with less than 0.1 percent of all medical claim lines and the greatest increase in claim lines, 2007-2017

Claim lines for several eating disorder diagnoses grew from 2007 to 2017 (figure 5). Anorexia topped the list with an increase of 156 percent, growing from 0.007 percent to 0.02 percent of all medical claim lines. The category of “eating disorder–other” saw a 92 percent increase, rising from 0.008 percent to 0.018 percent of all medical claim lines. This category includes diagnoses such as binge-eating disorder and avoidant/restrictive food intake disorder. The percentage of claim lines for bulimia remained relatively steady over time.

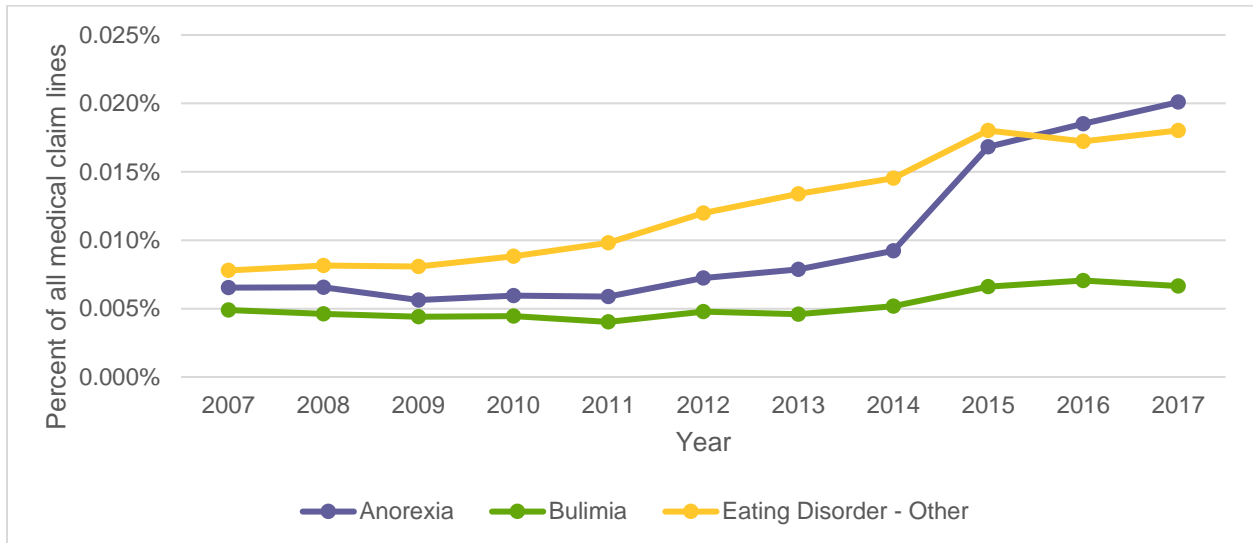


Figure 5. Claim lines with eating disorder diagnoses as a percentage of all medical claim lines, 2007-2017

Age-Related Findings

The pediatric population (which, in this study, is defined as ages 0-22, to include young adults of college age) was disproportionately represented in the increase in claim lines with mental health disorders from 2007 to 2017.

Adjustment Disorders

From 2007 to 2017, claim lines with adjustment disorders, which are emotional or behavioral disturbances induced by stress,²⁰ increased 78 percent for young adults (ages 19-30)—more than for any other age group—rising from 0.35 percent to 0.62 percent of all medical claim lines for this age group (figure 6). Claim lines for this age group increased steadily since 2013, with an 18 percent increase from 2015 to 2017. Growth of behavioral health diagnoses in this age group may have been affected by ACA expansion of dependent coverage to young adults.

Claim lines for adjustment disorders for individuals over age 60 also rose, showing growth of 70 percent from 2007 to 2017, increasing from 0.07 percent to 0.12 percent of all medical claim lines associated with this age group, with a decrease of 2 percent from 2015 to 2017.

For middle school- and high school-age individuals (ages 11-18), claim lines for adjustment disorders rose 54 percent from 2007 to 2017, increasing from 0.57 percent to 0.89 percent of all medical claim lines for this age cohort.

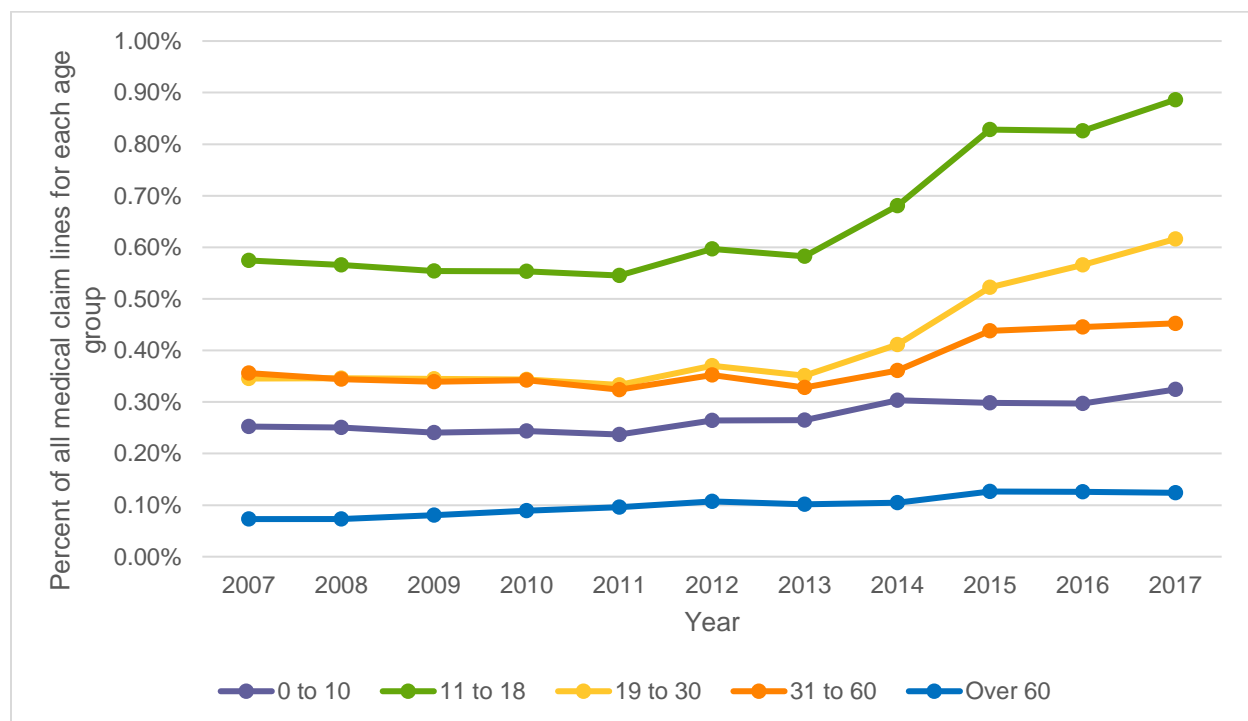


Figure 6. Claim lines with adjustment disorder diagnoses as a percentage of all medical claim lines by age group, 2007-2017

²⁰ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition: DSM-5* (Arlington, VA: American Psychiatric Association, 2013), 286.

Major Depressive Disorder

In 2007, claim lines associated with an adult diagnosis of MDD were highest for individuals in the 41-50 age group, who accounted for 28 percent of the adult total (figure 7). In 2017, the age-related distribution changed: The percentage of claim lines associated with the 41-50 age group fell to 22 percent and the percentage associated with the 23-30 age group rose from 13 percent to 18 percent. Claim lines for those over 70 remained constant. The change in MDD-related age distribution occurred even though the underlying age distribution over this time period in FAIR Health data remained stable, with little to no statistically significant variation.

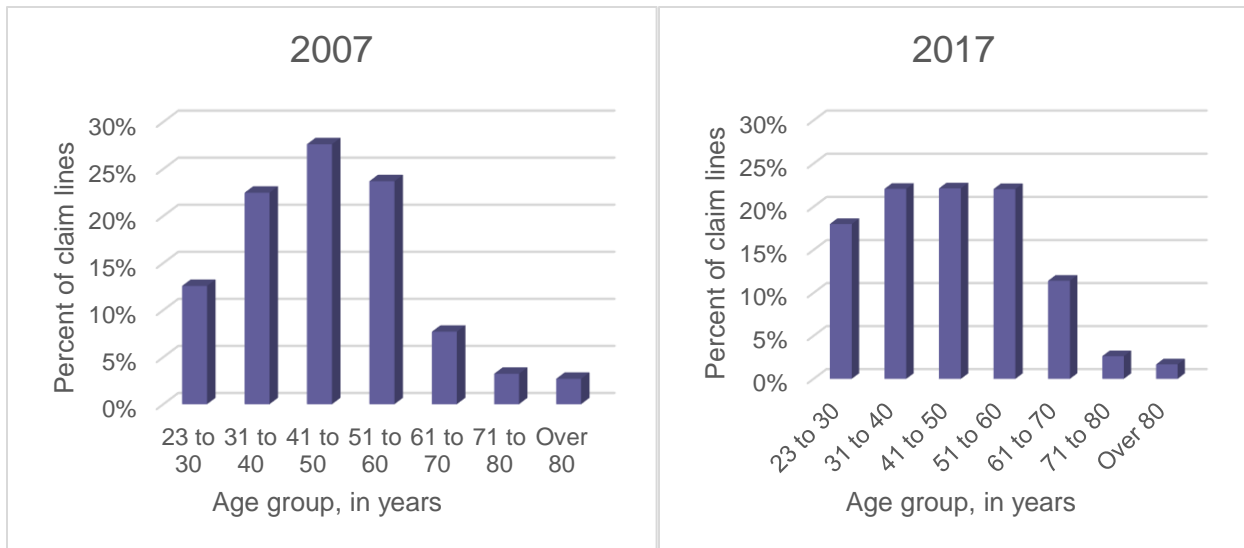


Figure 7. Distribution of claim lines with major depressive disorder diagnoses by adult age group, 2007 and 2017

The pediatric share of the distribution of claim lines with MDD increased sizably from 2007 to 2017 (figure 8). In 2007, only 15 percent of claim lines associated with MDD were for pediatric individuals 22 years and under. In 2017, claim lines for pediatric individuals had increased to 23 percent of the total.

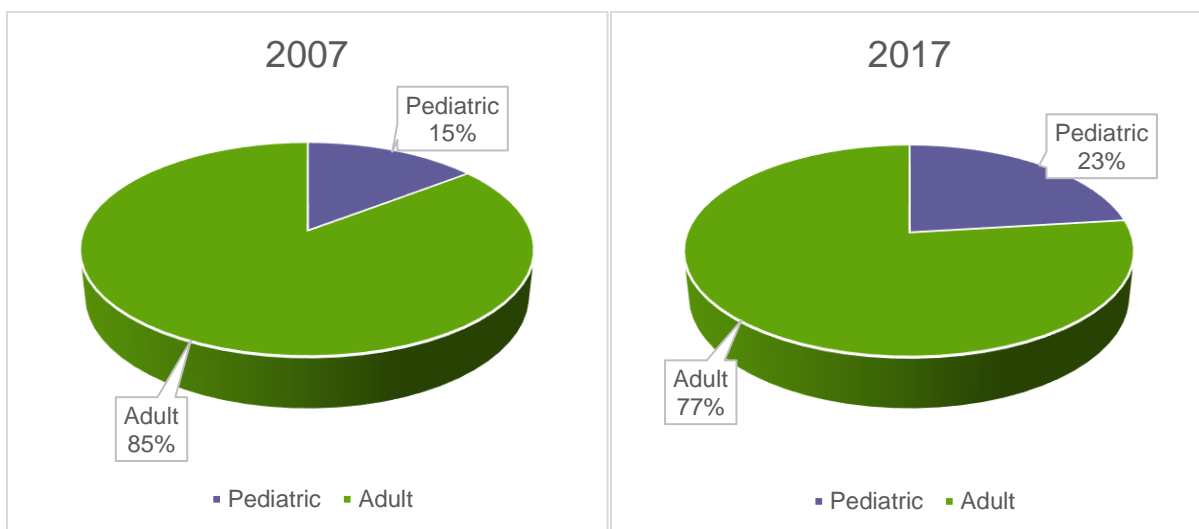


Figure 8. Pediatric and adult distribution of claim lines with major depressive disorder diagnoses, 2007 and 2017

In both 2007 and 2017, claim lines with a pediatric MDD diagnosis were most prevalent for high school-age (14-18) individuals (figure 9). These years, however, also saw an increase in percent of claim lines for college-age (19-22) individuals. This group increased from 29 percent to 36 percent of total pediatric claim lines for MDD.

FAIR Health’s findings of an increase in the pediatric share of claim lines for MDD are consistent with the research noted above that found the increase in major depression prevalence from 2005 to 2015 disproportionately affected young people.²¹ Another study found that the 12-month prevalence of major depressive episodes increased in both adolescents and young adults from 2005 to 2014.²² Many potential causes for the apparent increase in depression among young people have been publicly discussed, including growing academic pressures and greater use of social media and smartphones, but a definitive answer is still lacking.^{23,24}

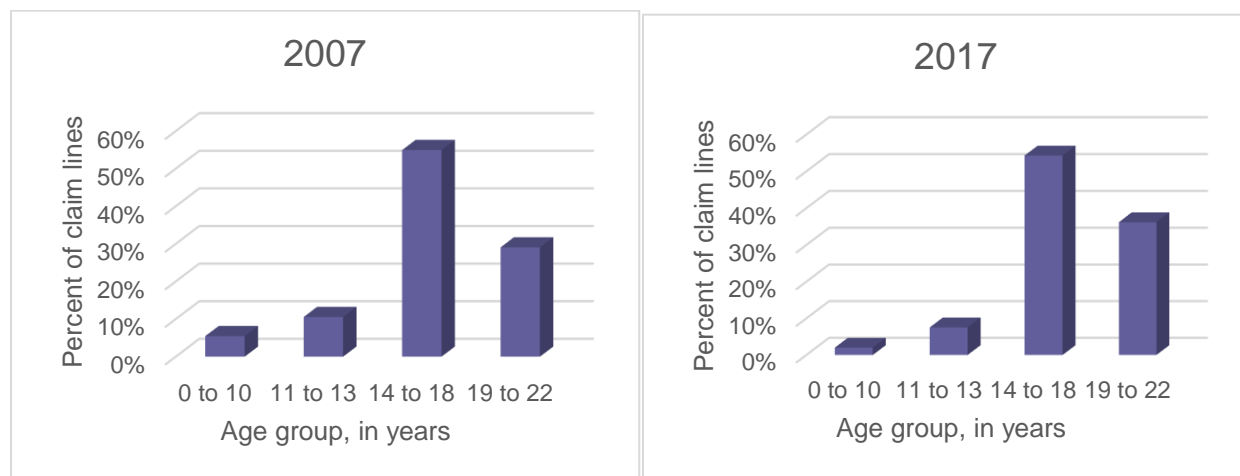


Figure 9. Distribution of claim lines with major depressive disorder diagnoses by pediatric age group, 2007 and 2017

²¹ Weinberger, “Trends in Depression Prevalence.”

²² Ramin Mojtabai, Mark Olson and Beth Han, “National Trends in the Prevalence and Treatment of Depression in Adolescents and Young Adults,” *Pediatrics* 138, no. 6 (2016): e20161878, <https://doi.org/10.1542/peds.2016-1878>.

²³ Katherine Kam, “Troubling Trend: Depression Rates Rising in Teens,” WebMD, December 2, 2016, <https://www.webmd.com/depression/news/20161219/depression-rates-rising-teens#1>.

²⁴ Jean M. Twenge, “Have Smartphones Destroyed a Generation?” *The Atlantic*, September 2017, <https://www.theatlantic.com/magazine/archive/2017/09/has-the-smartphone-destroyed-a-generation/534198/>.

Generalized Anxiety Disorder

As seen in figures 10 and 11, the percentage of claim lines associated with a diagnosis of GAD increased from 2007 to 2017 in both the adult and the pediatric populations. Among adults, the greatest percent increase in GAD claim lines was for ages 23-30 and 61-70, for whom claim lines rose 275 percent and 282 percent, respectively (figure 10). GAD claim lines in the age group 23-30 represented a larger share of all medical claim lines in that age cohort than was the case in the age group 61-70. GAD claim lines in the age group 23-30 rose from 0.36 percent of all medical claim lines for that age group in 2007 to 1.34 percent in 2017, while those in the age group 61-70 grew from 0.06 percent of all medical claim lines for that age group in 2007 to 0.24 percent in 2017.

GAD claim lines for individuals aged 31-40 increased 206 percent from 0.34 percent in 2007 to 1.03 percent of all medical claim lines for this age cohort. GAD claim lines for individuals aged 41-50 increased 152 percent, changing from 0.27 percent to 0.67 percent of all medical claim lines for the age group. Claim lines for individuals over age 70 saw an increase similar to that in most of the other age groups until 2015, but decreased 11 percent from 2015 to 2017.

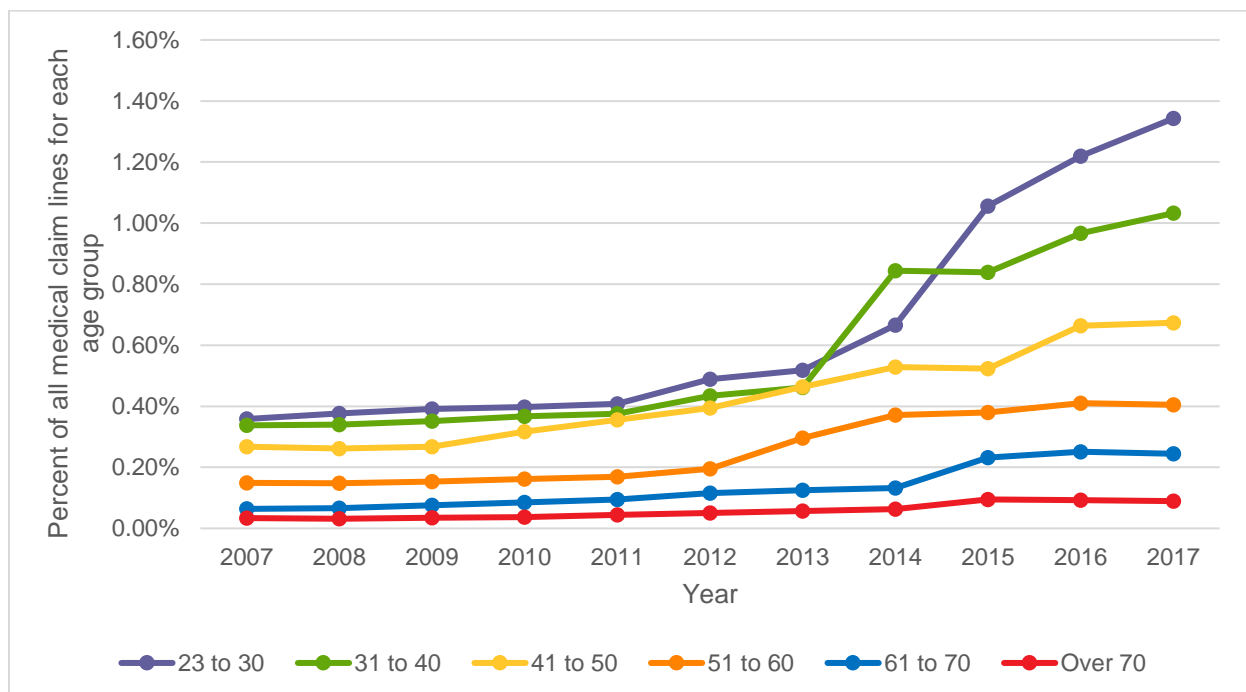


Figure 10. Claim lines with generalized anxiety disorder diagnoses as a percentage of all medical claim lines by adult age group, 2007-2017

GAD claim lines for the pediatric population also rose from 2007 to 2017 (figure 11). Claim lines for individuals of college and high school age rose by greater percentages than any adult group. Claim lines for college-age individuals increased 441 percent, growing from 0.62 percent to 3.16 percent of all medical claim lines for the age cohort, including a rise of 102 percent from 2014 to 2017. For high school-age individuals, GAD claim lines increased 389 percent, rising from 0.4 percent to 1.77 percent of all medical claim lines for that age group.

GAD claim lines for middle school-age (11-13) children increased 255 percent, changing from 0.59 percent to 1.71 percent of all medical claim lines for the age group. GAD claim lines for elementary school-age (6-10) children rose 140 percent, increasing from 0.28 percent to 0.65 percent of all medical claim lines for that age group.

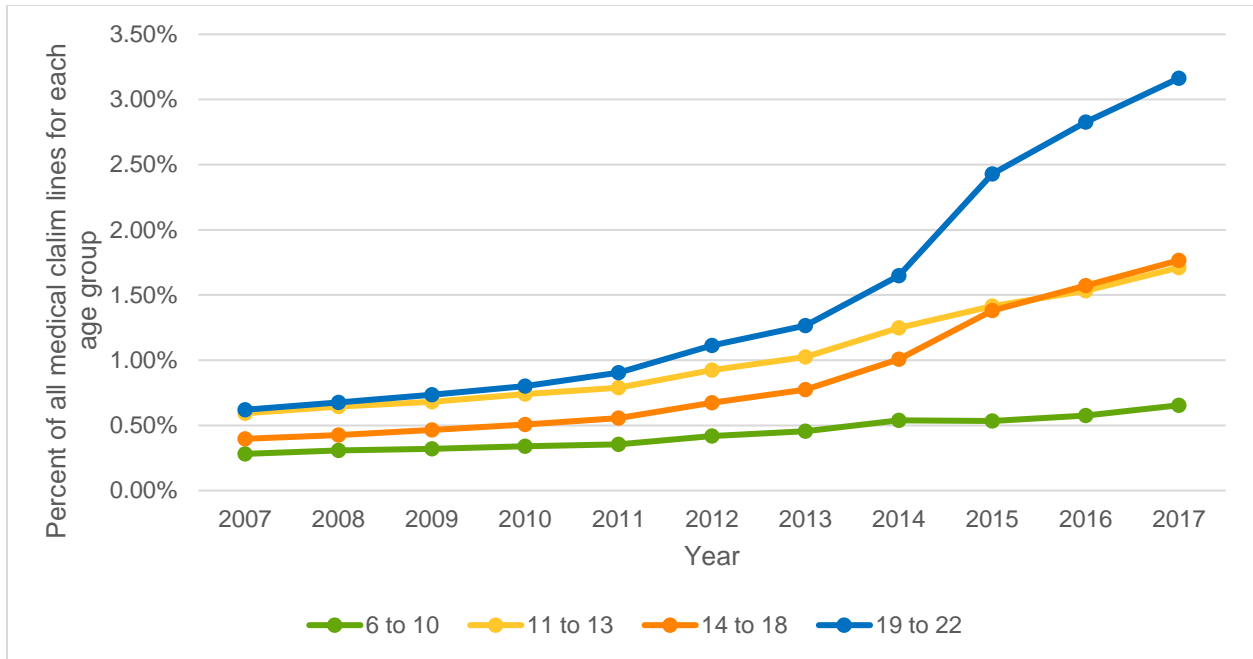


Figure 11. Claim lines with generalized anxiety disorder diagnoses as a percentage of all medical claim lines by pediatric age group, 2007-2017

In 2017, individuals aged 22 and under accounted for 24 percent of total GAD claim lines (figure 12).

Increased anxiety has been reported among young people in other studies. For example, a 2018 American College Health Association survey found 63.4 percent of college students felt overwhelming anxiety within the last 12 months, up from 49.9 percent in 2011.^{25,26} As with depression, the causes of increased anxiety among young people have been the subject of public discussion, with some of the same potential factors identified (for example, social media and smartphones), as well as others such as school shootings.^{27,28,29}

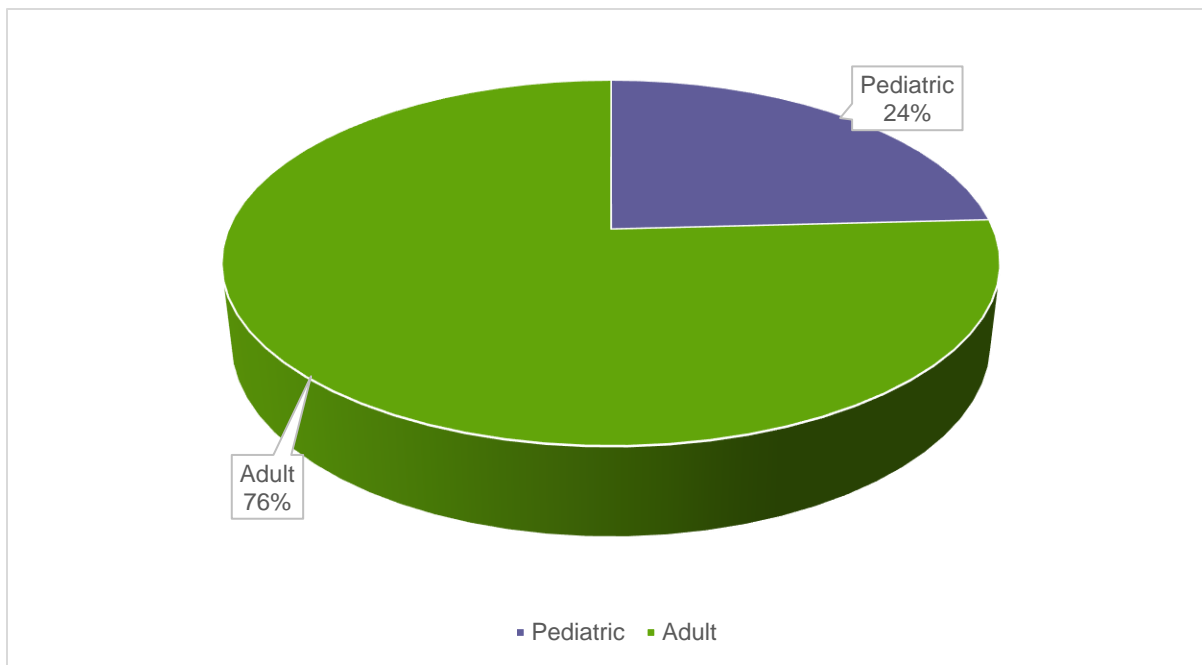


Figure 12. Pediatric and adult distribution of claim lines with generalized anxiety disorder diagnoses, 2017

²⁵ American College Health Association, *American College Health Association-National College Health Assessment II: Spring 2018 Reference Group Executive Summary* (Silver Spring, MD: American College Health Association, 2018), https://www.acha.org/documents/ncha/NCHA-II_Spring_2018_Reference_Group_Executive_Summary.pdf.

²⁶ American College Health Association, *American College Health Association-National College Health Assessment II: Fall 2011 Reference Group Data Report* (Hanover, MD: American College Health Association, 2012), https://www.acha.org/documents/ncha/ACHA-NCHA-II_ReferenceGroup_DataReport_Fall2011.pdf.

²⁷ David Z. Morris, "Social Media Is Fueling a Scary Trend for Teen Anxiety," *Fortune*, October 15, 2017, <http://fortune.com/2017/10/15/social-media-teen-anxiety/>.

²⁸ Twenge, "Have Smartphones Destroyed a Generation?"

²⁹ James M. Shultz et al., "Multiple Vantage Points on the Mental Health Effects of Mass Shootings," *Curr Psychiatry Rep* 16, no. 9 (2014): 469, <https://doi.org/10.1007/s11920-014-0469-5>.

In children aged 10 and under, males accounted for more GAD claim lines than females in 2017 (figure 13). In the middle school years, the distribution was weighted more toward females, who accounted for 53 percent of total claim lines. This trend continued in high school- and college-age females, who accounted for twice as many GAD claim lines as males.

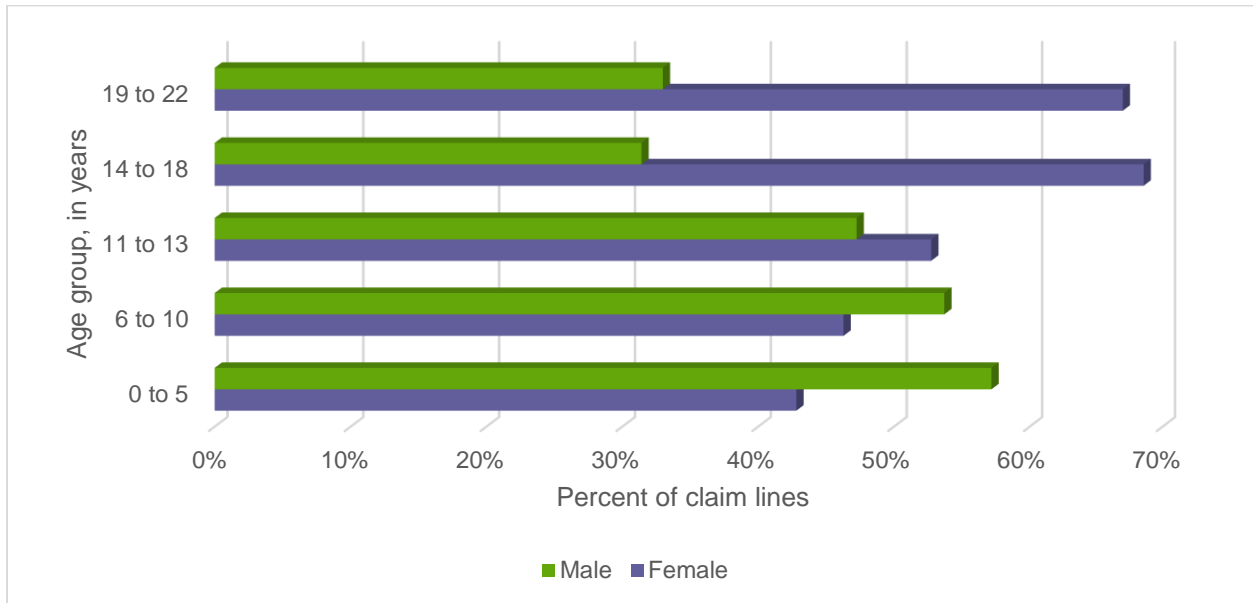


Figure 13. Distribution of claim lines with generalized anxiety disorder diagnoses by age group and gender, 2017

Eating Disorders

Despite their association with adolescence, eating disorders affect multiple age groups, as seen in figure 14. In 2017, claim lines for anorexia were most prevalent in the 11-18 age group, while those for bulimia were most prevalent in individuals aged 23-30.

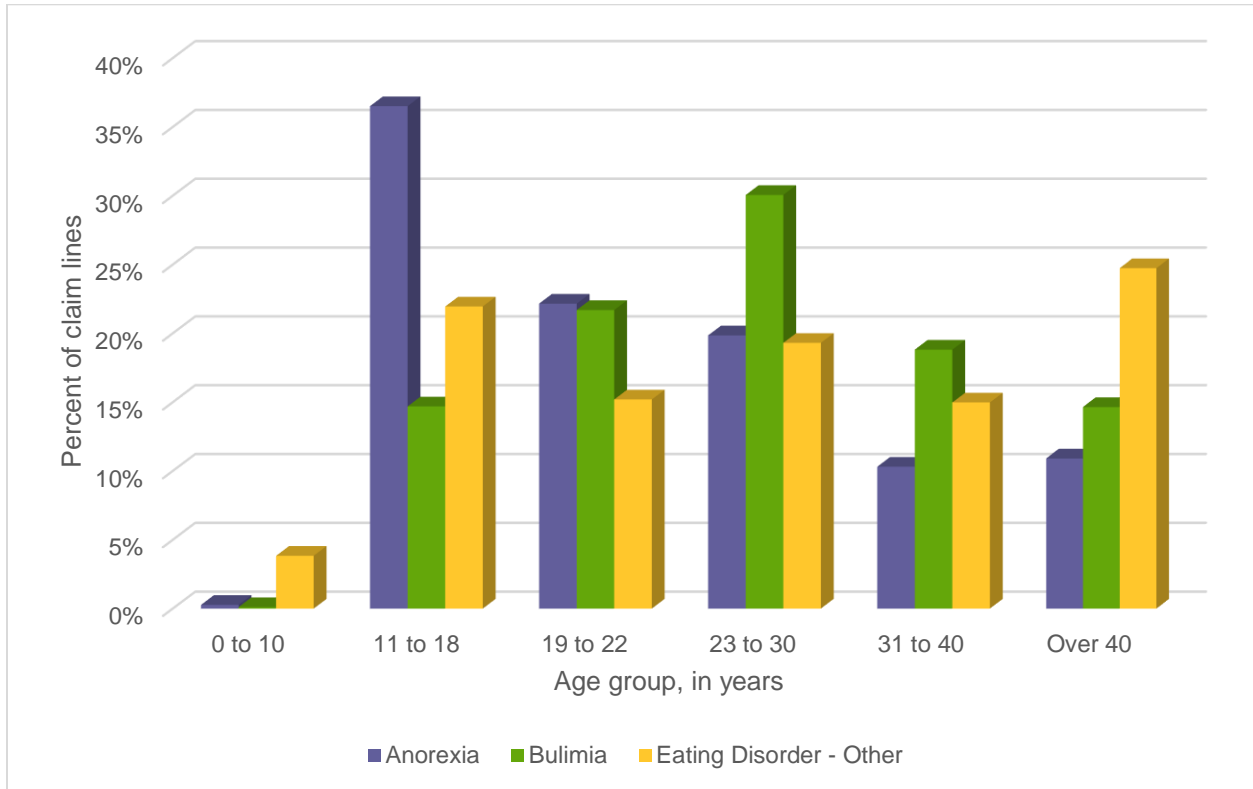


Figure 14. Distribution of claim lines with eating disorder diagnoses by disorder and age group, 2017

Geographic Findings

In the heat maps that follow, states toward the red end of the spectrum are those in which claim lines associated with a particular diagnosis were a larger percentage of all medical claim lines. States toward the green end are those in which claim lines with that diagnosis were a smaller percentage of all medical claim lines.

Adjustment Disorders

In 2007, the five jurisdictions in which adjustment disorder claim lines were the largest percentage of medical claim lines were Washington, DC; Wyoming; Nebraska; Washington; and New Mexico (figure 15). The bottom five states were Utah, Mississippi, Kentucky, North Carolina and Nevada.

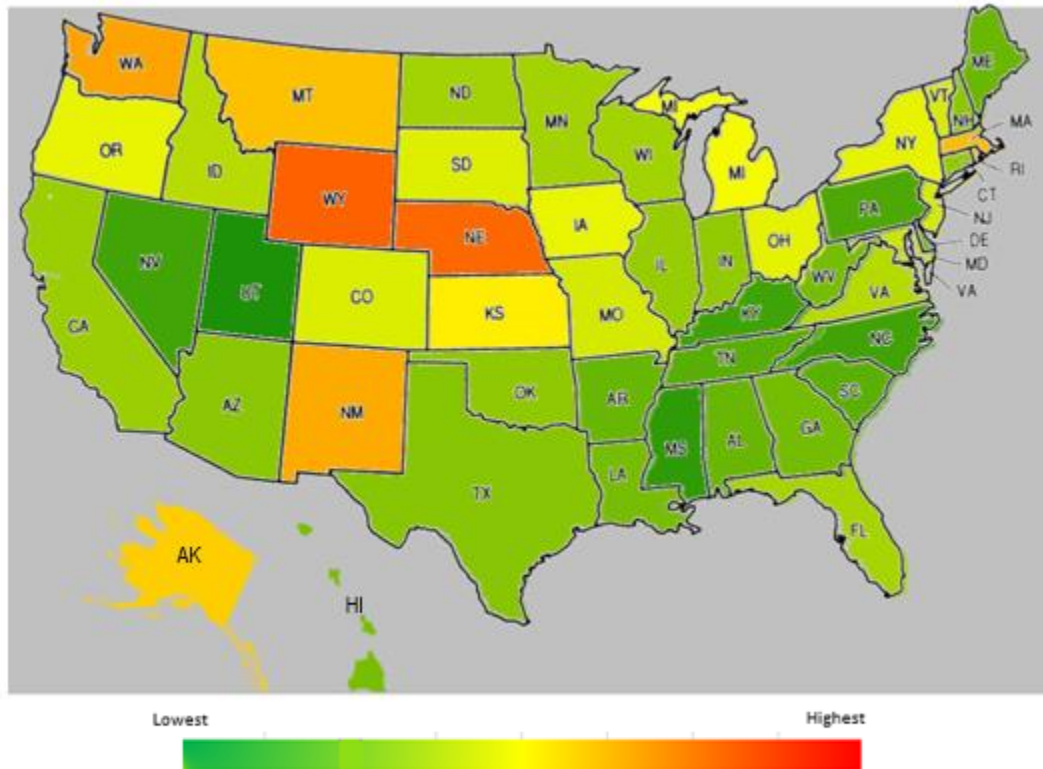


Figure 15. Claim lines with adjustment disorder diagnoses as a percentage of all medical claim lines by state, 2007

Ten years later, in 2017, the top five jurisdictions for adjustment disorder diagnoses were California; Washington, DC; Nevada; Wyoming; and Hawaii (figure 16). The bottom five states were Utah, North Carolina, Kentucky, Tennessee and Oklahoma.

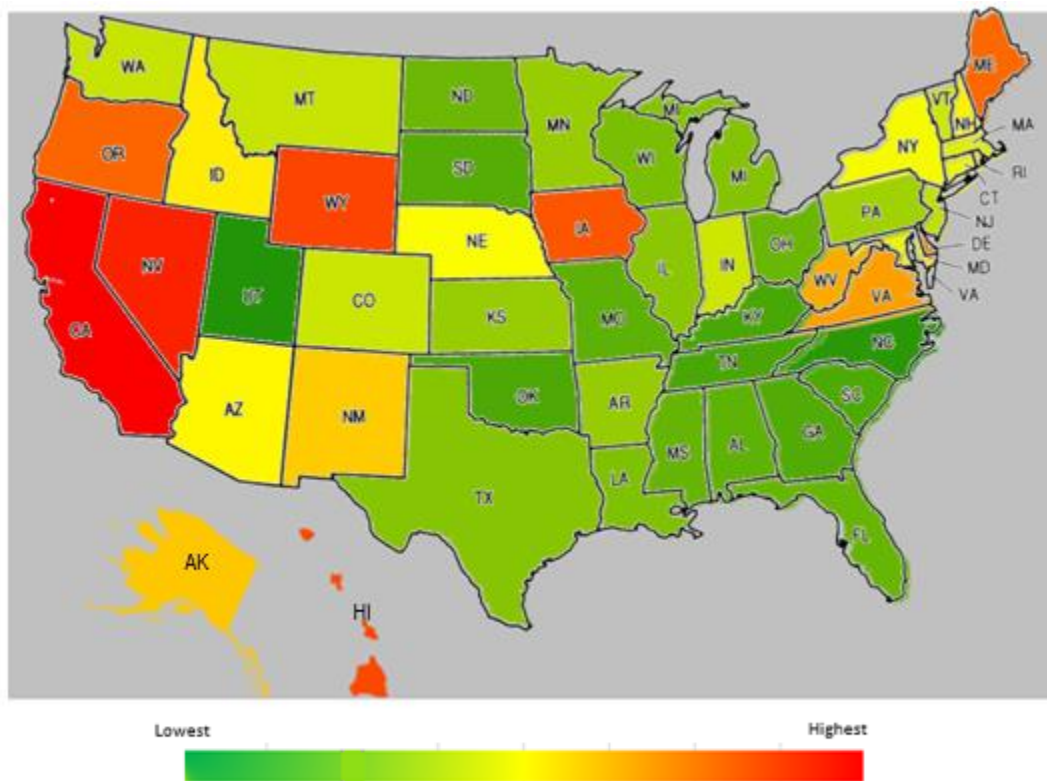


Figure 16. Claim lines with adjustment disorder diagnoses as a percentage of all medical claim lines by state, 2017

Major Depressive Disorder

In 2007, Massachusetts was the state with the highest percentage of claim lines associated with MDD compared to claim lines for all medical diagnoses (figure 17). North Dakota, Rhode Island, Montana and Utah rounded out the top five. The states with the lowest percentage of MDD claim lines were North Carolina, Pennsylvania, Nevada, Delaware and Alabama.

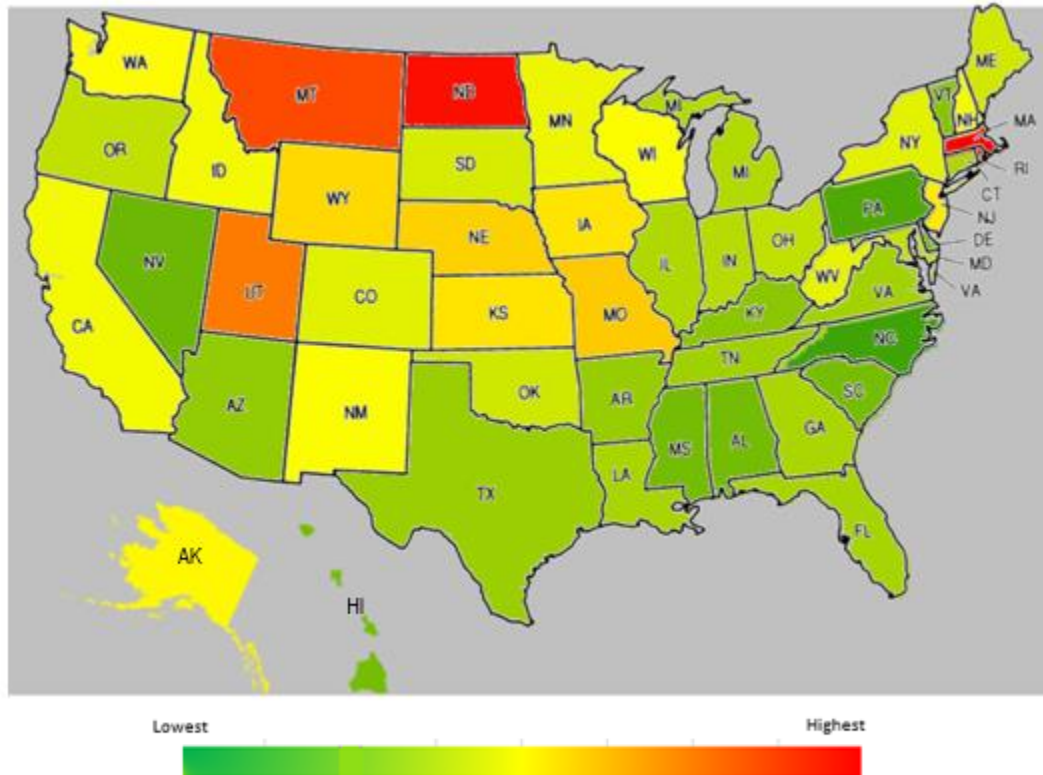


Figure 17. Claim lines with major depressive disorder diagnoses as a percentage of all medical claim lines by state, 2007

In 2017, the map was markedly different (figure 18). Percentages of claim lines associated with MDD increased in most regions, with the exception of the South. Utah, in 2017, remained in the top five states for MDD and had the highest percentage of MDD claim lines. Rhode Island had the second highest percentage and also remained in the top five. California came third in the list, with North Dakota and Minnesota fourth and fifth, respectively. Alabama and North Carolina remained in the bottom five, along with Tennessee, Mississippi and South Carolina. Unlike in 2007, all five of the bottom states in 2017 were southern, part of a regional shift toward lower percentages of MDD claim lines in the South than in the rest of the country.

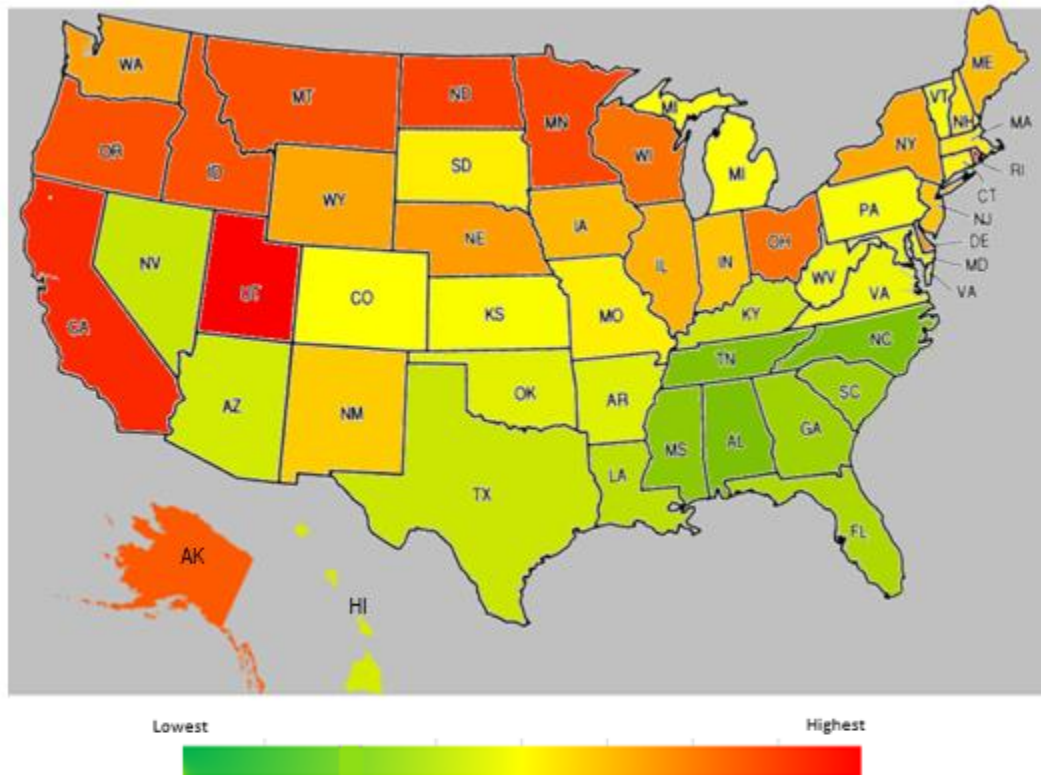


Figure 18. Claim lines with major depressive disorder diagnoses as a percentage of all medical claim lines by state, 2017

Generalized Anxiety Disorder

For GAD, there was a similar shift toward higher percentages of claim lines associated with the disorder in most of the country except the South. In 2007, percentages of claim lines associated with GAD diagnoses were greatest in Washington, DC; New York; Rhode Island; Massachusetts; and North Dakota (figure 19). The states with the lowest percentages were North Carolina, Delaware, Alabama, Pennsylvania and Hawaii.

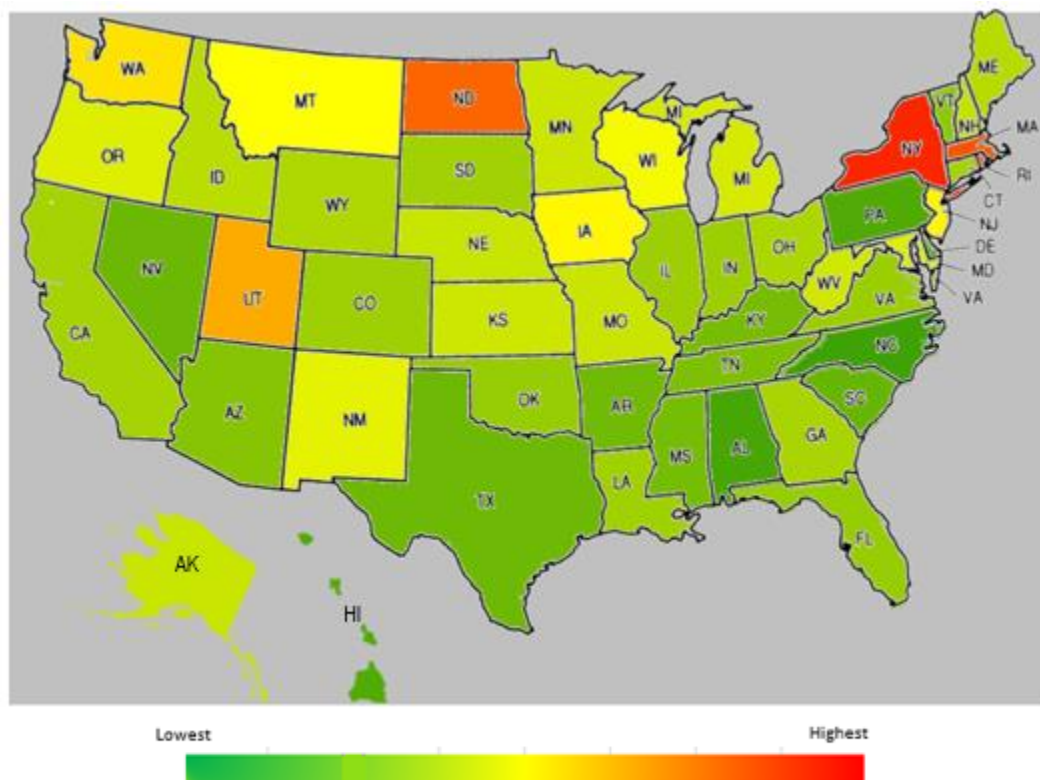


Figure 19. Claim lines with generalized anxiety disorder diagnoses as a percentage of all medical claim lines by state, 2007

By 2017, GAD-related claim line percentages had risen in numerous states in the North and West (figure 20). Rhode Island; Washington, DC; New York; Oregon; and Minnesota had the highest percentages of GAD claim lines. The lowest percentages were found in Alabama, Tennessee, Texas, Hawaii and Mississippi—all but Hawaii located in the South.

The relative scarcity in the South of claim lines with MDD and GAD diagnoses may be related to access issues. In Mental Health America’s ranking of states in 2017 by access to care for mental illness, 8 of the bottom 10 states were southern.³⁰

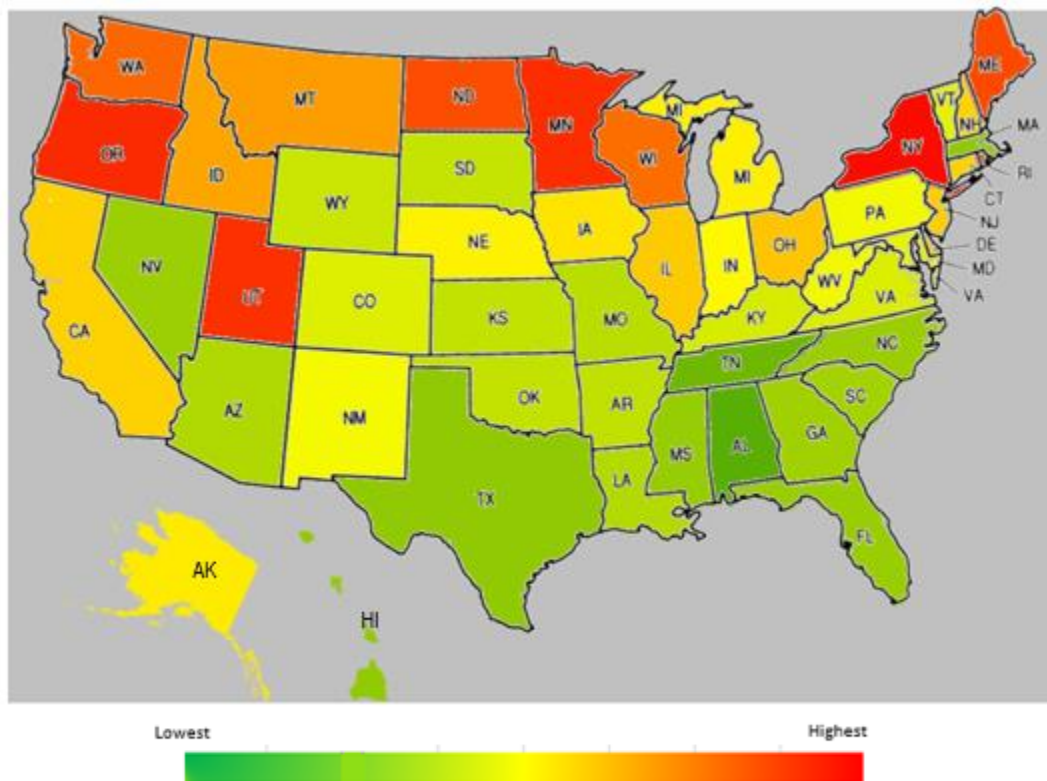


Figure 20. Claim lines with generalized anxiety disorder diagnoses as a percentage of all medical claim lines by state, 2017

³⁰ “2017 State of Mental Health in America—Ranking the States,” Mental Health America, accessed January 25, 2018, <http://www.mentalhealthamerica.net/issues/2017-state-mental-health-america-ranking-states>.

Substance Use Disorders

In 2007, alcohol dependence was the most common substance use disorder diagnosis, with 30 percent of the distribution of claim lines for such diagnoses (figure 21). In 2017, alcohol dependence continued to have a large share of substance use disorder diagnoses (28 percent), but it fell to second place behind opioid dependence, which accounted for 37 percent of the category, up from 14 percent in 2007.

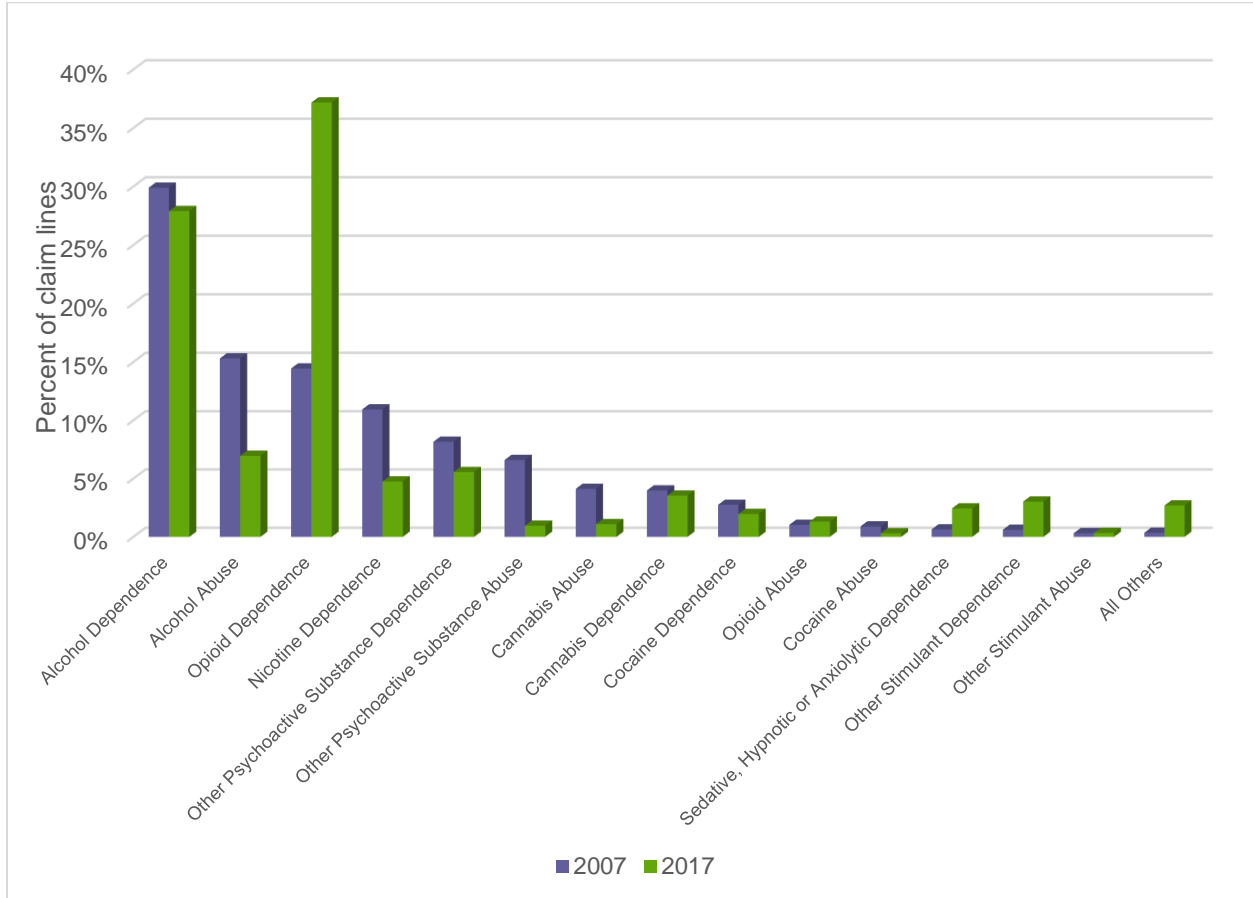


Figure 21. Distribution of claim lines for substance use disorder diagnoses, 2007 and 2017

Of the top growing substance use disorder diagnoses in the period 2007 to 2017, some diagnoses continued to grow in claim lines in the period from 2015 to 2017 (figure 22), while others did not (figures 23, 24). Alcohol dependence constituted one diagnosis for which claim lines rose 555 percent from 2007 to 2017, changing from 0.034 percent to 0.268 percent of all medical claim lines (figure 22). This is consistent with a study showing increases in alcohol use, high-risk drinking and alcohol use disorder from 2001-2002 to 2012-2013.³¹

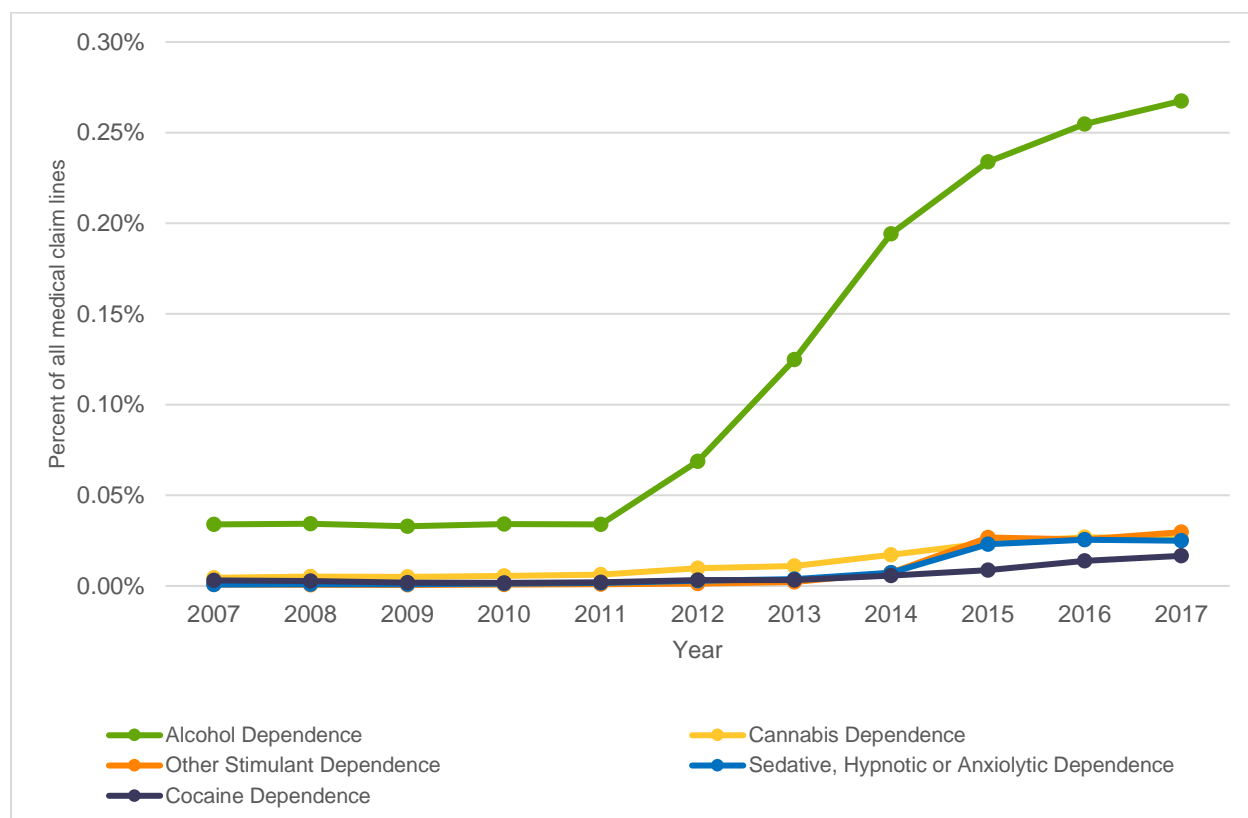


Figure 22. Substance use disorders with the greatest increases in claim lines as a percentage of all medical claim lines from 2007 to 2017, including continued growth from 2015 to 2017

Claim lines for certain other substance use disorder diagnoses grew even more than alcohol dependence while representing a smaller share of medical claim lines. The substance use disorder with the greatest increase overall from 2007 to 2017, including in the period 2015-2017, was “other stimulant dependence.” This category grew 3,490 percent in claim lines from 2007 to 2017, even though it constituted a relatively small percentage of all medical claim lines, increasing from 0.001 percent to 0.03 percent of all medical claim lines. Encompassing stimulants other than cocaine, other stimulant dependence includes dependence on methamphetamine, methylphenidate (Ritalin) and dextroamphetamine/levoamphetamine (Adderall). This finding is consistent with research showing that prescription stimulant usage doubled from 2006 to 2016, with considerable diversion of these drugs for nonmedical use.³²

Claim lines associated with dependence on sedatives, hypnotics or anxiolytics rose 2,779 percent from 2007 to 2017, increasing from 0.001 percent to 0.025 percent of all medical claim lines. These types of drugs include benzodiazepines, such as diazepam (Valium) and alprazolam (Xanax).

³¹ Bridget F. Grant et al., “Prevalence of 12-Month Alcohol Use, High-Risk Drinking, and DSM-IV Alcohol Use Disorder in the United States, 2001-2002 to 2012-2013: Results from the National Epidemiologic Survey on Alcohol and Related Conditions” *JAMA Psychiatry* 74, no. 9 (2017): 911-23, <https://doi.org/10.1001/jamapsychiatry.2017.2161>.

³² Brian J. Piper et al., “Trends in Use of Prescription Stimulants in the United States and Territories, 2006 to 2016,” *PLoS One* 13, no. 11 (2018), <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0206100>.

Claim lines for cannabis dependence increased 377 percent from 2007 to 2017, rising from 0.005 percent to 0.026 percent of all medical claim lines. This increase is consistent with studies showing that cannabis abuse/dependence has been rising among inpatients and that cannabis-associated emergency department visits have been increasing.^{33,34} Another study, however, found that overall prevalence of cannabis use disorder fell from 2002 to 2016, though prevalence increased among non-daily cigarette smokers.³⁵

Cocaine dependence claim lines rose 342 percent from 2007 to 2017; 82 percent of that increase occurred from 2015 to 2017, during which cocaine dependence claim lines changed from 0.009 percent to 0.017 percent of all medical claim lines. Researchers studying trends in cocaine-related overdose deaths from 2000 to 2015 found a trend of increase followed by a temporary decline, which was succeeded by another increase (to 2.13 per 100,000 population in 2015).³⁶

³³ Paris Charilaou et al., "Trends of Cannabis Use Disorder in the Inpatient: 2002 to 2011," *Am J Med* 130, no. 6 (2017):678-87.e7, <https://doi.org/10.1016/j.amjmed.2016.12.035>.

³⁴ Jay J. Shen et al., "Trends and Related Factors of Cannabis-Associated Emergency Department Visits in the United States: 2006-2014," *J Addict Med* (November 9, 2018), <https://doi.org/10.1097/ADM.0000000000000479>.

³⁵ Andrea H. Weinberger et al., "Trends in Cannabis Use Disorder by Cigarette Smoking Status in the United States, 2002-2016," *Drug Alcohol Depend* (October 1, 2018), <https://doi.org/10.1016/j.drugalcdep.2018.06.016>.

³⁶ Christopher McCall Jones, Grant T. Baldwin and Wilson M. Compton, "Recent Increases in Cocaine-Related Overdose Deaths and the Role of Opioids," *Am J Public Health* 107, no. 3 (2017): 430-32, <https://doi.org/10.2105/AJPH.2016.303627>.

Claim lines for certain other substance use disorder diagnoses decreased from 2015 to 2017 even while increasing greatly overall from 2007 to 2017 (figures 23, 24). The decreases perhaps reflected increasing public attention to the necessity of treating these disorders.³⁷ Claim lines related to opioid abuse and dependence rose dramatically, despite a 50 percent decrease in both from 2015 to 2017 (figure 23). Opioid abuse claim lines fell 50 percent from 0.017 percent of all medical claim lines in 2015 to 0.009 percent in 2017. Opioid dependence claim lines declined 50 percent from 0.479 percent of all medical claim lines in 2015 to 0.252 percent in 2017. Overall, from 2007 to 2017, opioid abuse claim lines rose 534 percent, from 0.001 percent to 0.009 percent of all medical claim lines. Opioid dependence claim lines rose 1,180 percent, from 0.016 percent to 0.252 percent of all medical claim lines.

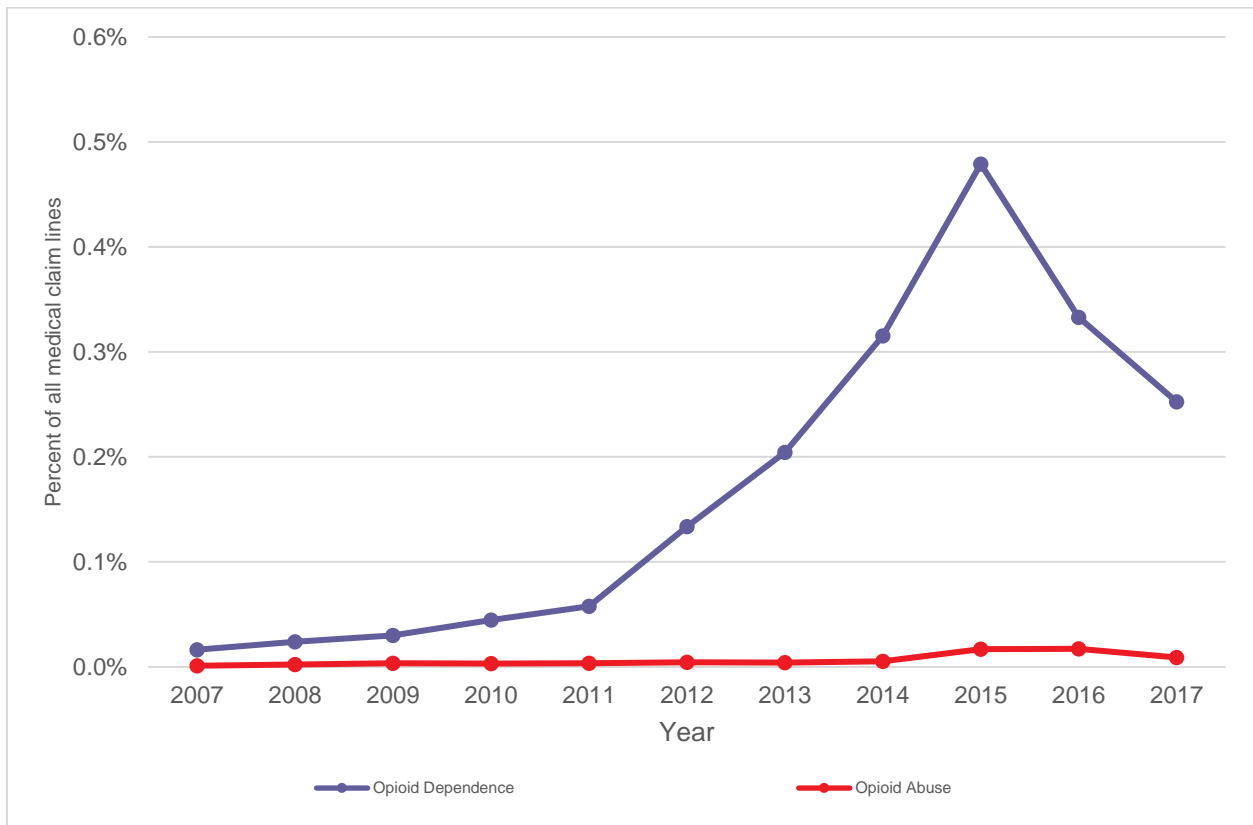


Figure 23. Substance use disorders with the greatest increases in claim lines as a percentage of all medical claim lines from 2007 to 2017 despite decreases from 2015 to 2017: opioid-related only

³⁷ US Department of Health & Human Services (HHS), Office of the Surgeon General, *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health* (Washington, DC: HHS, November 2016), <https://addiction.surgeongeneral.gov/sites/default/files/surgeon-generals-report.pdf>.

Among nonopioid-related substance use disorders with the greatest increases in claim lines from 2007 to 2017 despite decreases from 2015 to 2017, “other stimulant abuse” rose 539 percent overall, from 0.0004 percent of all medical claim lines in 2007 to 0.002 percent in 2017 (figure 24). The decrease for other stimulant abuse from 2015 to 2017 was 14 percent. Sedative, hypnotic or anxiolytic abuse had an increase of 326 percent overall, from 0.0003 percent of all medical claim lines in 2007 to 0.001 percent in 2017. The decrease for this category from 2016 to 2017 was 29 percent.

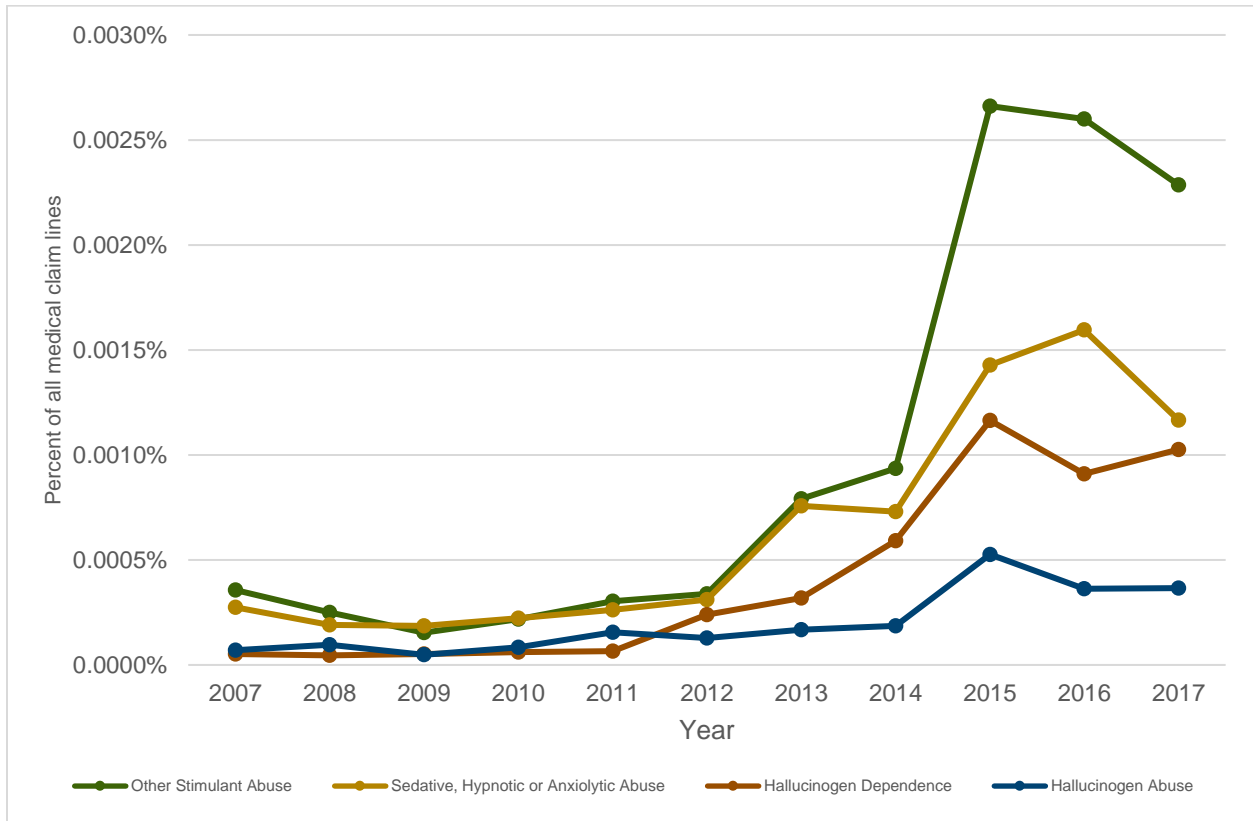


Figure 24. Substance use disorders with the greatest increases in claim lines as a percentage of all medical claim lines from 2007 to 2017 despite decreases from 2015 to 2017: not opioid-related

Age-Related Findings

Alcohol

In 2017, claim lines associated with an alcohol abuse diagnosis were distributed relatively evenly across all age groups from 23 to 60 (figure 25). Of claim lines for individuals from age 14 to over 60, 13 percent were for individuals aged 19-22 and 5 percent for individuals aged 14-18.

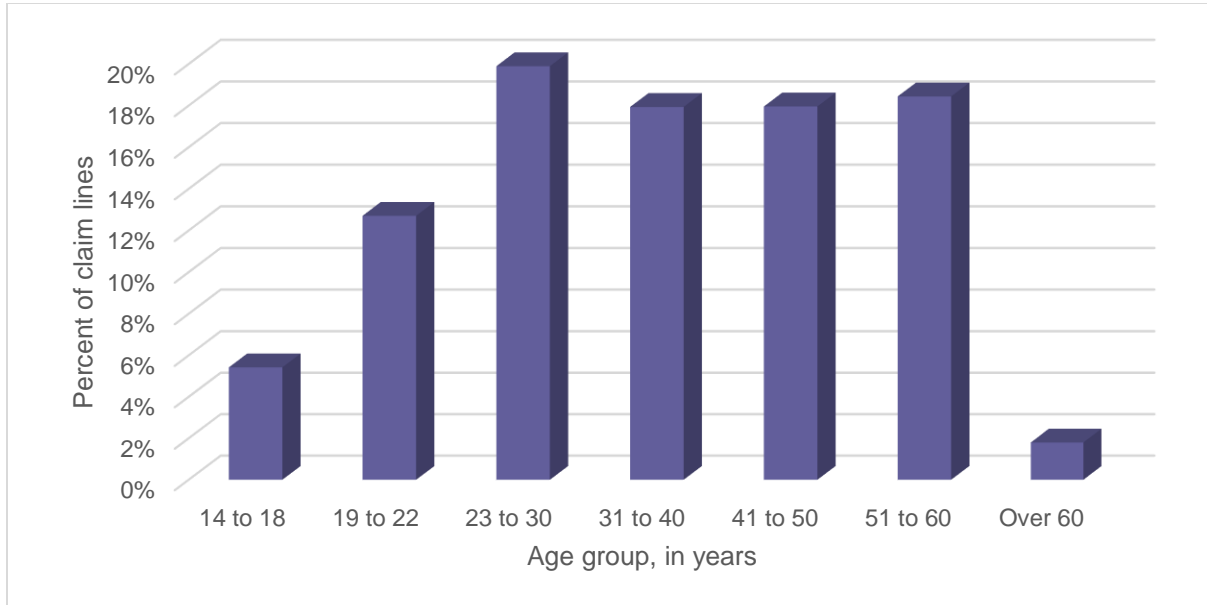


Figure 25. Distribution of claim lines with an alcohol abuse diagnosis by age group, 2017

As for alcohol abuse, claim lines for alcohol dependence were concentrated in the 23-60 age range in 2017 (figure 26). The percentage of claim lines for individuals aged 14-22 was considerably lower than that. High school-age individuals accounted for only one percent of the distribution of alcohol dependence claim lines for ages 14 to over 60, and college-age individuals eight percent.

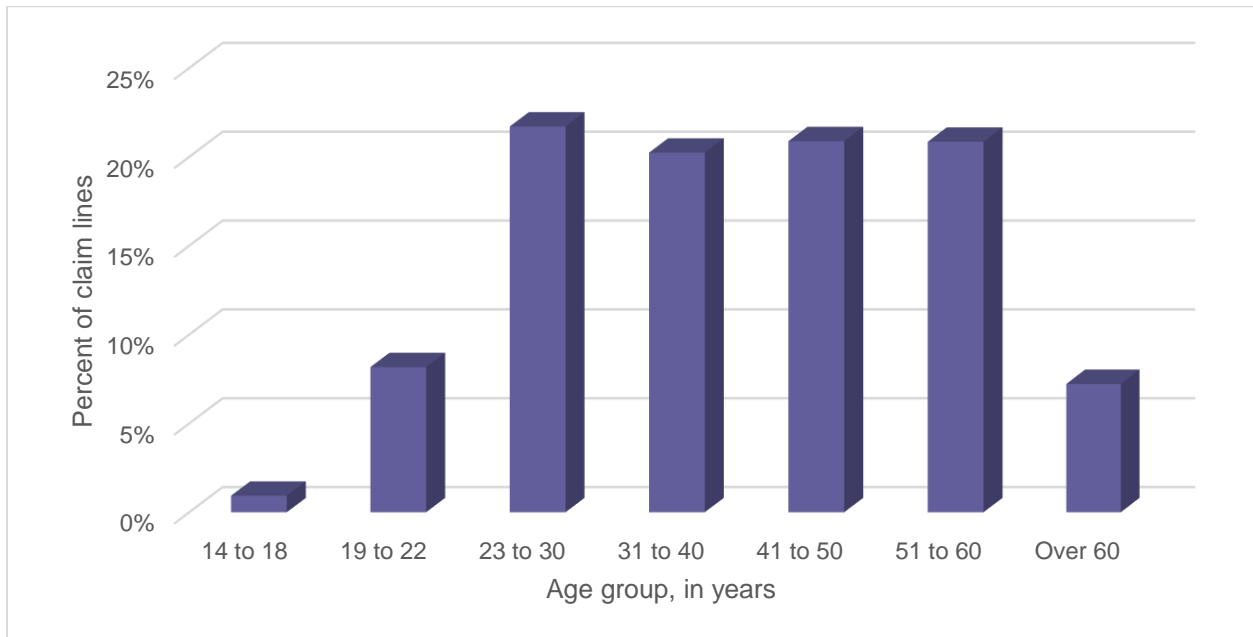


Figure 26. Distribution of claim lines with alcohol dependence diagnoses by age group, 2017

Cannabis

Cannabis abuse and dependence presented a strikingly different age-related picture (figure 27). Individuals aged 0-18 had a higher share of cannabis abuse claim lines (32 percent) in 2017 than any other age group. Claim lines associated with cannabis dependence were greatest (28 percent) for individuals aged 23-30.

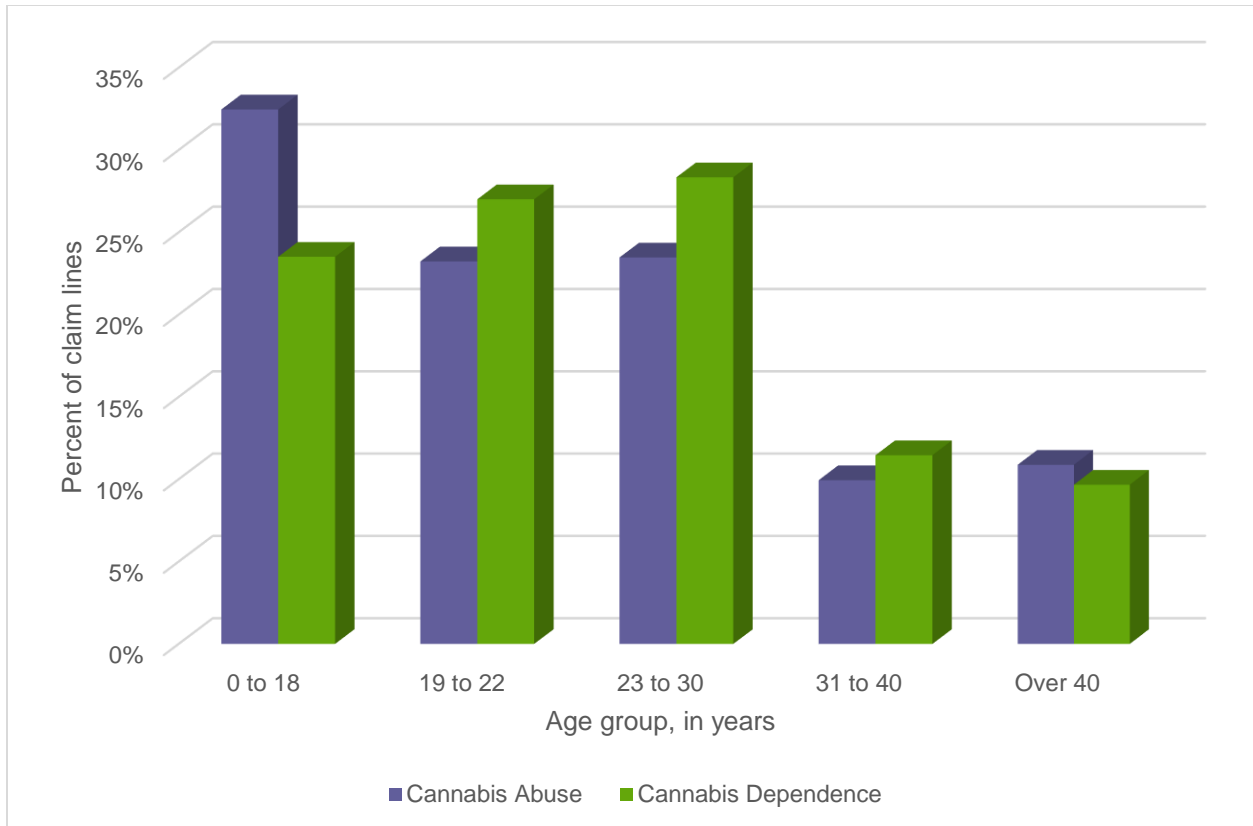


Figure 27. Distribution of claim lines with cannabis abuse or dependence diagnoses by age group, 2017

Cocaine

In 2017, claim lines for cocaine abuse were highest in the 23-30 age group, which accounted for 27 percent of the total (figure 28).

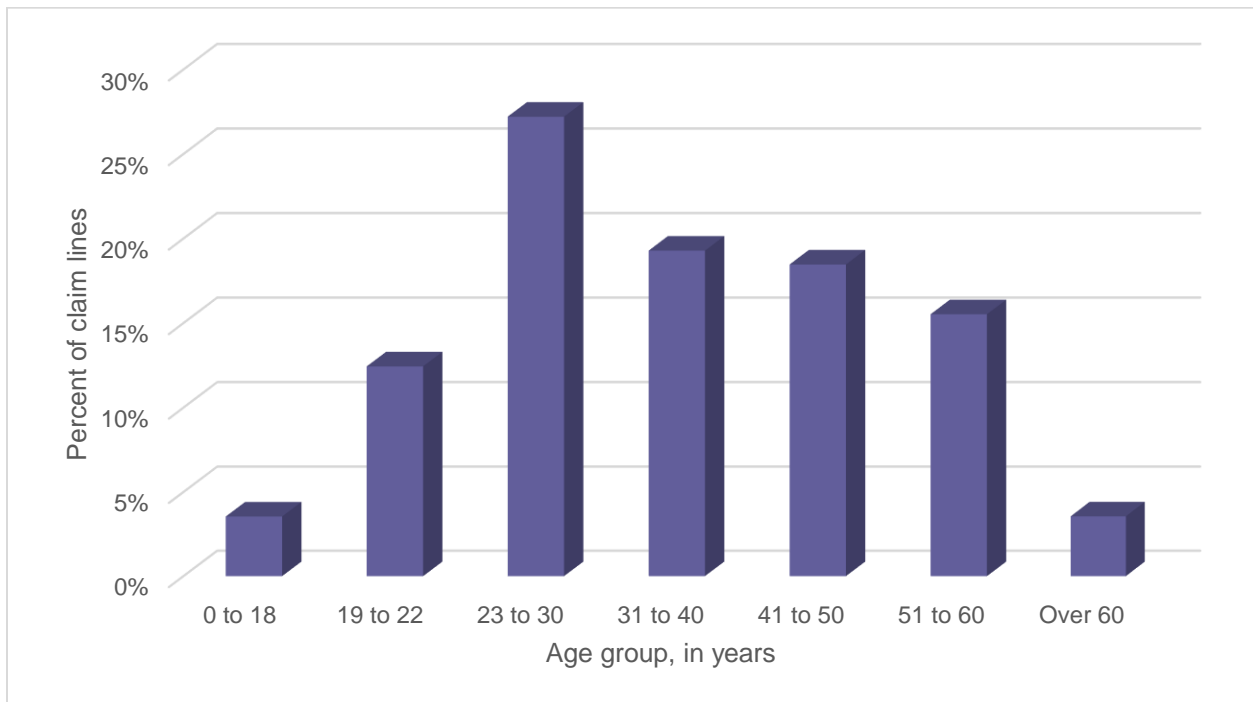


Figure 28. Distribution of claim lines with cocaine abuse diagnoses by age group, 2017

In all but one age group, claim lines associated with cocaine abuse diagnoses were predominantly submitted for males in 2017. The exception was the 0-18 age group, in which females accounted for 58 percent of claim lines (figure 29). Among college-age individuals, females accounted for 35 percent of claim lines. Among individuals age 23 and over, males typically accounted for 72-79 percent of cocaine abuse claim lines.

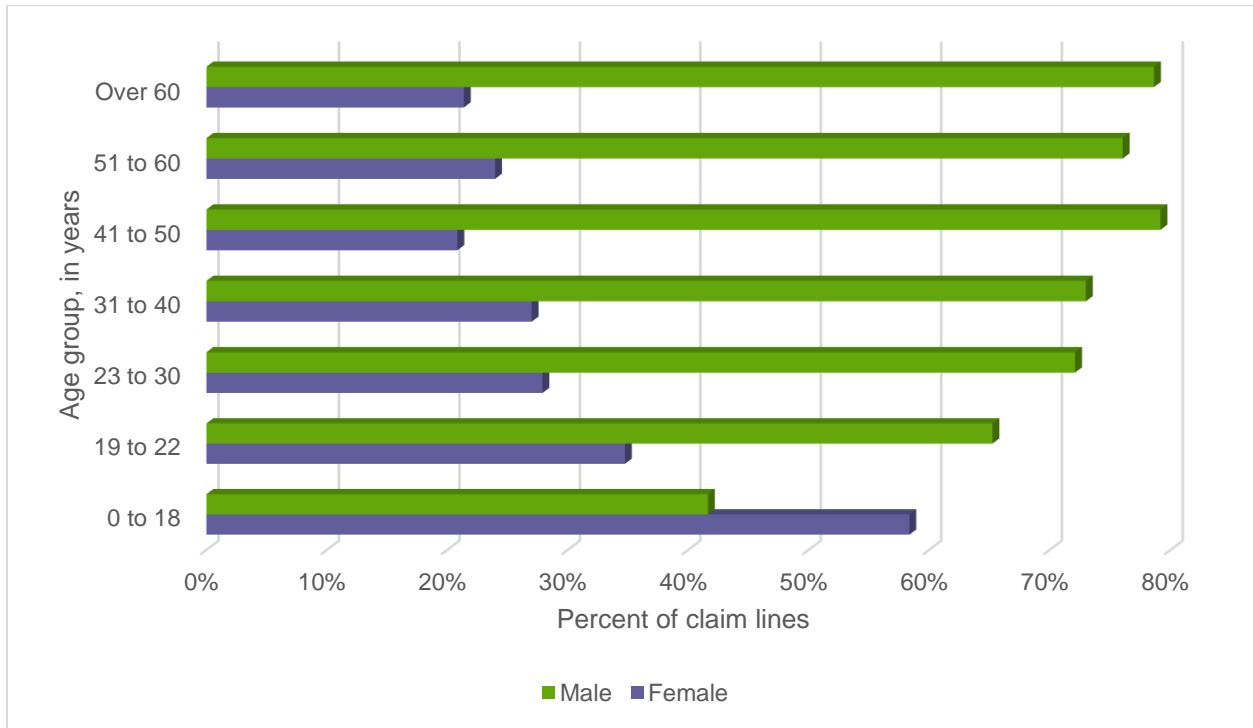


Figure 29. Distribution of claim lines with cocaine abuse diagnoses by age group and gender, 2017

Other Stimulants

It has been reported that men are likelier than women to use almost all types of illicit drugs, and that, for most age groups, they have higher rates of use of or dependence on illicit drugs and alcohol.³⁸ But FAIR Health data show that in certain age groups, the gender disparity for “other stimulant use” is diminished or even reversed. In the 23-30 age group in 2017, more claim lines for other stimulant use were submitted for females (56 percent) than for males (44 percent; figure 30). This may be connected to evidence of a trend among young women to use stimulants for weight loss.³⁹ For the diagnoses of other stimulant dependence and abuse, males remained predominant in this age group in the FAIR Health data (68 percent for dependence, 69 percent for abuse).

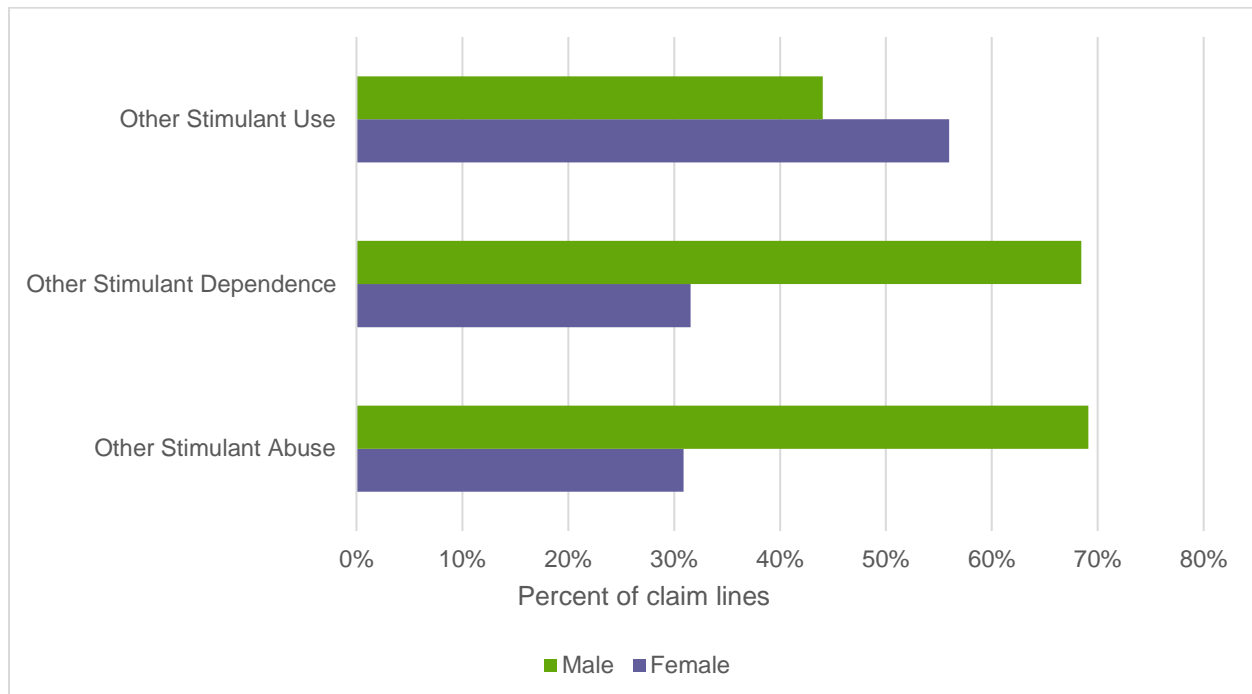


Figure 30. Distribution by gender of claim lines with other stimulant use, dependence and abuse diagnoses in the 23-30 age group, 2017

³⁸ “Substance Use in Women: Sex and Gender Differences in Substance Use,” National Institute on Drug Abuse, last updated July 2018, <https://www.drugabuse.gov/publications/research-reports/substance-use-in-women/sex-gender-differences-in-substance-use>.

³⁹ Amanda B. Bruening, Marisol Perez and Tara K. Ohrt, “Exploring Weight Control as Motivation for Illicit Stimulant Use,” *Eat Behavior* 30: 72-75 (2018), <http://doi.org/10.1016/j.eatbeh.2018.06.002>.

In the 51-60 age group, claim lines for other stimulant use were distributed relatively evenly between men and women (figure 31). Men accounted for 52 percent of claim lines, women for 48 percent. This was in contrast to much larger percentages for men with respect to other stimulant abuse and dependence in this age group (80 percent for dependence, 65 percent for abuse). The near-equality of 51-60-year-old women and men in regard to other stimulant use may be related to some women's use of stimulants for menopausal cognitive symptoms.⁴⁰

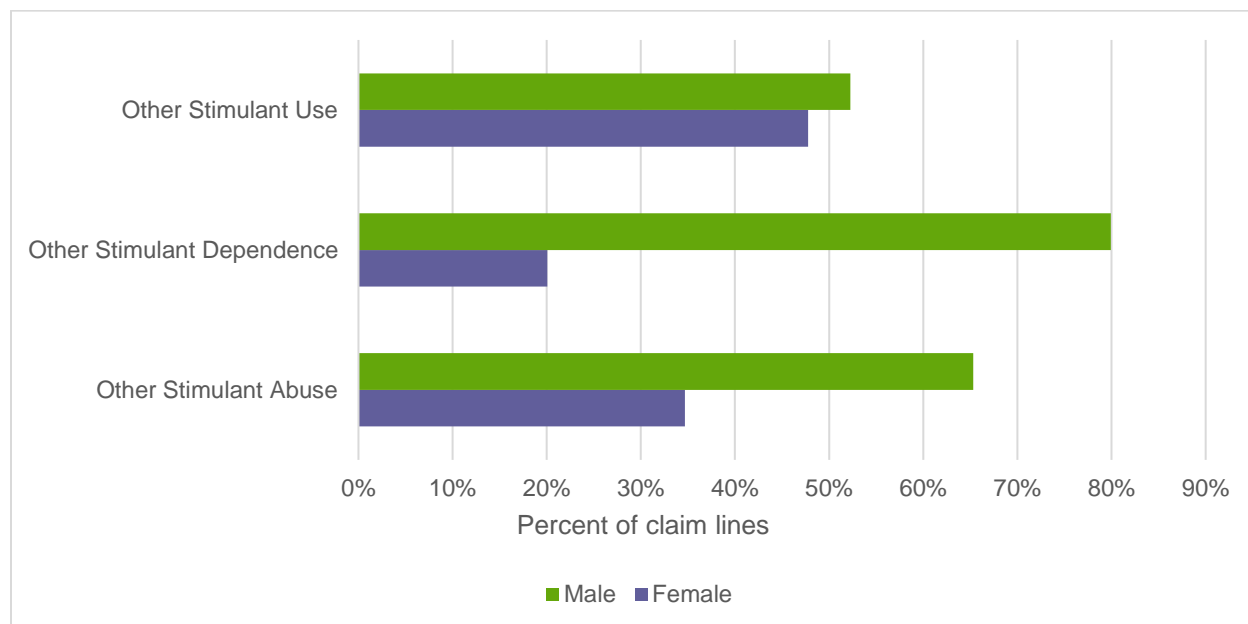


Figure 31. Distribution by gender of claim lines with other stimulant use, dependence and abuse diagnoses in the 51-60 age group, 2017

Conclusion

This study sheds light on many aspects of behavioral health since the Mental Health Parity Act. Claim lines with behavioral health diagnoses increased markedly. In 2007 and 2017, major depressive disorder was the most common diagnosis in the distribution of mental health claim lines, but its share fell while the share of generalized anxiety disorder rose over the 10-year period. Of mental health diagnoses with over 0.1 percent of all medical claim lines, generalized anxiety disorder had the greatest increase in claim lines. Anorexia and other eating disorders also showed notable growth.

The pediatric population (ages 0-22) was disproportionately represented in the increase in claim lines with mental health diagnoses, particularly with respect to adjustment disorders, major depressive disorder and generalized anxiety disorder. Claim lines associated with major depressive disorder and generalized anxiety disorder became more common by comparison to claim lines for all medical diagnoses in most parts of the country, with the striking exception of the South.

Opioid dependence overtook alcohol dependence to occupy the largest share of claim lines with substance use disorder diagnoses, although opioid dependence claim lines fell from 2015 to 2017. Other stimulant dependence was the diagnosis with the greatest increase in claim lines from 2007 to 2017, despite constituting a relatively small percentage of total medical claim lines. The age distribution for diagnoses related to different substances (e.g., alcohol, cannabis, cocaine) varied. The gender distribution for other stimulant use in certain age groups (23-30, 51-60) did not exhibit the substantial male predominance characteristic of many substance use disorders.

⁴⁰ C. Neill Epperson et al., "New Onset Executive Function Difficulties at Menopause: A Possible Role for Lisdexamfetamine," *Psychopharmacology (Berl)* 232, no. 16: 3091-100 (2015), <https://doi.org/10.1007/s00213-015-3953-7>.

In a time of change in the nation's behavioral health, the trends and patterns revealed in this study have implications for numerous stakeholders, including providers, payors, researchers, policy makers and patients. FAIR Health conducted this study to provide a strong foundation of key indicators of behavioral health services rendered to the commercial healthcare population. We look forward to providing additional layers to this analysis, including the nature of the services rendered, the type of venue where services were rendered (including telehealth access) and the specialties of the healthcare professionals providing the services.

About FAIR Health

FAIR Health is a national, independent, nonprofit organization dedicated to bringing transparency to healthcare costs and health insurance information through data products, consumer resources and health systems research support. FAIR Health qualifies as a public charity under section 501(c)(3) of the tax code. FAIR Health possesses the nation's largest collection of private healthcare claims data, which includes over 28 billion claim records contributed by payors and administrators who insure or process claims for private insurance plans covering more than 150 million individuals. FAIR Health licenses its privately billed data and data products—including benchmark modules, data visualizations, custom analytics, episodes of care analytics and market indices—to commercial insurers and self-insurers, employers, providers, hospitals and healthcare systems, government agencies, researchers and others. Certified by the Centers for Medicare & Medicaid Services (CMS) as a national Qualified Entity, FAIR Health also receives data representing the experience of all individuals enrolled in traditional Medicare Parts A, B and D; FAIR Health houses data on Medicare Advantage enrollees in its private claims data repository. FAIR Health can produce insightful analytic reports and data products based on combined Medicare and commercial claims data for government, providers, payors and other authorized users. FAIR Health's free, award-winning, national consumer websites are fairhealthconsumer.org and fairhealthconsumidor.org. For more information on FAIR Health, visit fairhealth.org.

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