SC Medicaid Enrollees Within the Growing Opioid Crisis
A Look at the Impact of the Prescription Monitoring Program Policy

DEVELOPED BY:
The Division of Medicaid Policy Research
at the University of South Carolina Institute for Families in Society
under contract to the SC Department of Health and Human Services

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This study, conducted by the USC Institute for Families in Society, Division of Medicaid Policy Research under contract to the SC Department of Health and Human Services, examines the impact of the 2014 policy change requiring SC Medicaid prescribers to use the Prescription Monitoring Program (PMP). Failure to verify the opioid prescribing history of the Medicaid recipient can result in penalties and loss of provider payment.

This report was prepared under contract with the South Carolina Department of Health and Human Services. The findings, views, and opinions of authors expressed herein do not necessarily state or reflect those of the SC Department of Health and Human Services.

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Age and race make a difference in the SC Medicaid adult population with prescribed opioids.

- Older adults (≥ 46 years) were disproportionately represented among the high-dosage (42%) opioid users compared to all opioid (23%) and at-risk (21%) groups.
- Regardless of gender, White/Caucasian Medicaid recipients were more likely to be among high-dosage users.

Prescription dosage makes a difference.

At-risk opioid users (50 mg to < 120 mg TDMED) are:

- 2.4 times more likely to have a heroin overdose prior to implementation (CY2013) vs. 1.8 times after the implementation (CY2016).

High-dosage opioid users (≥ 120 mg TDMED) are:

- 3 times more likely to have a primary diagnosis of hepatitis C than those with a lower Rx dosage (CY2013-2016); and
- 5.8 times more likely to use more than 3 prescribing providers prior to implementation (CY2013) vs. 4.9 times after the implementation (CY2016).

Geography and poor outcomes differ.

- High-dosage opioid prescriptions seem to produce different outcomes by geography, with rural areas more likely to see “shopper” behaviors and urban counties “illicit” drug use. This inconsistent pattern indicates the need for different interventions depending on where within the state the high-dosage prescribing occurs.

“TDMED”

Used throughout this report, TDMED is the abbreviation of Total Daily Morphine Equivalent Dose. TDMED represents the total amount of opioid drugs prescribed to a patient daily, expressed as a common unit, milligrams of morphine. Opioid cough and cold products and combination products containing buprenorphine and naloxone are not included in TDMED calculations. Opioid users were classified by their maximum calculated TDMED in each year.
The pattern of opioid use in South Carolina, by geography, reflects known social determinants of health.

- Geographically, prescribing patterns reflect higher dosages in the upper, central, and coastal areas of South Carolina. The rural geographic pattern associated with higher average dosages has not changed substantially from previous reports. In 2013, the Office of Inspector General illustrated a similar geographical pattern in its seminal report on the need for a statewide prescription drug abuse strategy. See Appendix A.

- The top 25 places in South Carolina for high-dosage prescriptions are in predominantly rural communities where there are known factors associated with increased risk of opioid addiction and overdose. Rural communities experience poor housing, poverty, and unemployment at higher rates, all of which are known to increase the likelihood of substance use. Also, rural occupations are susceptible to physical injury that can lead to higher exposure of opioid prescriptions at higher dosages (Keyes, 2014).

The analysis shows that, with the implementation of the PMP, reductions or changes are noted in numbers of opioid prescriptions, changes in dosages, prescribing patterns, and the number of doctor and pharmacy shoppers.

Reduction in the percent of Medicaid recipients with an opioid prescription:
- ↓ 29% for all opioid prescriptions
- ↓ 15% for all high-dosage opioid users

Reduction in the average maximum TDMED:
- ↓ 7% for all opioid users
- ↓ 6% for high-dosage users

Positive change in prescribing patterns:
- ↓ Number of individuals prescribed opioids
- ↓ Total daily morphine equivalent dose per user per year

Decrease in the number of doctor and pharmacy “shoppers”:
- ↓ To date, there have been relative change reductions of 39% and 45%, respectively, among those with the two highest TDMED prescribed dosages: 50 to < 120 mg (At-Risk) and ≥ 120 mg (High-Dosage).
Examining Medicaid Opioid Prescribing Patterns: Why Does it Matter?

National Statistics

Nearly 12% of adults covered by Medicaid have a substance use disorder, including opioid use disorder (CMS, 2014).

The U.S. makes up 4.6% of the world population but consumes 81% of the world supply of oxycodone (National Safety Council, 2016).

4 out of 5 heroin users started on prescription opioids (National Safety Council, 2016).

Overall, rates of opioid-related emergency department (ED) visits and inpatient stays are greatest in low-income communities (Weiss, Bailey, O’Malley, et al., 2017).

From 2005 to 2014, rates of opioid-related ED visits increased more in rural areas than in large metropolitan areas (Weiss, Bailey, O’Malley, et al., 2017).

Hepatitis C is a highly infectious blood-borne virus that can cause severe liver damage and death. Needle sharing among people who inject drugs (PWID) is the most common form of hepatitis C transmission. Research undertaken by the Centers for Disease Control (CDC) suggests rising hepatitis C rates are associated with increasing injection of opioid drugs (CDC, 2015).

South Carolina Statistics

South Carolina ranks in the highest quartile among states for the number of painkiller prescriptions per 100 people and has seen prescriptions increase each year (CDC, 2016).

Opioid-related deaths across South Carolina jumped from 237 in 2013 to 516 in 2014; and, in 2015, more than 600 people died from opioid and heroin overdoses (SC DHEC, 2016).

Recipients with opiate prescriptions account for 20.4% of South Carolina’s total Medicaid population and consume 6.1% of pharmacy spending (IBM Health Watson, 2017).
As of April 1, 2014, the South Carolina Department of Health and Human Services (SCDHHS) requires that providers verify Medicaid members’ controlled substance prescription history before issuing prescriptions for opioids. Failure to consult the South Carolina Reporting and Identification Prescription Tracking System (PMP) database may result in loss of Medicaid payments for the office visit during which the prescription was given. Further action, such as referral to the appropriate licensing boards, may be taken against providers with serious or persistent compliance problems.

This report examines the impact of this policy on Medicaid opioid prescribing patterns and users for Calendar Years 2013, 2014, 2015, and 2016—before, during, and after implementation of the state’s Prescription Monitoring Program (PMP).

What is the value of the PMP? Prescription monitoring programs, also known as PMPs, are state-run electronic databases that collect, monitor, and analyze information on the prescribing and dispensing of controlled substances. PMPs are authorized by state law and administered by a state agency, such as the health department, pharmacy board, or the attorney general’s office. Each state law sets forth the controlled substances for which dispensing data will be collected. Most PMPs collect data on Schedules II-IV drugs, but some states require reporting on other drugs of concern. Responsibility for reporting typically falls to pharmacies and other dispensers. PMPs were created to assist clinicians and law enforcement in curbing misuse, abuse, and diversion of controlled substances.
BACKGROUND

Things to Know About This Study

DATA SOURCE
Recipient Provider Claims Within the SC Medicaid Management Information System

PRESCRIPTION MONITORING PROGRAM (PMP) TIMELINE
Baseline Year (No PMP)
PMP Began
PMP in Full Effect

OPIOID PRESCRIPTIONS INCLUDED
buprenorphine, butorphanol, codeine, dihydrocodeine, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, nalbuphine, opium, oxycodone, oxymorphone, oxymorphone, pentazocine, tapentadol, and tramadol

THE STUDY INCLUDED
Anyone who was 19 years of age or older

THE STUDY INCLUDED
Anyone who was 19 years of age or older

THE STUDY INCLUDED
Anyone who was 19 years of age or older

THE DATA WAS ANALYZED BY
SUBGROUPS
At-Risk Opioid Users
TDMED* 50 <120 mg
High-Dosage Opioid Users
TDMED* 120 mg+
Opioid “Shoppers”
(>3 opioid providers & >3 pharmacies)
Older White Males
(Ages 46+)
Women of Childbearing Age
(Ages 19-44)

THE STUDY INCLUDED
Anyone who was 19 years of age or older

THE STUDY INCLUDED
Anyone who was 19 years of age or older

THE STUDY INCLUDED
Anyone who was 19 years of age or older

THE DATA WAS ANALYZED BY
DEMOGRAPHICS
Age
Gender
Race/Ethnicity

THE DATA WAS ANALYZED BY
GEOGRAPHIC PATTERNS
OPIOID USE
PRESCRIPTION OPIOID OVERDOSE
HEROIN OVERDOSE
HEPATITIS C

THE DATA WAS ANALYZED BY
STATISTICS
CHANGE IN #/% OF:
ALL OPIOID USERS
AT-RISK OPIOID USERS
HIGH-DOSAGE USERS
OPIOID SHOPPERS
OPIOID USERS BY DRUG
RISK OF:
AT-RISK/HIGH-DOSAGE USE
OPIOID SHOPPING
PRESCRIPTION OPIOID OVERDOSE
HEROIN OVERDOSE
HEPATITIS C

* TDMED (Total Daily Morphine Equivalent Dose) is the total amount of opioid drugs prescribed to a patient daily, expressed in terms of a common unit, milligrams of morphine.
ORGANIZATION OF THE DATA RESULTS

The results are organized by three distinct groups of individuals with Medicaid opioid claims:

**All Opioid Users** include SC Medicaid recipients ages 19 years or older with any opioid prescription in the measurement period.

**At-Risk Opioid Users** refers to those SC Medicaid recipients among All Opioid Users who have a maximum TDMED of 50 to < 120 mg in a measurement year.

**High-Dosage Opioid Users** refers to those SC Medicaid recipients among All Opioid Users who have a TDMED of ≥ 120 mg in a measurement year.

These groupings are based on the CDC recommendations for calculating the total daily dose of opioids. Dosages at or above 50 TDMED/day are twice as likely to have a higher risk of overdose and death.

As such, for the purposes of this report, the study population consists of two groups: at-risk and high-dosage opioid users.
DATA CAVEATS

The identification of all opioid users and high-dosage opioid users is based only on claims associated with prescribed opioid medications.

Maps represent only those opioid users with viable addresses in South Carolina (approximately 99% of all opioid users with claims).

Map locations use the most current address of the Medicaid recipient.

Charts with Medicaid recipients used as a denominator to calculate a percent that are opioid users have the following exclusions applied to the total Medicaid population denominator: (1) in a Nursing home or Hospice by restricting to those who were not in the payment categories (10, 33, or 54) in each year, (2) who were not age 19 or older in each year, and (3) those that did not have a viable SC address (< 1% of all recipients in each year). The counts of opioid users and high-dosage users in these charts also exclude those users that did not have a viable SC address (< 1% of all recipients in each year).

The methods illustration details the specific approach for this analysis. However, as the availability of data was explored, limitations were found in what analyses could be conducted at this time. In some cases a more comprehensive analysis of sub-populations has been deferred as a component of next steps (e.g., women with prescription opioids and cohort of individuals enrolled across all years.)

HOW TO USE THE STUDY FINDINGS

This report can be used by policymakers, health care providers, health system administrators, and community stakeholders to better understand prescription opioid use among adult Medicaid recipients in South Carolina.

In particular, this report can help:

- identify demographic groups at increased risk for high-dosage opioid use;
- identify opioid users at greater risk for prescription opioid overdose and hepatitis C;
- locate geographic areas with high rates of heroin overdose;
- evaluate the impact of the state’s Prescription Monitoring Program (PMP) on the number and proportion of high-dosage prescriptions as well as the specific opioids prescribed; and
- detect differences in the average maximum TDMED for all opioid users and high-dosage users before and after PMP implementation.
KEY FINDINGS

AGE

Age makes a difference.

In the Medicaid adult population with prescribed opioids:

Older adults (≥ 46 years) were disproportionately represented in the high-dosage (42%) opioid users group compared to all opioid (23%) and at-risk (21%) groups.

Conversely, less than 9% of high-dosage opioid users are ages 19-25 compared to all (22%) and at-risk opioid users (22%).

Age Characteristics of All, At-Risk, and High-Dosage Opioid Users
Combined Years (CY2013-16)

ALL USERS

AT-RISK USERS

HIGH-DOSE USERS

Note: Rounded percentages may not total to 100%.

RACE & GENDER

Race and gender make a difference.

Regardless of gender, White/Caucasian Medicaid recipients were more likely to be among high-dosage users. Of those males who were prescribed opioids anytime between 2013 and 2016 and were high-dosage users, most were 56+ years of age and Caucasian.

In contrast, of those females who were prescribed opioids anytime between 2013 and 2016 and were high-dosage opioid users, most were between 26 and 35 years of age and Caucasian. A higher percentage of all, at-risk, and high-dosage opioid users were women. Subsequent analysis will explore specific factors among women of childbearing age connected with opioid use.

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Impact of Prescribing High-Dosage Opioids

STUDIES SHOW
High-Dosage Opioids = High Abuse

Research shows that patients receiving > 100 mg TDMED/day had an 8.9-fold increase in overdose risk: 12% of these overdoses were fatal (Dunn et al., 2010).

Dose escalation to > 120 mg TDMED/day is associated with a 2.6-fold risk of clinical depression (Zedler, 2014).

Growing evidence suggests that abusers of prescription opioids are shifting to heroin as prescription drugs become less available or harder to abuse (Compton et al., 2016).

Rural communities in southern states are disproportionately impacted by high-dosage opioid prescribing practices and a shift in heroin use (Okie, 2010; Koebler, 2014; Keyes, 2014; MMWR, 2014).

Our Study Findings
SC Medicaid AT-RISK opioid users (50 mg to < 120 mg TDMED) are:

- more likely to have a heroin overdose prior to implementation (CY2013) vs. 1.8X after implementation (CY2016).

HIGH-DOSAGE opioid users (≥ 120 mg TDMED) are approximately:

- more likely to use more than 3 prescribing providers and pharmacies than those with lower prescription dosages (CY2013).

- 6X more likely to have a primary diagnosis of hepatitis C than those with a lower prescription dosage (CY2013-16).

Notes:
Classes represent adjusted natural breaks.
High-dosage is defined as a TDMED of 120 mg or higher.
Source: SC MMIS, CY2016
The risks associated with a high prescribed dosage of opioids do not follow a consistent geographical urban or rural distribution.

Differing geographical areas with poor outcomes require holistic interventions that address the multiple needs of individuals. Interventions must address increasing access to behavioral health services and providers trained to treat opioid addiction and related conditions.

In CY2016, five counties had populations among the highest percentages of those prescribed high-opioid dosages and high-risk outcomes (i.e., opioid “shoppers,” prescription opioid overdoses, heroin overdoses, and hepatitis C).

Those five counties were Anderson, Lexington, Dorchester, Berkeley, and Horry.

* Based on data distributions, only two classes are mapped for Prescription Opioid Overdoses, Heroin Overdoses, and Hepatitis C: low (absence of condition) and high (presence of condition).
Prescribing Patterns and Geographic Variation

DO PRESCRIBING PATTERNS DIFFER BY GEOGRAPHICAL AREAS?

The geographical prescription dosage patterns are higher in the upper, central, and coastal areas of South Carolina. The rural geographic pattern associated with higher average prescribing dosage has not changed substantially from previous reports.

In CY2016, the average opioid dosage per adult Medicaid user varied considerably by county. In high-prescribing counties (top quartile of the distribution), the average opioid dosage per person was 1.8 times greater than in low-prescribing counties (bottom quartile of the distribution).

See Appendix D for a map of average number of opioid milligrams dispensed per county resident.

APPENDIX D
Prescribing Patterns and Geographic Variation (continued)

SOCIAL DETERMINANTS IMPACT OPIOID ADDICTION RISK AND TREATMENT

**Key Findings**

Children born to parents who have not completed high school are more likely to live in an environment that poses barriers to health. Their neighborhoods are more likely to have:

- Unsafe Surroundings
- Exposed Garbage/Litter
- Dilapidated Housing
- Vandalism
- Sidewalks
- Parks
- Playgrounds
- Recreation Centers
- Libraries

**Impact of Risk Factors on Premature Death**

- **30%** Social & Environmental Factors
- **40%** Individual Behaviors
- **10%** Health Care

For the complete infographic, “Social and Economic Factors That Impact Health,” visit [schealthviz.sc.edu/Data/Sites/1/media/features/sdohinfographic.pdf](http://schealthviz.sc.edu/Data/Sites/1/media/features/sdohinfographic.pdf).

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KEY FINDINGS

SC ZCTAs
With the Highest Percentages of High-Dosage Opioid Users

Central and coastal locations are among the top 25 places for high-dosage opioid users in South Carolina.

Of the top 25 ZCTAs shown here, 72% are rural. Of those 18 rural ZCTAs, 61% are higher than or equal to their respective counties in % poverty, % unemployment and/or % with no high school diploma.

Social determinants of health, such as substandard housing, poverty, and unemployment, are seen at higher rates in rural communities. These determinants are known to increase the likelihood of opioid use that can, in turn, lead to opioid abuse.

Also, workers in rural occupations are susceptible to physical injuries that can lead to higher exposure to opioid prescriptions at higher dosages.
PMP POLICY ANALYSIS
Medicaid PMP Policy Implementation Analysis

% of SC Medicaid Recipients With an Opioid Prescription

FINDING: The PMP policy has reduced the percent of Medicaid recipients with an opioid prescription.

The values reported in this graphic are based on opioid users and Medicaid recipients with viable addresses in SC (approximately 99% of all records).

% With An Opioid Prescription: ↓29%

% With A High-Dosage Opioid Prescription: ↓15%
Medicaid PMP Policy Implementation Analysis
Prescription Maximum Dose Patterns

FINDING: The PMP policy has significantly reduced the average maximum TDMED.

The policy is successfully reducing the dosage for individuals with TDMED associated with all opioid users by 7% and high-dosage users by 6%. For an understanding of the impact of the PMP on at-risk users see Appendix E.

In contrast, there has been an increase of TDMED < 50mg between CY2013–CY2016. This change may require further exploration related to reasons for the increased lower-dosage prescription pattern.

Appendix E

RELATIVE CHANGE

All Opioid Users: ↓7%

High-Dosage Users ↓6%
Medicaid PMP Policy Implementation Analysis
Prescription Patterns Addressing Opioid Abuse Risk

FINDING: The PMP policy is positively associated with an increase of prescriptions for the treatment for opioid overdose/abuse and a reduction of fentanyl, associated with increasing risk of overdose.

In spite of removing individuals with diagnoses more likely to be prescribed fentanyl (e.g., cancer, hospice, and sickle cell disease) the number of individuals who received fentanyl prescriptions remained high in CY2016 compared to the number of individuals who received buprenorphine prescriptions to treat opioid dependence.

NOTE: Fentanyl is a powerful synthetic opioid analgesic that is similar to morphine. It is 50-100 times more potent than morphine. The high potency of fentanyl greatly increases risk of overdose.†

Medicaid PMP Policy Implementation Analysis

Doctor & Pharmacy “Shoppers”

FINDING: The PMP policy resulted in a 45% relative decrease in the % of those among the high-dosage opioid users identified as doctor and pharmacy “shoppers.”

A goal of the SC Medicaid PMP policy is to reduce the number of opioid doctor and pharmacy “shoppers,” who are known to be at increased risk of dependence, abuse, and overdose death.†

The PMP Medicaid policy has substantially reduced the percent of doctor and pharmacy shoppers across all TDMEDs.

<table>
<thead>
<tr>
<th>TDMED ≥ 120 mg</th>
<th>Relative Change</th>
<th>TDMED 50 to &lt;120 mg</th>
<th>Relative Change</th>
<th>TDMED 20 to &lt;50 mg</th>
<th>Relative Change</th>
<th>ALL OPIOID USERS</th>
<th>Relative Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.4</td>
<td>45%</td>
<td>5.1</td>
<td>43%</td>
<td>2.8</td>
<td>39%</td>
<td>5.9</td>
<td>27%</td>
</tr>
<tr>
<td>12.3</td>
<td></td>
<td>5.9</td>
<td></td>
<td>3.2</td>
<td></td>
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<td>8.4</td>
<td></td>
<td>5.0</td>
<td></td>
<td>2.5</td>
<td></td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td></td>
<td>3.1</td>
<td></td>
<td>1.6</td>
<td></td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1</td>
<td></td>
<td>0.8</td>
<td></td>
<td>1.1</td>
<td></td>
</tr>
</tbody>
</table>

Percent of the SC Medicaid Recipient Population With Opioid Prescriptions Identified as “Shoppers” by Prescribed Maximum Total Daily Morphine Equivalent Dose (TDMED)

Note: Shoppers are defined as those recipients who are prescribed opioids by more than 3 providers and have their prescriptions filled by more than 3 pharmacies within a calendar year.

The percent of recipients prescribed TDMED 0–<20 mg is 0% in any year and is not plotted.

† Yang et al., 2015.
CONCLUSIONS & RECOMMENDATIONS
CONCLUSIONS

The implementation of the Prescription Monitoring Program (PMP) has positively reduced the total daily morphine equivalent dose (TDMED) of Medicaid recipients across all TDMED levels.

1. Total daily morphine equivalent dosages < 20 mg TDMED experienced the largest increase in prescriptions. See Appendix E.

2. Reductions in the higher dosage prescription levels (≥ 120 mg TDMED) were small and do not significantly reduce the poor outcomes—opioid and heroin overdose and the growing rate of hepatitis C—among this population and among “shoppers.”

3. The PMP is making a difference in curtailing the growing opioid epidemic. However, continued gains must be grounded in a statewide commitment to holistic interventions. These interventions should address the clinical and social determinants that increase the risk of opioid dependence.
RECOMMENDATIONS

To increase the long-term effectiveness of the PMP and to lessen the impact on individuals and communities, the study findings suggest:

1. Implement a policy of prescribing partial dosage of 7 days for first-time opioid patients. This policy has the potential to curb unnecessary prescriptions at higher rates and without medical oversight ensuring the need for ongoing pain medication intervention.

2. Monitor the use of opioids at high-dosage levels.
   
   Use of Opioids at High Dosage. This measure assesses the rate of health plan members 18 years and older who receive long-term opioids at high-dosage (average morphine equivalent dose ≥ 120 mg).

3. Implement strategies to address “prescription shoppers” at the different levels.
   
   Use of Opioids from Multiple Providers measures to assess the rate of Medicaid beneficiaries 18 years and older who receive TDMED ≥ 120 mg from 3 or more multiple prescribers and pharmacies for at least 90 consecutive days.

4. Incorporate new variables measuring the initiation and engagement of opioid dependence services as a component of access to care and service utilization. To enhance existing reporting protocols, we recommend capturing the rate of individuals receiving the following services:
   - Medication-Assisted Treatment (MAT)
   - Outpatient treatment services
   - Telehealth treatment services
   - Emergency department visits
   - Inpatient hospital stays

5. Limit the number of prescriptions or require alternate authorization procedures for individuals without a known medical diagnosis for dosages ≥ 120 mg for 90 days or more. Any procedural change should not create a barrier for patients with medical conditions or end-of-life stage diseases where higher dosages are medically warranted.

6. Encourage testing for hepatitis C and illicit drug use among high-dosage opioid users who have long-term patterns of use.

7. Enhance the working relationship with SC SCRIPTS so as to link SC Medicaid data with all-payer data to identify “shopper” and related behaviors detrimental to the medical treatment of these patients and to formulate interagency approaches to address the problem.

8. Explore working with rural stakeholders on the development of approaches to lessen the impact on these communities and to enhance the provision of treatment services in these areas.
The geographical distribution of all opioid claims has not substantially changed from CY2013–CY2016.
Demographic Characteristics of High-Dosage Opioid Users, At-Risk Opioid Users, and All Opioid Users Combined Years (CY2013-CY2016) 
BY RACE

Note: At-Risk Opioid Users include all opioid users with a Total Daily Morphine Equivalent Dosage (TDMED) of 50<120 mg. High-Dosage Opioid Users include all opioid users with a TDMED greater than or equal to 120 mg. Race category charts do not include opioid users for whom race data is missing.
Demographic Characteristics of High-Dosage Opioid Users, At-Risk Opioid Users, and All Opioid Users Combined Years (CY2013-CY2016)

BY GENDER


Note: At-Risk Opioid Users include all opioid users with a Total Daily Morphine Equivalent Dosage (TDMED) of 50<120 mg. High-Dosage Opioid Users include all opioid users with a TDMED greater than or equal to 120 mg.
Average Number of Opioids Dispensed in Milligrams (MG) per County Resident
(Average county in US dispenses 426 MG)

MG Per Resident

- ≤ 325
- 326 – 526
- 527 – 726
- ≥ 727
Medicaid PMP Policy Implementation Analysis
Opioid Users by Maximum Dose Patterns

FINDING: The policy is successfully reducing the number of individuals with TDMED associated with at-risk (9%) and high-dosage (12%) opioid users. In contrast, there was an increase of TDMED < 50mg between CY2013–CY2016. This change may require further exploration related to reasons for the increased lower-dosage prescription pattern.

Note:
The total numbers of all opioid users for each year (regardless of TDMED value) are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Baseline</th>
<th>Policy Change</th>
<th>Full Implementation</th>
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</thead>
<tbody>
<tr>
<td>CY2013</td>
<td>8,480</td>
<td>4,591</td>
<td>4,040</td>
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<td>CY2014</td>
<td>9,899</td>
<td>4,798</td>
<td>5,174</td>
</tr>
<tr>
<td>CY2015</td>
<td>10,291</td>
<td>5,174</td>
<td>10,360</td>
</tr>
<tr>
<td>CY2016</td>
<td>10,360</td>
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<td></td>
</tr>
</tbody>
</table>

Note: The total numbers of all opioid users for each year (regardless of TDMED value) are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Numbers</th>
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<tbody>
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<td>CY2013</td>
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</tr>
<tr>
<td>CY2014</td>
<td>109,744</td>
</tr>
<tr>
<td>CY2015</td>
<td>109,454</td>
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<td>CY2016</td>
<td>97,430</td>
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