PRESCRIPTION DRUG MONITORING PROGRAM

BOONE COUNTY
Q3 2017

Contents

Executive Summary

St. Louis County enacted legislation on March 1, 2016, to establish and authorize the operation of a Prescription Drug Monitoring Program (PDMP) by Saint Louis County Department of Public Health (DPH). The St. Louis County PDMP is the first locally based PDMP in the country. DPH serves as the program administrator, and any Missouri jurisdiction may subscribe to the St. Louis County PDMP upon enacting authorizing legislation and signing a User Agreement with St. Louis County.

Chapter 602 of the St. Louis County Revised Ordinances (SLCRO) is known as the "St. Louis County Narcotics Control Act" or more commonly known as the PDMP ordinance.

The St. Louis County PDMP monitors the prescribing and dispensing of schedule II-IV controlled substances to assist in the identification and prevention of prescription drug misuse and abuse.

The program's goals are to 1) improve controlled substance prescribing by providing critical information regarding a patient's controlled substance prescription history, 2) inform clinical practice by identifying patients at high-risk who would benefit from early interventions, and 3) reduce the number of people who misuse, abuse, or overdose while making sure patients have access to safe, effective treatment.

The St. Louis County PDMP launched on April 25, 2017, with 14 jurisdictions participating in the initial implementation. As of December 31, 2017, 57 jurisdictions have enacted legislation to participate in the St. Louis County PDMP. Additional jurisdictions will continue to be added to the PDMP on a monthly basis. A list of all participating jurisdictions and links to enacted legislation can be found on the DPH PDMP website, www.stlouisco.com/PDMP.

Additional information on the PDMP can be found at www.stlouisco.com/PDMP or by contacting DPH at PDMP.DPH@stlouisco.com or 314-615-0522.

This report contains dispensation information for patients residing in Boone County submitted by dispensers (pharmacies) in any of the 32 jurisdictions participating in PDMP implementation cycles 1-3. Quarter 3 (Q3) 2017 (July-September) is the second complete quarter the PDMP was operational, and this report contains only prescriptions dispensed in Q3 2017. As this report only contains one quarter of information, the findings are not necessarily indicative of average prescribing practices in Boone County. Rates in this report represent projected annual rates based on one quarter of data. Pharmacy compliance is an ongoing focus of DPH, and while over 90% of pharmacies are appropriately submitting data, not all pharmacies were submitting data at the time of this report. DPH continues to work with pharmacies on data submission and increasing pharmacy compliance. Appendix A contains data tables used to create all figures.

Figure 1 represents the PDMP participation status for Q3 2017; these jurisdictions were part of the first 3 PDMP implementation cycles. Prescriptions dispensed from these jurisdictions to Boone County residents are reflected in this report.

Figure 2 represents the PDMP participation status as of December 31, 2017. 57 jurisdictions are currently participating in the PDMP and cover 79% of the Missouri population and 92% of healthcare providers.

Figure 1. PDMP participation map for implementation cycles 1-3 (as of 07/01/2017).
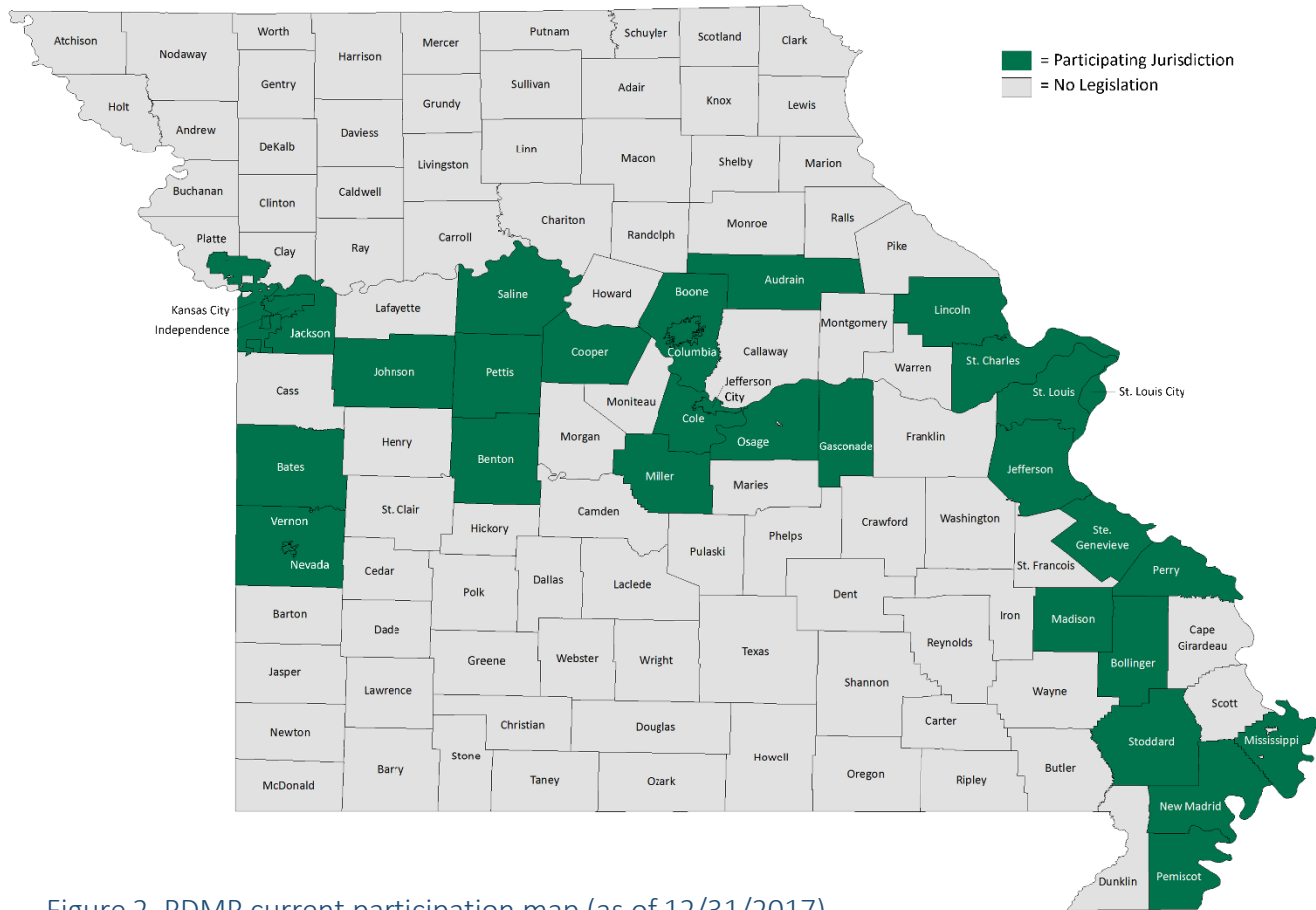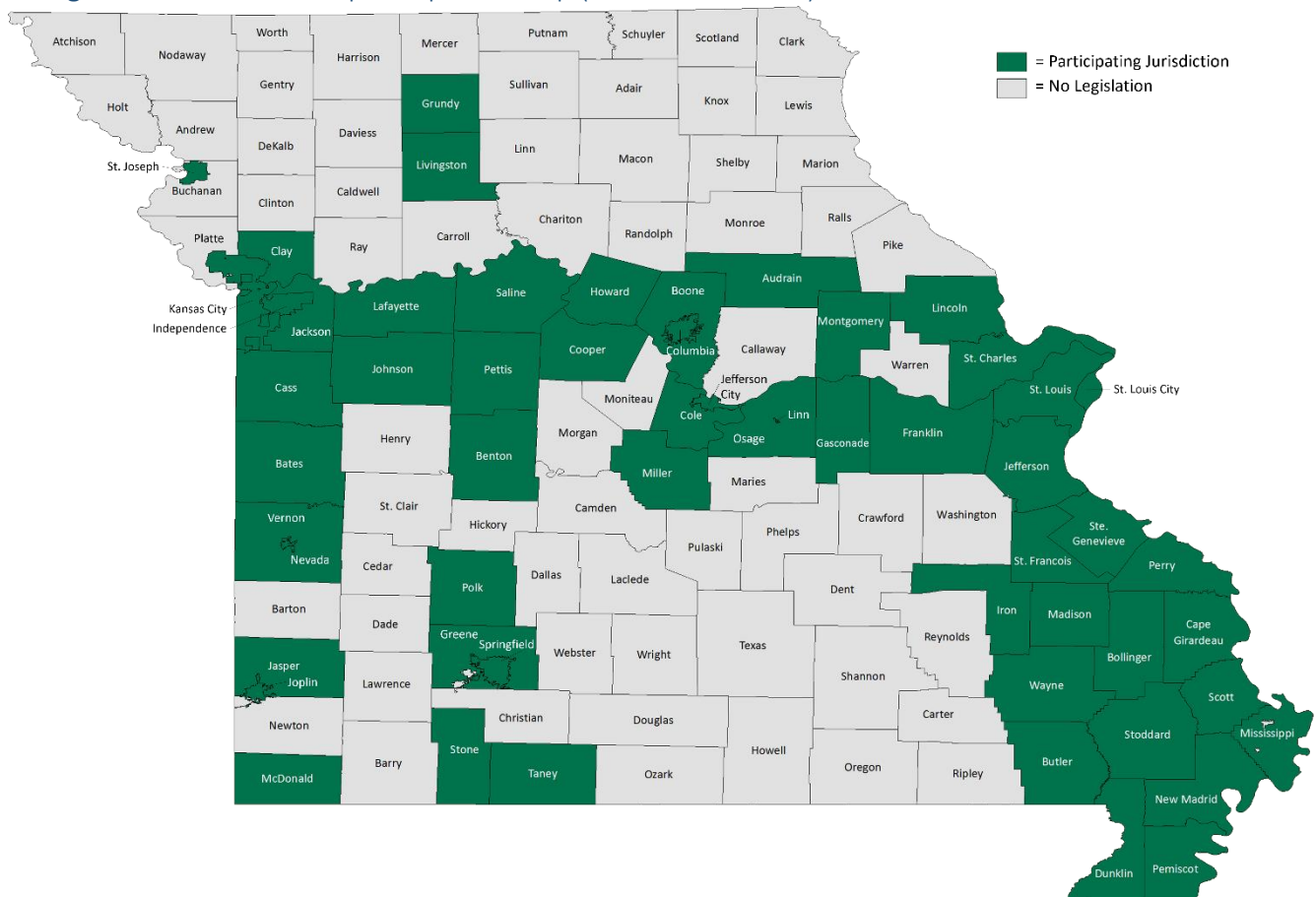

Figure 2. PDMP current participation map (as of 12/31/2017).

User Registration & System Utilization

Section 602.806 SLCRO details persons authorized to be provided dispensation information or authorized users. Authorized users are divided into three categories with varying levels of access to the PDMP and to PDMP data.

1) Authorized users with direct, full access to the PDMP.
   a. Healthcare providers accessing the PDMP for the purpose of providing medical or pharmaceutical care have direct, full access to the PDMP. Doctors, dentists, and pharmacists have the ability to supervise and delegate access to the PDMP but maintain all liability. Examples of delegate users include nurses, pharmacy technicians, and medical residents.
2) Authorized users with restricted or limited access to the PDMP.
   a. These authorized users register in the PDMP and can submit search requests, but these requests require DPH approval and verification of additional ordinance requirements before authorized users are provided with any PDMP data. Authorized users with restricted PDMP access include state regulatory boards, law enforcement or prosecutorial officials, MO HealthNet, and judges or judicial officers.
3) Authorized users with ability to request PDMP data but do not directly access the PDMP.
   a. Persons may request their own dispensation information in accordance with law. These requests are submitted directly to DPH and returned to the requestor.

Each user must register individually in the PDMP. Registration requires users provide personal and employer information along with validation documentation. Validation documentation is required for all users and varies by user type. Healthcare providers must provide a copy of their current professional license. DPH validates registration information prior to approving access to the PDMP.

User registration for the PDMP opened on April 4, 2017. As of December 31, 2017, there are over 5,290 approved users within the system. Figures 3 and 4 represent approved user counts for the total PDMP by month and type, respectively. User registration has steadily increased since registration started in early April. Approximately 50 new users are registering per day. Pharmacists represent approximately 44% of users, and physicians represent 41%. Delegate comprise 13% of users and include medical residents, pharmacy technicians, nurses, etc. Pharmacists comprise the largest user group as expected as pharmacists receive multiple rounds of communication and are required to submit dispensation to the PDMP. It is expected that the physician and delegate user groups will surpass pharmacist users as the PDMP progresses.

System utilization has increased as both the number of approved users and participating jurisdictions have increased. In May 2017, PDMP users were performing an average of 690 patient searches per day. In December 2017, over 1,400 patient searches were performed by approved users each day. Increasing utilization of the PDMP will be of primary focus for DPH in 2018.

Figure 3. PDMP Approved User Counts by Month.

PDMP Approved Users by Month

Month	Number of Approved Users
April	996
May	2,735
June	3,198
July	3,614
August	3,968
September	4,309
October	4,659
November	5,006
December	5,294
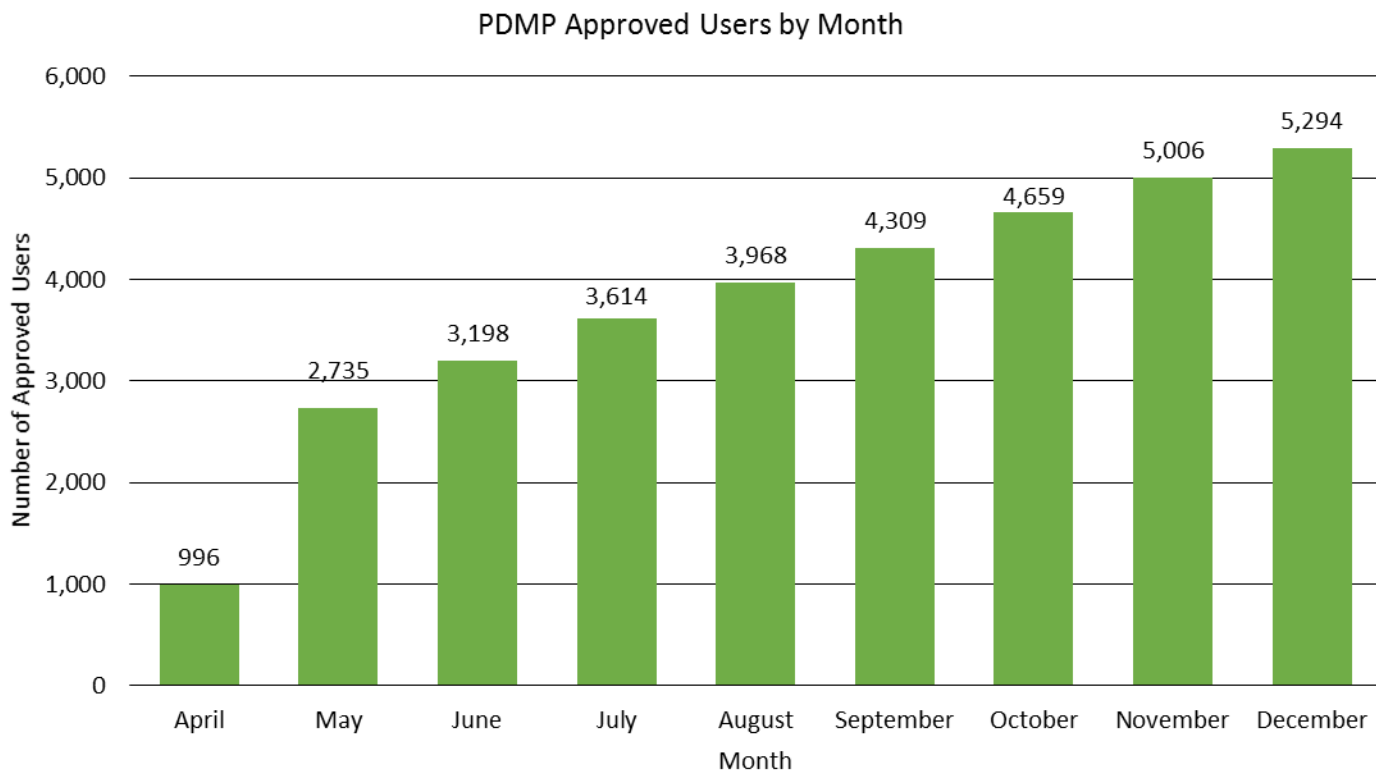
Figure 4. PDMP Approved User Counts by User Type.

User Type	Count
Pharmacist	2,312
Physician (MD, DO)	2,161
Delegate	685
Dentist	100
Other	17
Podiatrist (DPM)	10
Optometrist	9
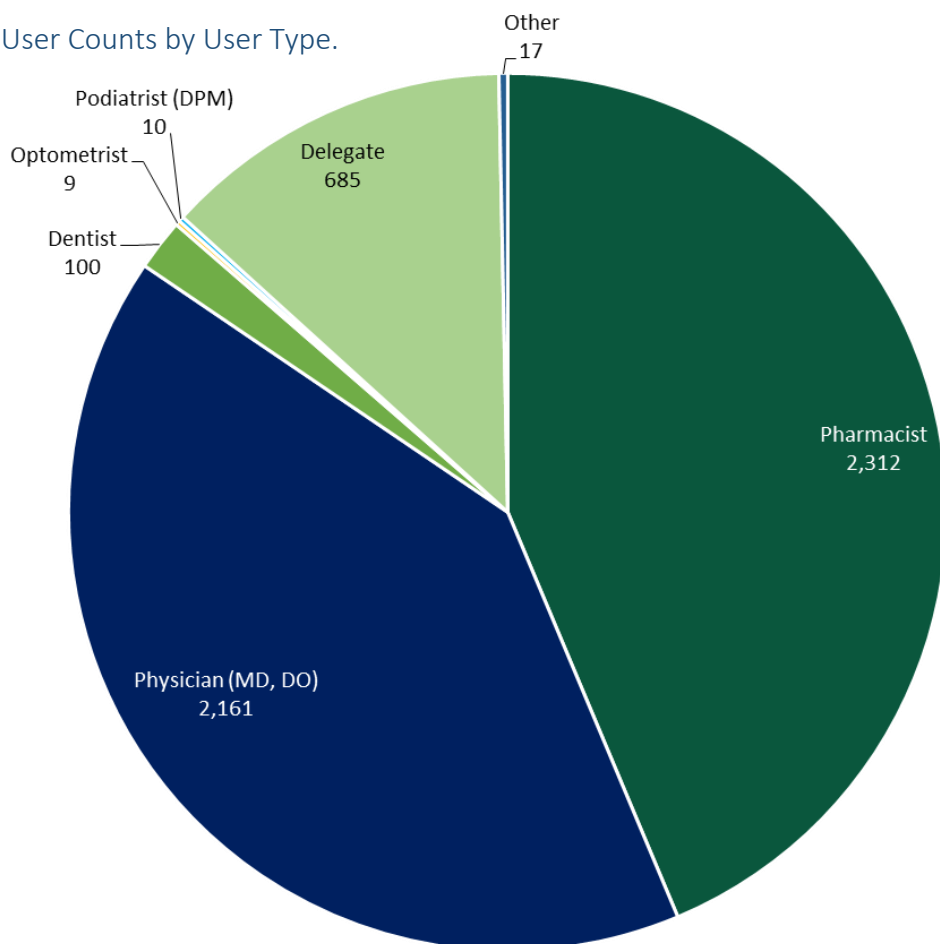
Dispensation Rates

Throughout this report, rates will be represented per 1,000 population. Significance noted in the report is statistical significance at a 95% confidence level (α=0.05). Rates in this report represent projected annual rates based on one quarter of data. Population counts were identified from the 2010 census. Appendix A contains dispensation data tables. Suppressed rates indicate too few dispensations to report; counts less than or equal to 5 were suppressed per DPH policy. Dispensation rates by geography, age, gender, and drug type will be discussed in this report with statistically significant differences highlighted. The total or overall rate means the rate of all jurisdictions participating in PDMP implementation cycles 1-3. When examining rates by gender, total rates include dispensations to those with a gender of male, female, and unknown. Rates for those with an unknown gender are not separately displayed but are included in the total rates.

While 32 jurisdictions enacted legislation to participate in PDMP implementation cycles 1-3, for the purpose of this report, some jurisdictions are combined. Boone County represents both City of Columbia and Boone County; Cole County represents Jefferson City and Cole County; and Vernon County represents City of Nevada and Vernon County. Both Osage and Mississippi Counties enacted PDMP legislation, but the enacted legislation does not apply to incorporated areas of the Counties. All Osage and Mississippi County pharmacies are located in incorporated areas and therefore not covered by legislation. Dispensations from Osage and Mississippi Counties were not included in the Q3 reports.

Again, pharmacy compliance is a continued focus of DPH, and not all pharmacies were appropriately reporting data at the time of this report.

Dispensation Rates by Geography

Dispensation rates vary by patient residence. The schedule II-IV controlled substance dispensation rate of the total system is 1,578.5 prescriptions per 1,000 population. Madison County residents receive the highest rates of controlled substance dispensations (2,254.9 prescriptions per 1,000 population). Miller County residents receive the lowest rates of controlled substances (860.8 prescriptions per 1,000 population). Boone County's dispensation rate is significantly lower than the overall system (1,364.5 prescriptions per 1,000 population).

When compared to the total system (all jurisdictions combined), 9 jurisdictions have significantly higher dispensation rates. In descending order of dispensation rates, these 9 jurisdictions are: Madison County, Pemiscot County, Jefferson County, Lincoln County, St. Charles County, City of Independence, Jackson County (excluding Kansas City & Independence), Benton County, and Stoddard County.

15 jurisdictions have significantly lower rates (again in descending order): St. Louis County, Cole County, Perry County, New Madrid County, Boone County, Pettis County, Bollinger County, Kansas City, Vernon County, Audrain County, St. Louis City, Gasconade County, Johnson County, Cooper County, and Miller County.

Bates County, Ste. Genevieve County, and Saline County's dispensation rates are not significantly different than the overall system.

Figure 5 represents the dispensation rates per 1,000 population for each jurisdiction. Jurisdictions were categorized as either higher, lower, or not different than the overall dispensation rate based on statistical significance at α=0.05. In Figure 5, the darker the color, the higher the dispensation rate.

Further figures compare Boone County to the entire system. Note that not all figures are on the same scale.

Figure 5. Schedule II-IV controlled substance dispensation rates per 1,000 by patient residence.

Schedule II-IV Controlled Substance Dispensation Rates by Patient Residence
- Higher than overall rate
- Not different than overall rate
- Lower than overall rate
- No Legislation

* Rate differences based on statistical significance at $\alpha = 0.05$.

** Overall rate means the rate of all jurisdictions participating in PDMP implementation cycles 1-3.
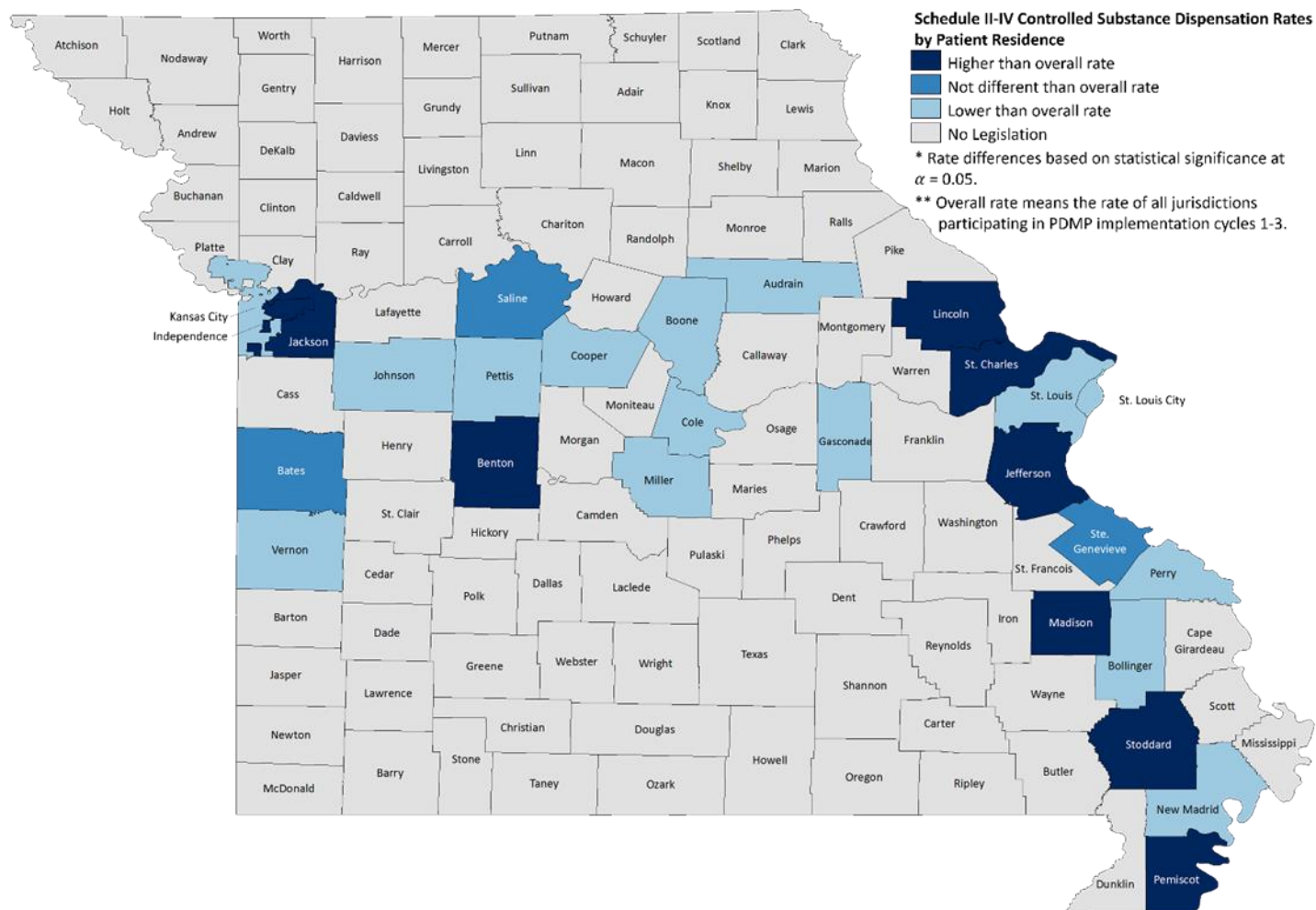
Dispensation Rates by Gender

Females receive controlled substance prescriptions at significantly higher rates than males in both Boone County and the entire system (Figure 6). The dispensation rate for Boone County females is 1,508.6 prescriptions per 1,000 population compared to 1,166.4 per 1,000 population for males. There is no significant difference in controlled substance dispensation rates for males in Boone County compared to the overall system while Boone County females receive significantly lower rates of controlled substances compared to the overall system.

Figure 6. Controlled substance dispensation rates per 1,000 population by gender.

Schedule II-IV Controlled Substance Dispensation Rates per 1,000 population by Gender, All Ages, Q3 2017
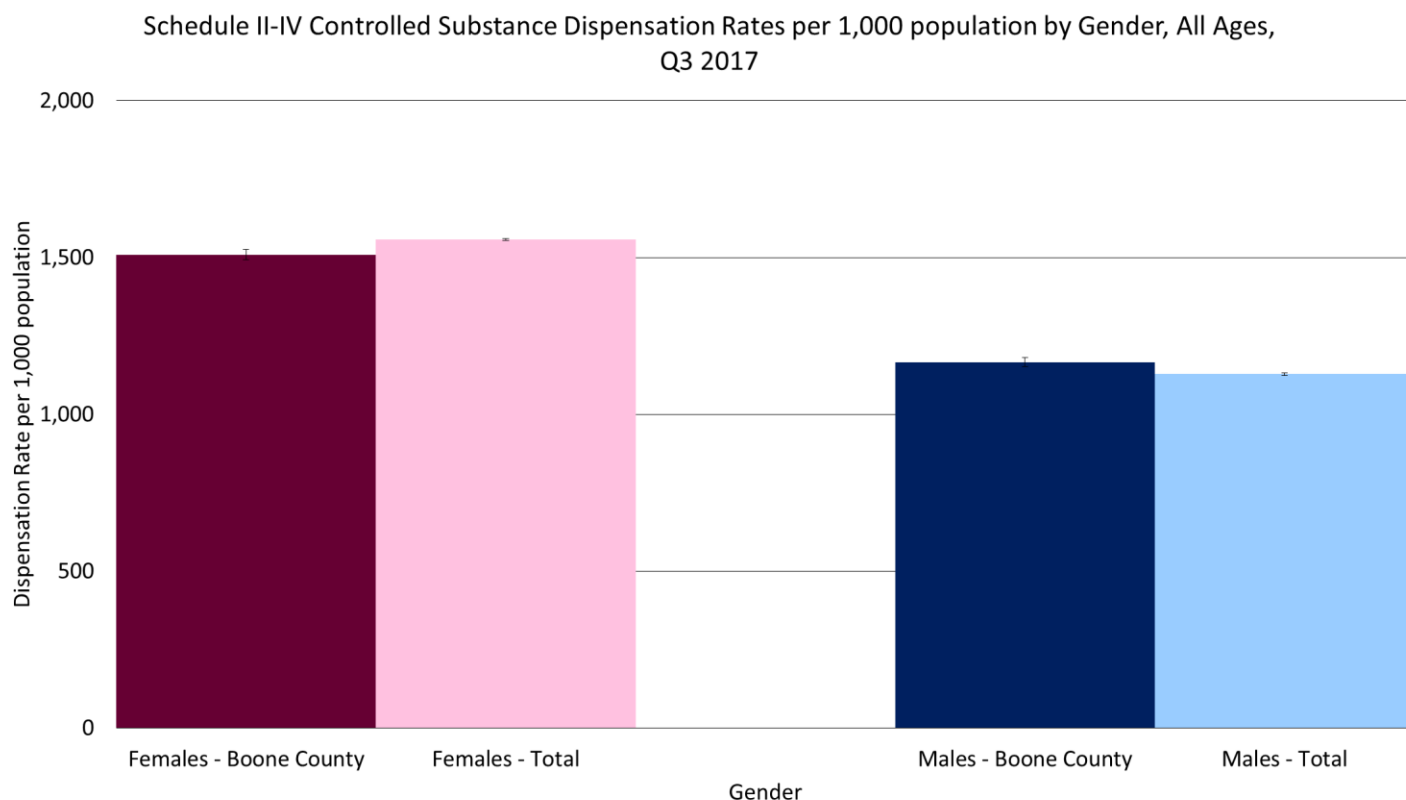
Dispensation Rates by Age

Dispensation rates generally increase with age (Figure 7). Unlike the overall system which experiences a significant decrease from ages 55-64 to 65+, dispensation rates for Boone County residents increase as age increases. Boone County residents aged 65+ receive the highest rates of controlled substances at 3,088.4 dispensations per 1,000 population. Overall, Boone County residents receive significantly lower rates of controlled substances than the overall system.

Figure 7. Controlled substance dispensation rates per 1,000 population by age.

Schedule II-IV Controlled Substance Dispensation Rates per 1,000 population by Age, All Genders, Q3 2017
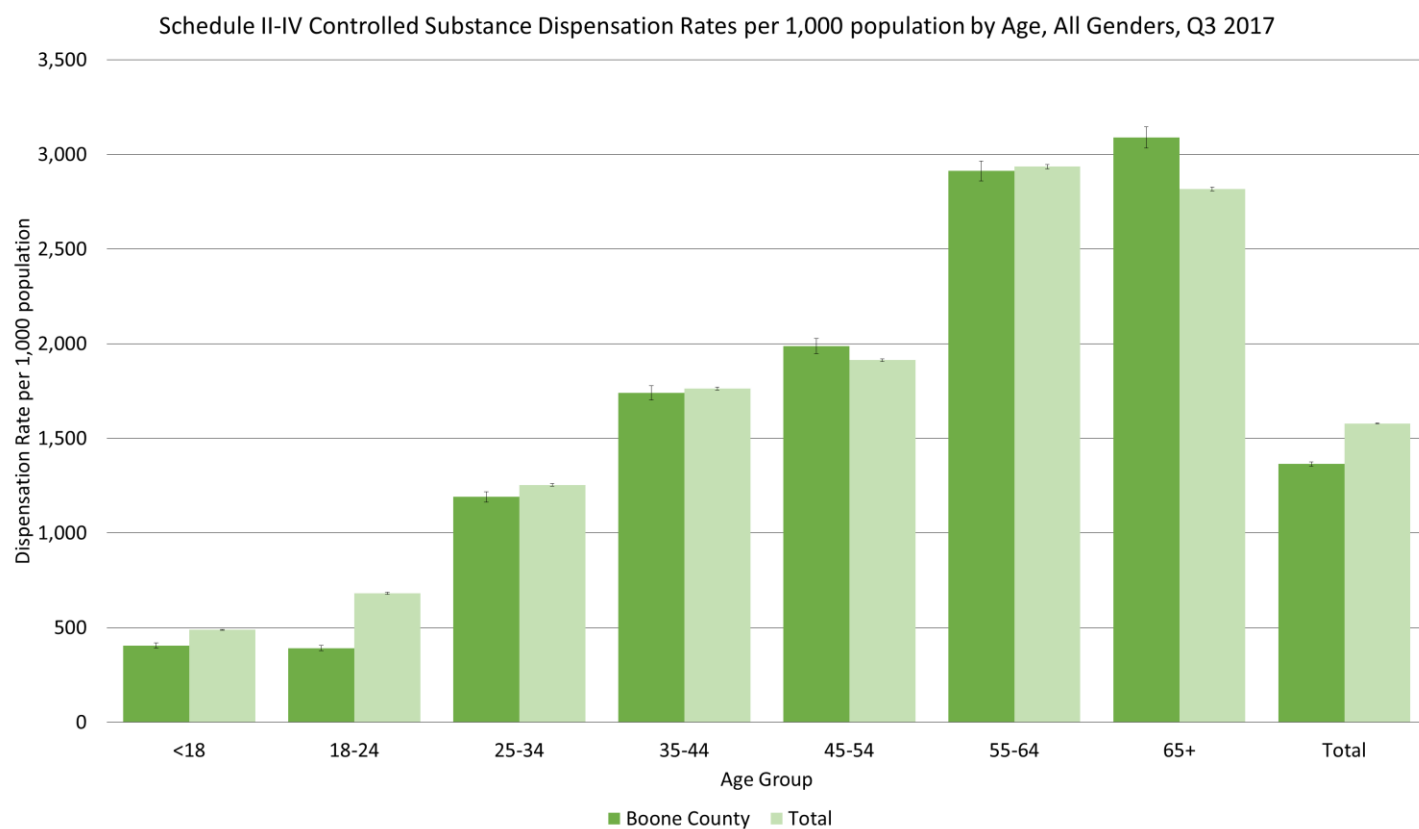
Dispensation Rates by Age and Gender

Across all schedule II-IV controlled substances, Boone County females receive higher rates of controlled substance dispensations for all ages, except for those under 25 years old. Figure 8 demonstrates that, across both genders, dispensation rates increase with age for both Boone County and the overall system. In Boone County, females aged 65+ receive the highest rates of controlled substances at 3,380.8 prescriptions per 1,000 population. Males in Boone County aged 65+ receive the highest rates of controlled substances at 2,627.9 prescriptions per 1,000 population. Boone County residents receive significantly higher rates of controlled substances than the overall system for those aged 25+.

Figure 8. Controlled substance dispensation rates per 1,000 population by age and gender.

Schedule II-IV Controlled Substance Dispensation Rates per 1,000 population by Age and Gender, Q3 2017
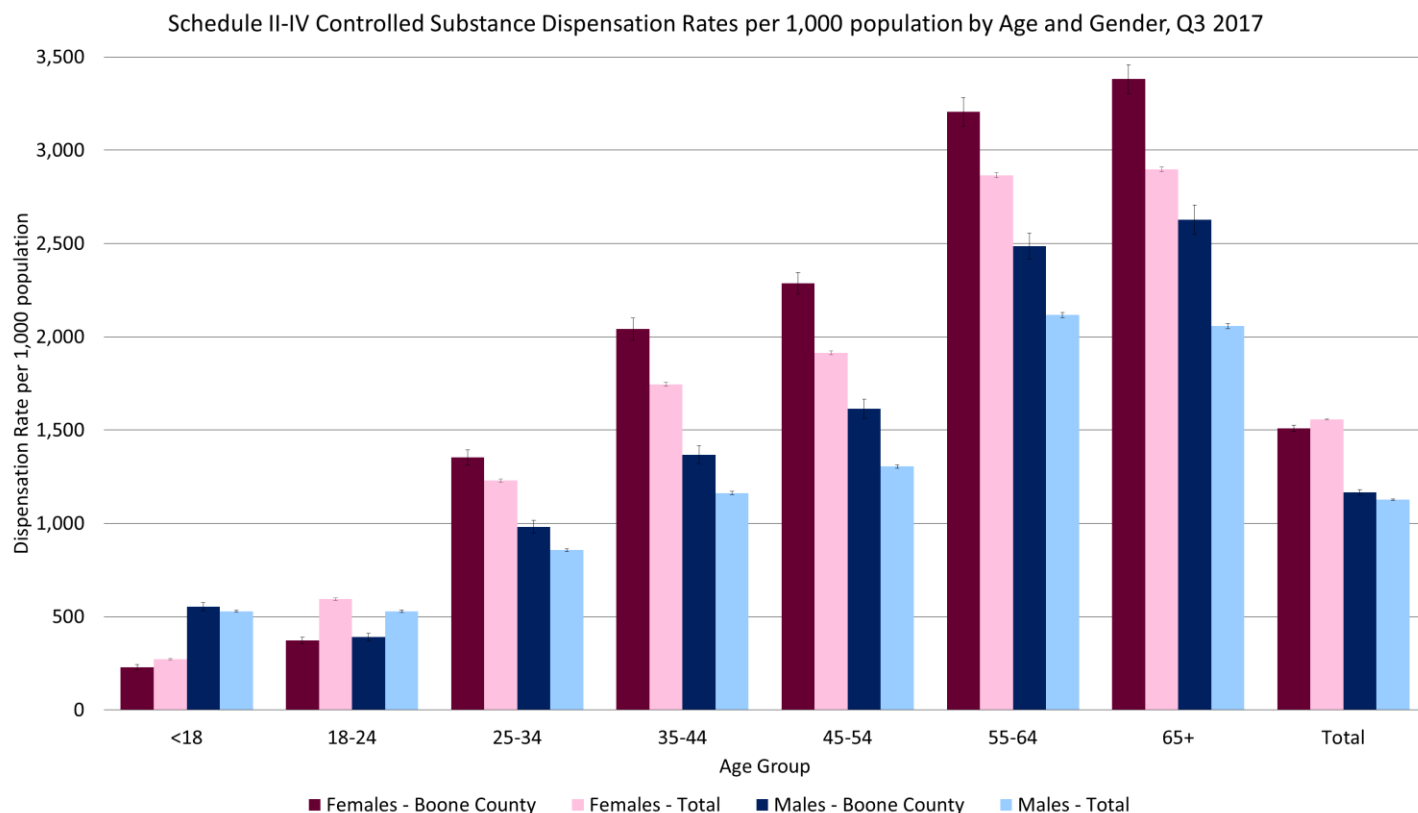
Dispensation Rates by Age, Gender, and Drug Type

The group 'Unclassified' contains schedule II-IV controlled substances not classified as opioids, benzodiazepines, muscle relaxants, stimulants, or zolpidem. Steroids and hormones are two examples of unclassified controlled substances.

All Ages

Across all age groups, opioids are the most frequently prescribed schedule II-IV controlled substance drug type (Figure 9). Benzodiazepines are the second most frequently prescribed drug type, followed by stimulants, zolpidem, unclassified, and muscle relaxants. Females receive higher rates of all drug types, except stimulants. Opioids comprise approximately 40% of all controlled substances dispensed.

Figure 9. Dispensation rates per 1,000 by gender and drug type, all ages.

Schedule II-IV Controlled Substance Dispensation Rates per 1,000 population by Drug Type and Gender, Q3 2017
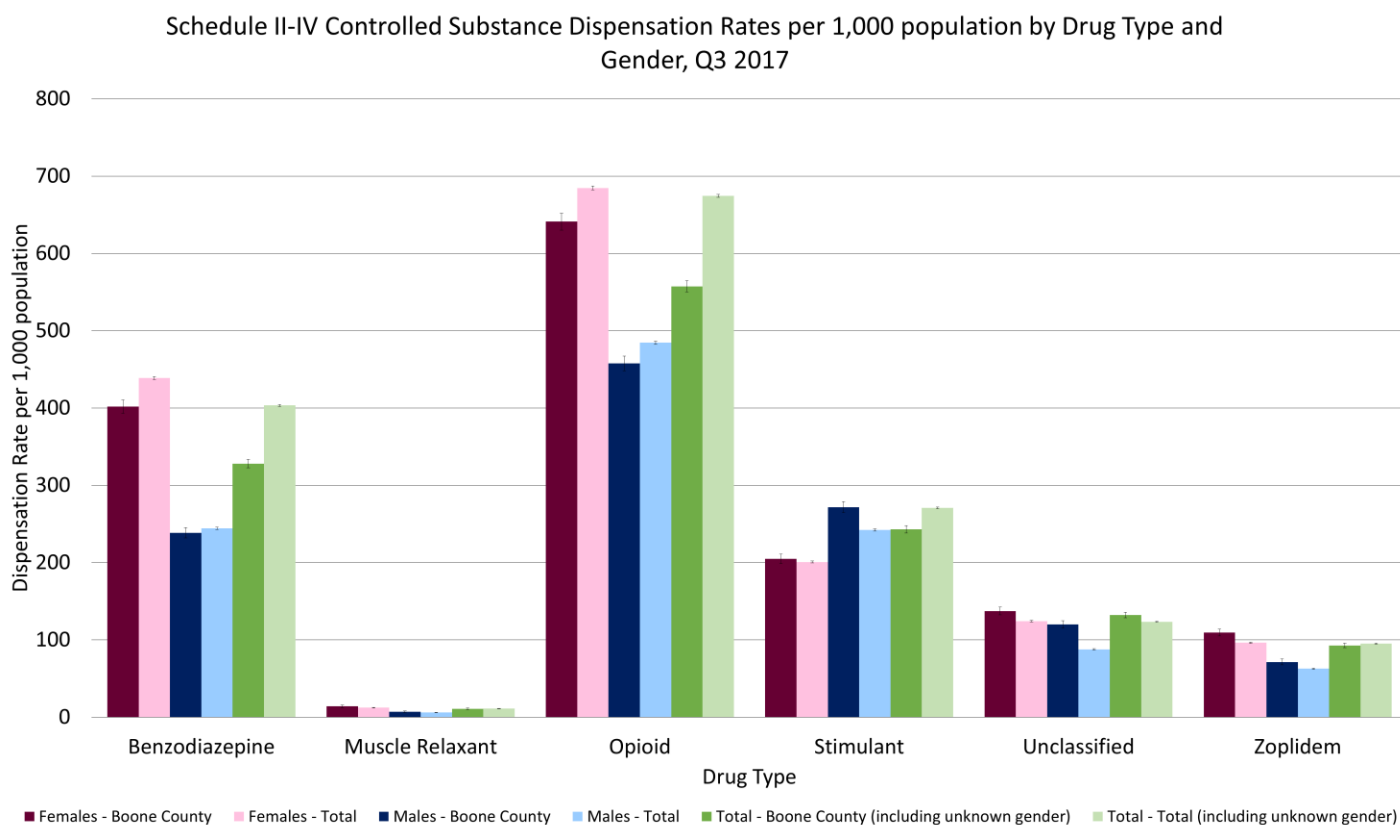
Opioid Dispensations

Opioid Dispensation Rates by Geography

Opioid dispensation rates per 1,000 population are represented in Figure 10. Jurisdictions were categorized as either higher, lower, or not different than the overall opioid dispensation rate based on statistical significance at α=0.05. In Figure 10, the darker the color, the higher the dispensation rate.

The opioid dispensation rate for the total system is 674.5 prescriptions per 1,000 population. Like all schedule II-IV controlled substances, Madison County residents receive the highest rates of opioid prescriptions (1,152.6 prescriptions per 1,000 population). Miller County residents receive the lowest rates of opioid prescriptions (437.0 prescriptions per 1,000 population). Boone County residents receive opioid prescriptions at a significantly lower rate than the total system (557.4 prescriptions per 1,000 population).

When compared to the total system (all jurisdictions combined), 12 jurisdictions have significantly higher opioid dispensation rates. In descending order of dispensation rates, these 12 jurisdictions are: Madison County, Lincoln County, Pemiscot County, Benton County, City of Independence, Jefferson County, Bates County, Saline County, Stoddard County, St. Charles County, Ste. Genevieve County, and Jackson County (excluding Kansas City & Independence).

13 jurisdictions have significantly lower rates (again in descending order): Pettis County, Cole County, St. Louis County, Gasconade County, St. Louis City, Kansas City, Perry County, New Madrid County, Audrain County, Johnson County, Boone County, Cooper County, and Miller County.

Bollinger County and Vernon County's opioid dispensation rates are not significantly different than the overall system.

Figure 10. Opioid dispensation rates per 1,000 by patient location.

Opioid Dispensation Rates by Patient Residence
- Higher than overall rate
- Not different than overall rate
- Lower than overall rate
- No Legislation

* Rate differences based on statistical significance at $\alpha = 0.05$.

** Overall rate means the rate of all jurisdictions participating in PDMP implementation cycles 1-3.
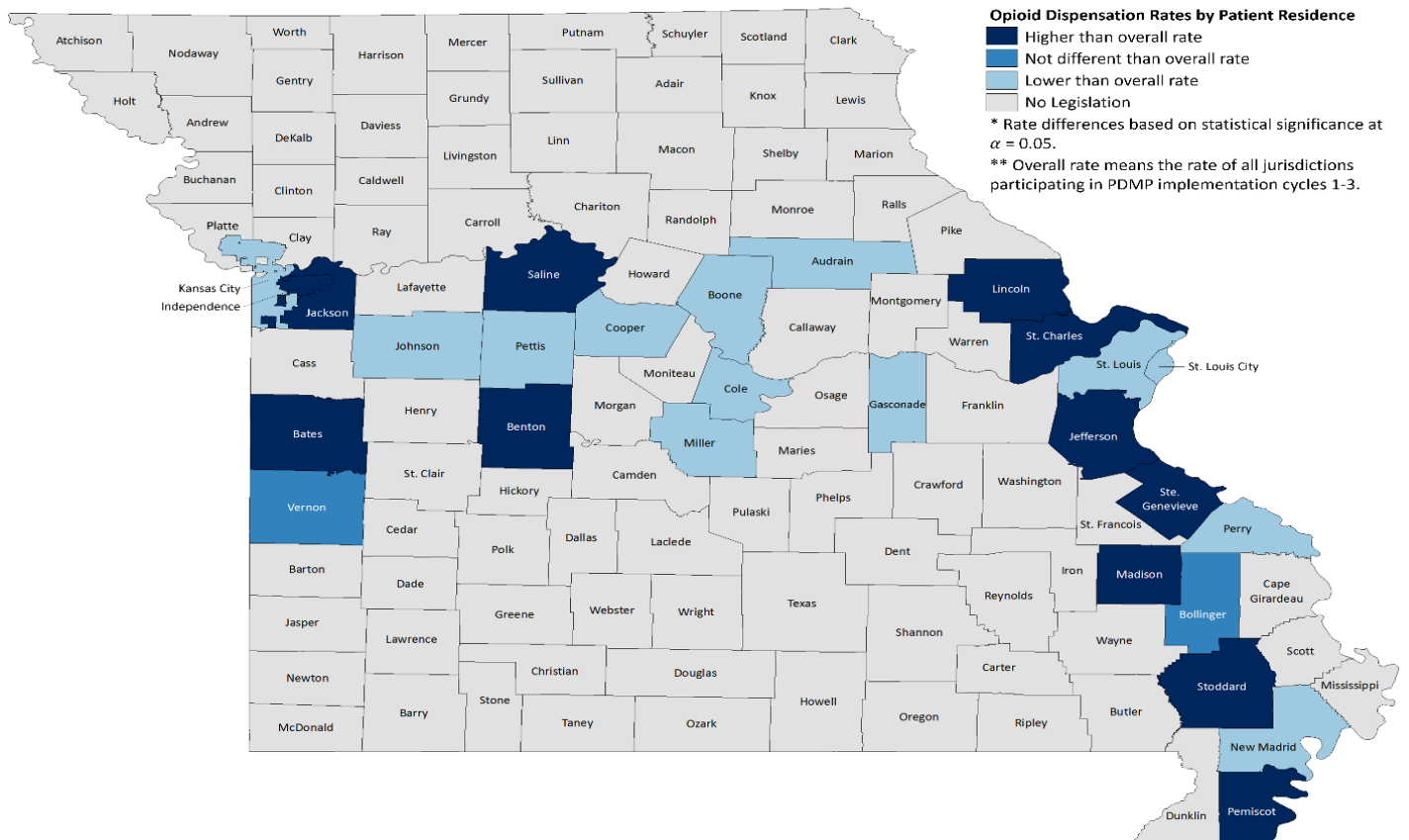
Opioid Dispensation Rates by Age and Gender

When examining opioid dispensation rates by age group, Boone County females receive significantly higher rates of opioid prescriptions than males for those aged 25+ (Figure 11). Across both genders, Boone County residents aged 65+ receive the highest rates of opioids compared to all other age groups (1,567.7 prescriptions per 1,000 population). Boone County females aged 65+ receive the highest rates of opioids compared to all other age and gender groups (1,737.6 prescriptions per 1,000 population). Among Boone County males, those aged 65+ receive the highest rates of opioids at 1,308.6 dispensations per 1,000 population.

Figure 11. Opioid dispensation rates per 1,000 by age and gender.

Age-Adjusted Opioid Dispensation Rates per 1,000 population by Age and Gender, Q3 2017
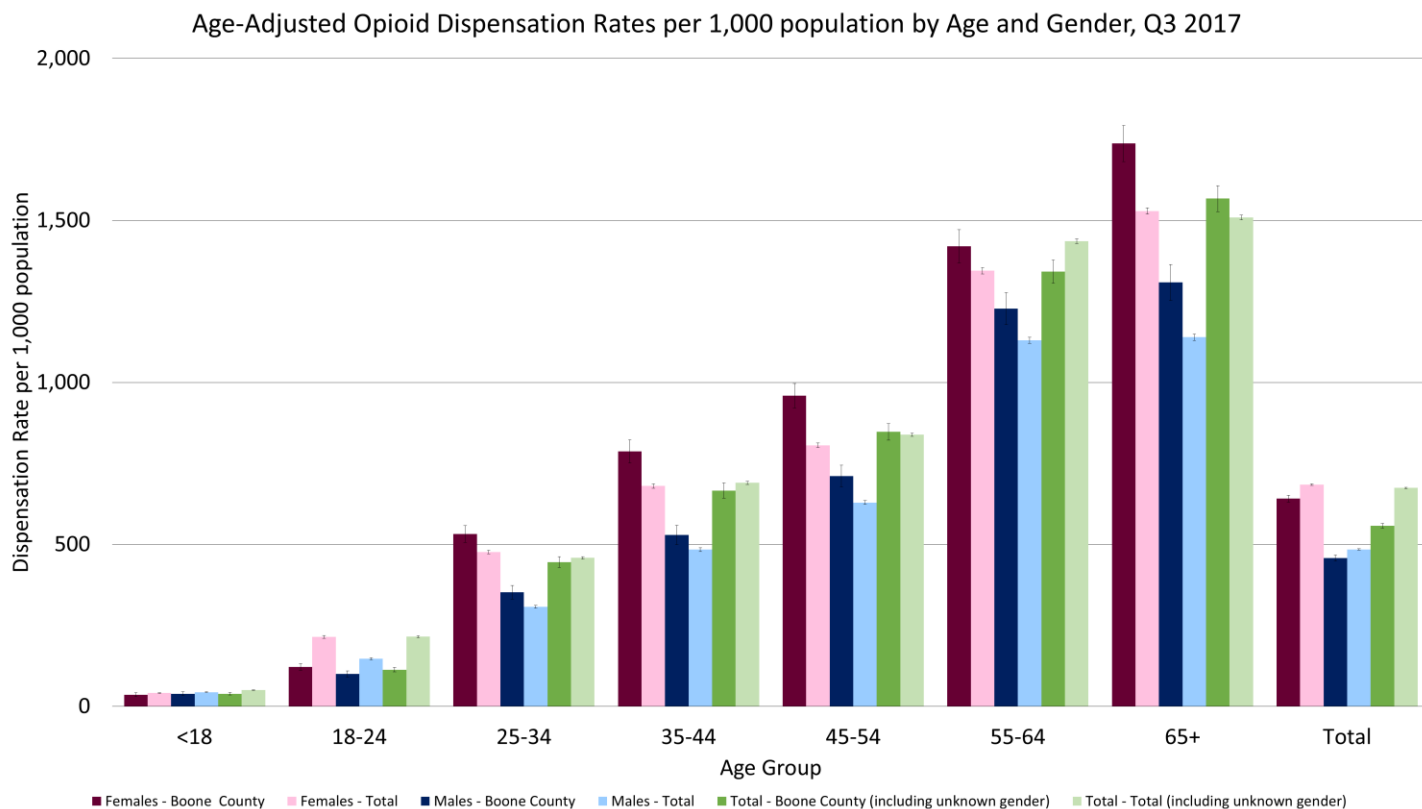
Morphine Milligram Equivalents (MME)

Opioid dispensations were categorized into one of three morphine milligram equivalent (MME) groupings using CDC's prescribing guidelines. Per CDC's guidelines, prescribers are to prescribe the lowest dosage possible, use caution when writing prescriptions for 50-90 MME, and use extreme caution when exceeding 90 MME. From these guidelines, opioid dispensations were categorized into <50 MME (low dose), 50-90 MME (medium dose), and >90 MME (high dose).

Of note, this data represents individual opioid prescriptions, not a cumulative patient total. It is possible for patients to receive multiple opioid prescriptions that combine to a daily MME greater than 90.

As displayed in Figure 12, the low dose opioids (MME<50) are the most commonly prescribed MME dosage category. In Boone County, low dose opioids (<50 MME) have the highest dispensation rates (376.7 prescriptions per 1,000 population) compared to all other dosage categories. Dispensation rates decrease as dosage increases. Opioid dispensations 50-90 MME have higher dispensation rates than opioid dispensations >90 MME for Boone County residents, 98.3 and 64.2 prescriptions per 1,000 population, respectively. As shown in Figure 13, buprenorphine and methadone are in the top ten opioids dispensed. These drugs are typically used in medication assisted treatment (MAT) and have high MME conversions. Overall, low dose opioid prescriptions (<50 MME) comprise approximately 70% of all opioid dispensations.

Figure 12. Opioid dispensations by MME category.

Opioid Dispensation Rates per 1,000 population by Morphine Milligram Equivalent (MME) Category and Gender, All Ages, Q3 2017
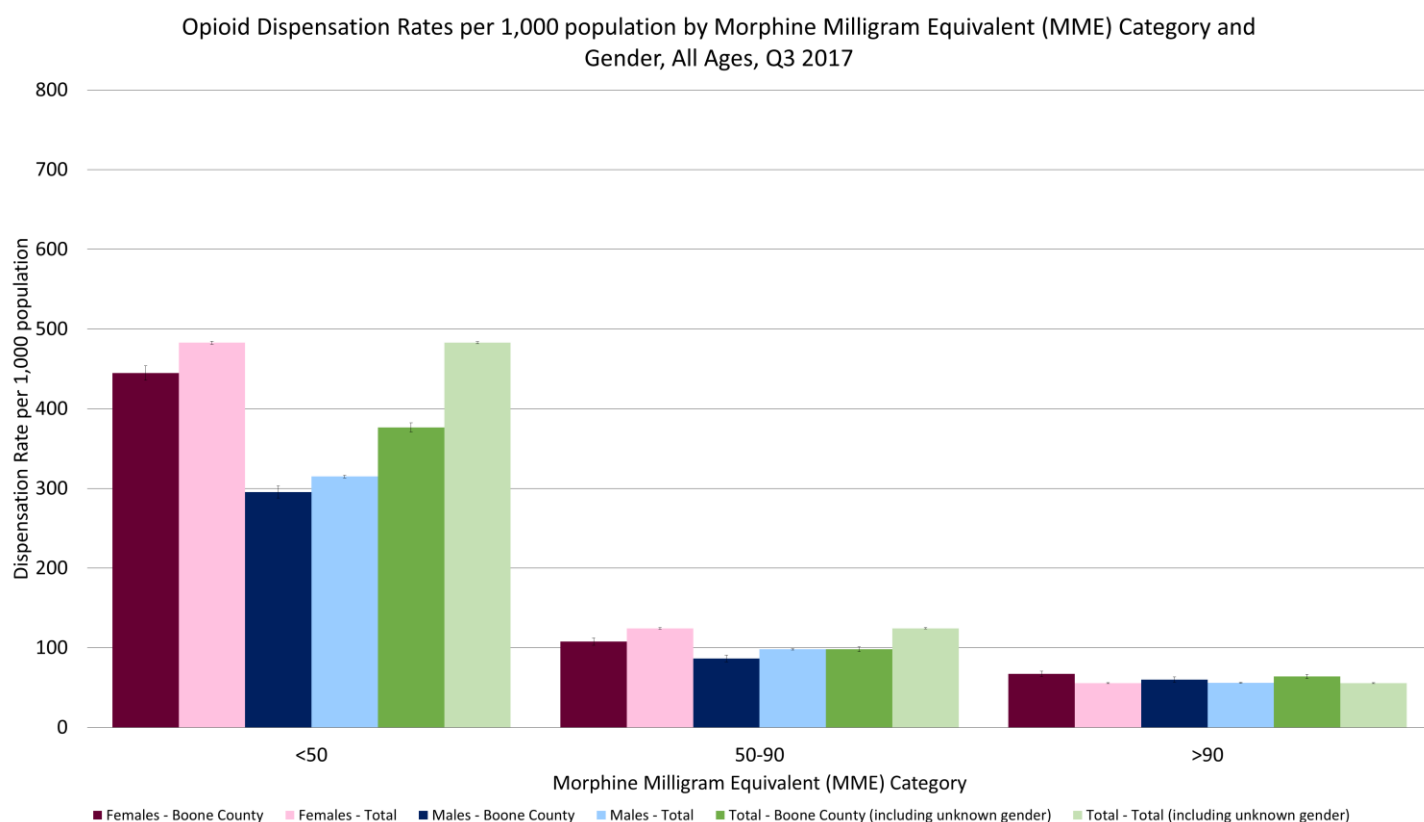
Primary Drug Ingredient

Figure 13 displays the top ten opioids dispensed by primary drug ingredient for the overall system. In descending order, hydrocodone, oxycodone, and tramadol are the three most frequently prescribed opioids. These three drugs comprise 85% of all opioids dispensed. Buprenorphine and methadone are in the top 10 dispensed opioids; these opioids are typically used in medication assisted treatment (MAT) for opioid use disorder.

Figure 13. Percent of opioid dispensations by top 10 primary drug ingredients.

Opioid Dispensations by Primary Drug Ingredient, All Ages and Genders, Q3 2017
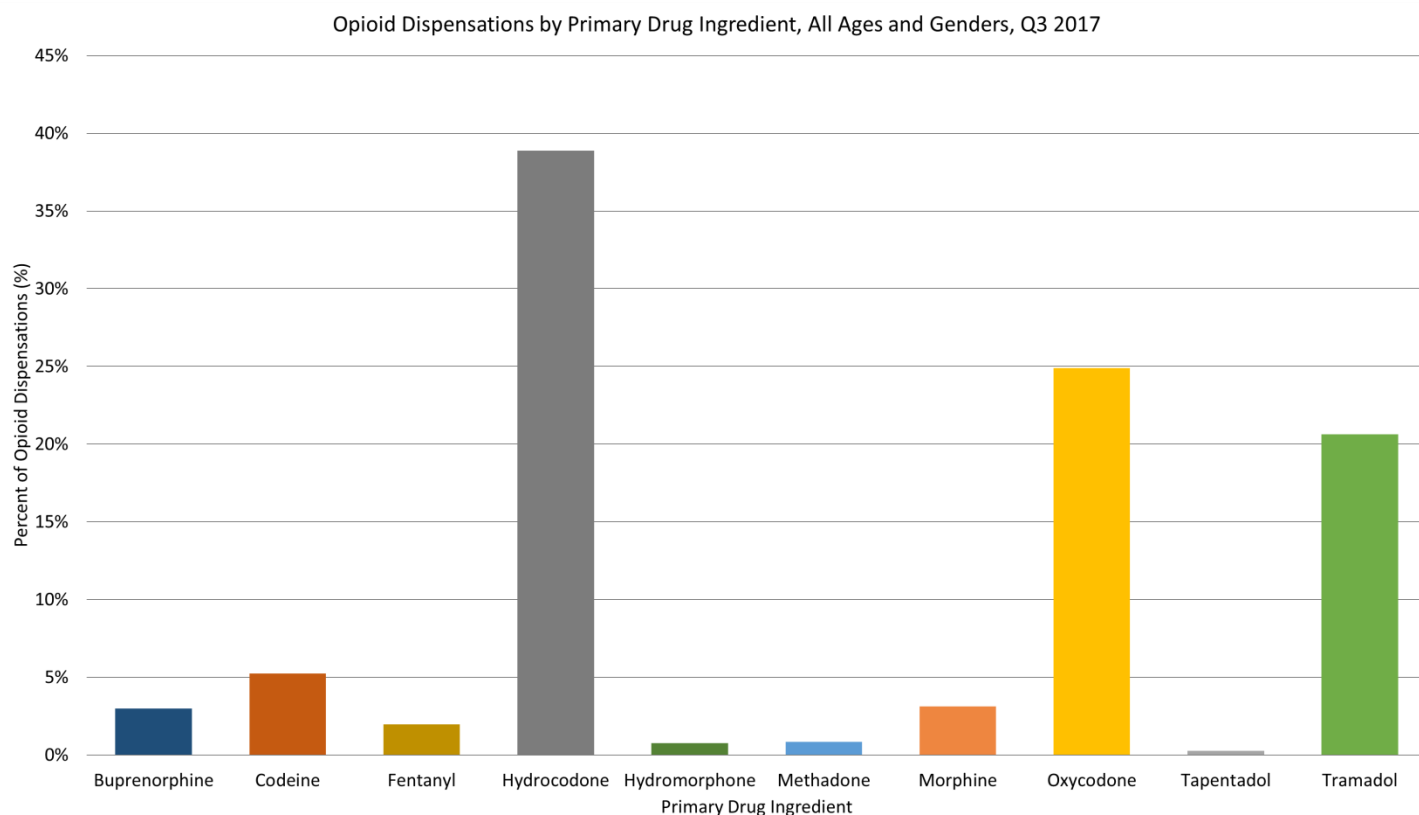
Appendix A: Data Tables

Table 1. Schedule II-IV controlled substance dispensation rates per 1,000 population by jurisdiction.

Schedule II-IV	<18		18-24		25-34		35-44		45-54		55-64		65+		Total	
	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
Audrain County	409.5	(378.1, 440.9)	506.5	(445.3, 567.7)	953.0	(885.9, 1020.1)	1327.8	(1246.9, 1408.7)	1509.1	(1428.7, 1589.4)	2519.2	(2406.4, 2632.1)	2040.2	(1952.5, 2127.8)	1265.4	(1237.8, 1293.0)
Bates County	223.8	(195.4, 252.2)	621.1	(533.0, 709.2)	1269.5	(1167.1, 1371.9)	1866.1	(1745.1, 1987.2)	1918.1	(1811.9, 2024.3)	3185.6	(3033.6, 3337.7)	2661.8	(2545.4, 2778.2)	1614.2	(1576.0, 1652.3)
Benton County	265.3	(230.9, 299.8)	378.5	(305.0, 451.9)	1354.7	(1231.5, 1478.0)	1638.7	(1523.0, 1754.4)	2224.8	(2116.1, 2333.6)	2697.9	(2588.4, 2807.3)	2213.9	(2130.9, 2297.0)	1729.6	(1692.3, 1767.0)
Bollinger County	338.7	(296.5, 380.9)	296.8	(227.7, 365.8)	574.6	(491.3, 657.8)	1007.9	(906.8, 1109.0)	1859.6	(1738.5, 1980.6)	2666.7	(2510.9, 2822.4)	2203.0	(2074.8, 2331.2)	1310.4	(1270.0, 1350.7)
Boone County	405.8	(392.3, 419.3)	391.7	(378.4, 405.0)	1190.7	(1163.5, 1217.9)	1740.4	(1702.5, 1778.4)	1987.5	(1948.2, 2026.7)	2912.4	(2859.7, 2965.1)	3088.4	(3032.3, 3144.5)	1364.5	(1353.2, 1375.9)
City of Independence	494.9	(478.1, 511.8)	717.7	(684.7, 750.6)	1486.8	(1448.3, 1525.2)	2281.2	(2230.5, 2331.9)	2353.6	(2308.2, 2399.0)	3725.3	(3662.3, 3788.4)	2862.2	(2813.8, 2910.6)	1912.2	(1896.4, 1928.1)
Cole County	527.4	(506.1, 548.7)	575.2	(539.5, 610.9)	1084.5	(1044.6, 1124.4)	1553.4	(1505.2, 1601.7)	1846.3	(1796.6, 1896.0)	2697.6	(2631.8, 2763.4)	3095.8	(3024.3, 3167.2)	1535.0	(1517.4, 1552.6)
Cooper County	235.2	(205.1, 265.4)	245.1	(198.0, 292.3)	709.6	(642.3, 776.9)	1329.5	(1230.0, 1428.9)	1234.5	(1149.2, 1319.9)	1669.8	(1560.4, 1779.2)	1208.0	(1125.1, 1290.9)	901.5	(873.5, 929.6)
Gasconade County	357.9	(317.5, 398.3)	400.0	(323.1, 476.9)	876.9	(781.4, 972.3)	1248.6	(1143.2, 1353.9)	1188.9	(1102.7, 1275.2)	2130.0	(2004.9, 2255.1)	1700.8	(1608.5, 1793.2)	1160.2	(1125.9, 1194.4)
Jackson County (exc. Indep & KC)	487.7	(476.9, 498.4)	759.6	(737.8, 781.3)	1170.6	(1149.1, 1192.2)	2179.6	(2148.3, 2210.9)	2267.6	(2236.8, 2298.3)	3250.4	(3208.4, 3292.3)	4446.0	(4396.2, 4495.8)	1837.4	(1826.9, 1847.9)
Jefferson County	645.0	(631.6, 658.4)	904.4	(876.8, 932.1)	1632.8	(1603.0, 1662.5)	2403.4	(2368.4, 2438.4)	2601.9	(2568.6, 2635.2)	4106.0	(4057.3, 4154.7)	3541.4	(3494.1, 3588.6)	2103.4	(2091.3, 2115.6)
Johnson County	315.5	(295.5, 335.6)	265.1	(244.9, 285.2)	854.3	(810.6, 898.0)	1382.2	(1323.4, 1441.0)	1698.7	(1636.4, 1760.9)	2700.2	(2609.9, 2790.4)	2296.2	(2217.2, 2375.3)	1121.3	(1103.2, 1139.4)
Kansas City	335.0	(328.2, 341.8)	546.3	(532.8, 559.9)	1002.9	(988.6, 1017.2)	1518.7	(1499.1, 1538.2)	1701.7	(1681.6, 1721.8)	2611.5	(2583.4, 2639.6)	2467.6	(2440.3, 2495.0)	1302.0	(1295.4, 1308.6)
Lincoln County	558.7	(534.6, 582.9)	930.6	(872.8, 988.4)	1634.7	(1574.4, 1694.9)	2405.2	(2332.3, 2478.0)	2735.2	(2664.1, 2806.4)	4415.6	(4306.1, 4525.2)	3667.5	(3568.2, 3766.8)	2071.8	(2047.2, 2096.4)
Madison County	533.6	(480.7, 586.5)	515.4	(438.3, 592.4)	1891.3	(1724.9, 2057.8)	2512.9	(2346.0, 2679.2)	3370.0	(3202.0, 3538.0)	4626.6	(4409.8, 4843.3)	3064.1	(2916.7, 3211.5)	2254.9	(2201.6, 2308.1)
Miller County	162.1	(142.0, 182.2)	336.0	(283.9, 388.0)	610.3	(552.4, 668.3)	755.6	(694.0, 817.2)	1167.4	(1098.2, 1236.6)	1501.4	(1416.6, 1586.2)	1659.7	(1578.8, 1740.6)	860.8	(837.7, 884.0)
New Madrid County	309.3	(276.8, 341.7)	459.6	(391.5, 527.7)	1173.4	(1082.2, 1264.6)	1632.7	(1529.3, 1736.1)	2072.5	(1966.6, 2178.4)	2656.1	(2528.8, 2783.4)	2350.1	(2241.2, 2459.0)	1487.9	(1453.1, 1522.6)
Pemiscot County	416.4	(380.7, 452.0)	586.3	(511.5, 661.1)	1706.9	(1594.8, 1819.0)	2587.7	(2451.5, 2723.9)	3365.0	(3222.6, 3507.3)	4845.6	(4660.6, 5030.6)	3548.5	(3406.2, 3690.8)	2232.0	(2188.7, 2275.3)
Perry County	720.7	(672.5, 768.9)	781.7	(688.9, 874.4)	1233.1	(1141.8, 1324.4)	1655.4	(1553.6, 1757.2)	1927.2	(1823.9, 2030.5)	2434.4	(2308.2, 2560.6)	2173.0	(2066.8, 2279.2)	1522.7	(1487.6, 1557.9)
Pettis County	335.7	(313.8, 357.6)	448.6	(406.9, 490.2)	1126.1	(1069.1, 1183.0)	1513.5	(1445.0, 1582.1)	1735.6	(1669.7, 1801.6)	2644.8	(2553.0, 2736.6)	2368.5	(2291.9, 2445.1)	1350.3	(1328.1, 1372.5)
Saline County	536.0	(496.9, 575.0)	378.1	(331.9, 424.3)	1214.6	(1132.1, 1297.1)	1959.2	(1851.5, 2066.9)	1807.7	(1716.1, 1899.4)	3005.2	(2879.2, 3131.1)	2452.6	(2351.6, 2553.5)	1546.3	(1514.4, 1578.1)
St. Charles County	722.9	(712.0, 733.8)	1096.5	(1073.2, 1119.8)	1684.7	(1661.4, 1708.1)	2151.5	(2126.0, 2177.1)	2189.2	(2164.9, 2213.4)	3497.1	(3460.9, 3533.4)	3383.9	(3348.0, 3419.8)	1927.8	(1918.7, 1936.8)
St. Louis City	331.1	(322.4, 339.7)	342.5	(330.9, 354.1)	1004.6	(988.2, 1020.9)	1464.7	(1441.0, 1488.3)	1615.0	(1591.4, 1638.5)	2722.2	(2687.5, 2757.0)	2230.4	(2199.2, 2261.7)	1245.8	(1238.1, 1253.6)
St. Louis County	524.3	(518.5, 530.2)	909.3	(896.6, 922.0)	1342.0	(1329.0, 1355.0)	1544.6	(1530.7, 1558.5)	1647.9	(1635.2, 1660.7)	2579.8	(2562.2, 2597.3)	2671.6	(2655.0, 2688.1)	1543.7	(1538.9, 1548.6)
Ste. Genevieve County	590.4	(544.0, 636.7)	622.2	(538.1, 706.4)	1252.9	(1152.4, 1353.4)	1784.2	(1671.5, 1896.8)	1897.8	(1800.7, 1994.9)	2948.1	(2813.7, 3082.6)	2112.0	(2006.4, 2217.6)	1596.9	(1560.1, 1633.7)
Stoddard County	438.6	(407.2, 470.0)	552.9	(494.2, 611.6)	1258.9	(1183.7, 1334.1)	1907.3	(1817.9, 1996.7)	2441.5	(2348.9, 2534.0)	2875.7	(2768.6, 2982.8)	2097.3	(2019.6, 2174.9)	1623.5	(1594.6, 1652.3)
Vernon County	369.4	(336.5, 402.2)	456.2	(394.7, 517.8)	956.5	(876.9, 1036.1)	1538.1	(1439.2, 1637.0)	1924.3	(1825.7, 2023.0)	2247.7	(2136.5, 2358.9)	1814.7	(1725.2, 1904.3)	1283.6	(1253.1, 1314.1)
Total	**488.3**	**(485.3, 491.4)**	**680.7**	**(675.2, 686.3)**	**1254.2**	**(1247.8, 1260.6)**	**1763.7**	**(1755.8, 1771.6)**	**1913.0**	**(1905.4, 1920.6)**	**2935.1**	**(2924.6, 2945.7)**	**2817.7**	**(2807.8, 2827.6)**	**1578.5**	**(1575.9, 1581.2)**

Table 2. Dispensation rates per 1,000 population for Boone County by age, gender, and drug type.

Boone County	<18 Rate	<18 95% CI	18-24 Rate	18-24 95% CI	25-34 Rate	25-34 95% CI	35-44 Rate	35-44 95% CI	45-54 Rate	45-54 95% CI	55-64 Rate	55-64 95% CI	65+ Rate	65+ 95% CI	Total Rate	Total 95% CI
Benzodiazepine	**28.7**	**(25.1, 32.3)**	**52.4**	**(47.5, 57.2)**	**245.4**	**(233.0, 257.7)**	**457.2**	**(437.8, 476.6)**	**533.3**	**(513.0, 553.6)**	**749.5**	**(722.7, 776.2)**	**887.2**	**(857.1, 917.3)**	**328.1**	**(322.5, 333.7)**
Female	26.9	(21.9, 31.9)	55.3	(48.4, 62.2)	301.7	(282.3, 321.2)	537.9	(508.4, 567.4)	655.8	(624.7, 687.0)	911.4	(870.5, 952.3)	1033.8	(990.9, 1076.6)	401.9	(393.3, 410.4)
Male	28.7	(23.7, 33.7)	46.7	(40.0, 53.3)	175.8	(161.1, 190.6)	356.0	(331.5, 380.5)	386.1	(361.1, 411.2)	538.4	(505.7, 571.2)	675.8	(635.6, 716.0)	238.7	(231.9, 245.5)
Muscle Relaxant	*****	*****	*****	*****	**5.5**	**(3.7, 7.4)**	**18.5**	**(14.6, 22.4)**	**20.0**	**(16, 23.9)**	**33**	**(27.4, 38.6)**	**23.1**	**(18.2, 27.9)**	**10.8**	**(9.8, 11.8)**
Female	*	*	*	*	7.8	(4.7, 11)	29.1	(22.2, 35.9)	25.8	(19.6, 32.0)	41.5	(32.8, 50.2)	21.3	(15.1, 27.4)	14.1	(12.4, 15.7)
Male	*	*	*	*	2.9	(1.0, 4.8)	7.5	(3.9, 11.0)	11.9	(7.5, 16.3)	22.8	(16.0, 29.5)	25.5	(17.7, 33.3)	7.0	(5.9, 8.2)
Opioid	**39.1**	**(34.9, 43.3)**	**113.3**	**(106.2, 120.5)**	**445.6**	**(428.9, 462.2)**	**666.1**	**(642.7, 689.6)**	**847.5**	**(821.8, 873.1)**	**1342.3**	**(1306.5, 1378.0)**	**1567.7**	**(1527.7, 1607.7)**	**557.4**	**(550.2, 564.7)**
Female	36.2	(30.5, 42.0)	121.6	(111.4, 131.8)	532.0	(506.1, 557.8)	786.8	(751.1, 822.5)	959.3	(921.6, 996.9)	1420.3	(1369.3, 1471.3)	1737.6	(1682.0, 1793.2)	641.2	(630.3, 652.0)
Male	39.1	(33.3, 45.0)	100.3	(90.5, 110.0)	352.3	(331.5, 373.2)	529.0	(499.1, 558.8)	710.8	(676.8, 744.8)	1227.5	(1178.1, 1277.0)	1308.6	(1252.7, 1364.6)	457.6	(448.2, 467.0)
Stimulant	**324.7**	**(312.6, 336.7)**	**203.1**	**(193.5, 212.6)**	**363.8**	**(348.8, 378.9)**	**308.2**	**(292.3, 324.2)**	**168.3**	**(156.9, 179.7)**	**152.7**	**(140.6, 164.7)**	**66.6**	**(58.4, 74.9)**	**243.3**	**(238.5, 248.1)**
Female	157.9	(145.9, 170.0)	168.9	(156.8, 180.9)	361.8	(340.5, 383.1)	332.7	(309.5, 355.9)	186.4	(169.8, 203.0)	165	(147.6, 182.4)	67.1	(56.2, 78.0)	204.8	(198.7, 210.9)
Male	468.8	(448.6, 489.0)	227.5	(212.8, 242.2)	347.2	(326.5, 367.9)	269.5	(248.2, 290.9)	142.4	(127.2, 157.6)	130.5	(114.4, 146.6)	61.6	(49.5, 73.7)	271.8	(264.5, 279.1)
Unclassified	**13.3**	**(10.9, 15.8)**	**18.2**	**(15.3, 21.1)**	**92.4**	**(84.8, 100.0)**	**184.2**	**(171.9, 196.5)**	**253.0**	**(239.0, 267.0)**	**344.3**	**(326.2, 362.4)**	**275.2**	**(258.5, 292.0)**	**132.2**	**(128.7, 135.7)**
Female	7.0	(4.4, 9.5)	22.6	(18.2, 27.0)	110.0	(98.3, 121.8)	217.8	(199.0, 236.5)	252.2	(232.9, 271.6)	335.8	(311.0, 360.6)	244.8	(223.9, 265.7)	137.3	(132.2, 142.3)
Male	15.7	(12.0, 19.4)	11.6	(8.3, 14.9)	67.4	(58.3, 76.5)	137.4	(122.2, 152.6)	247.1	(227.1, 267.2)	338.1	(312.1, 364.0)	304.9	(277.9, 331.9)	119.8	(115.0, 124.7)
Zoplidem	*****	*****	**4.6**	**(3.1, 6.0)**	**38.0**	**(33.2, 42.9)**	**106.2**	**(96.8, 115.5)**	**165.5**	**(154.1, 176.8)**	**290.7**	**(274.0, 307.3)**	**268.6**	**(252.0, 285.1)**	**92.7**	**(89.8, 95.7)**
Female	*	*	3.6	(1.8, 5.3)	39.2	(32.2, 46.2)	137.7	(122.8, 152.7)	206.0	(188.6, 223.5)	331.5	(306.8, 356.1)	276.3	(254.1, 298.4)	109.4	(105.0, 113.9)
Male	*	*	5.7	(3.4, 8.0)	35.9	(29.3, 42.6)	68.9	(58.1, 79.7)	116.1	(102.4, 129.9)	227.8	(206.5, 249.1)	251.4	(226.9, 275.9)	71.4	(67.7, 75.2)
Total	**405.8**	**(392.3, 419.3)**	**391.7**	**(378.4, 405.0)**	**1190.7**	**(1163.5, 1217.9)**	**1740.4**	**(1702.5, 1778.4)**	**1987.5**	**(1948.2, 2026.7)**	**2912.4**	**(2859.7, 2965.1)**	**3088.4**	**(3032.3, 3144.5)**	**1364.5**	**(1353.2, 1375.9)**
Female	228.0	(213.5, 242.5)	372.2	(354.3, 390.1)	1352.6	(1311.4, 1393.8)	2041.9	(1984.4, 2099.4)	2285.5	(2227.4, 2343.7)	3205.4	(3128.8, 3282.1)	3380.8	(3303.3, 3458.4)	1508.6	(1491.9, 1525.2)
Male	552.3	(530.3, 574.3)	391.7	(372.4, 411.0)	981.5	(946.8, 1016.3)	1368.3	(1320.3, 1416.3)	1614.5	(1563.2, 1665.8)	2485.1	(2414.8, 2555.4)	2627.9	(2548.6, 2707.1)	1166.4	(1151.3, 1181.5)

* indicates the rate has been suppressed.

Table 3. Dispensation rates per 1,000 population for total PDMP by age, gender, and drug type.

Total	<18 Rate	<18 95% CI	18-24 Rate	18-24 95% CI	25-34 Rate	25-34 95% CI	35-44 Rate	35-44 95% CI	45-54 Rate	45-54 95% CI	55-64 Rate	55-64 95% CI	65+ Rate	65+ 95% CI	Total Rate	Total 95% CI
Benzodiazepine	**26.8**	**(26.1, 27.5)**	**101.4**	**(99.3, 103.6)**	**289.4**	**(286.3, 292.4)**	**471.1**	**(467.0, 475.2)**	**529.7**	**(525.7, 533.7)**	**829.5**	**(823.9, 835.1)**	**850.0**	**(844.5, 855.4)**	**403.4**	**(402.0, 404.7)**
Female	21.9	(21.0, 22.8)	98.0	(95.1, 101.0)	289.5	(285.2, 293.8)	489.3	(483.5, 495.1)	569.8	(564.0, 575.6)	870.9	(862.9, 878.8)	920.5	(913.0, 927.9)	438.8	(436.8, 440.8)
Male	22.3	(21.4, 23.2)	70.1	(67.5, 72.6)	188.4	(184.9, 192.0)	279.5	(275.0, 284.0)	317.8	(313.3, 322.2)	518.1	(511.6, 524.5)	549.8	(543.1, 556.6)	244.4	(242.9, 245.9)
Muscle Relaxant	**0.0**	**(0.0, 0.1)**	**0.7**	**(0.5, 0.8)**	**4.6**	**(4.2, 5.0)**	**14.2**	**(13.5, 14.9)**	**20.2**	**(19.4, 21.0)**	**32.7**	**(31.6, 33.9)**	**13.4**	**(12.7, 14.1)**	**11.1**	**(10.9, 11.4)**
Female	0.0	(0.0, 0.0)	0.7	(0.4, 1.0)	5.4	(4.8, 6.0)	14.9	(13.9, 16.0)	22.1	(21.0, 23.3)	36.1	(34.5, 37.7)	13.5	(12.6, 14.4)	12.3	(12.0, 12.6)
Male	0.0	(0.0, 0.1)	0.3	(0.1, 0.4)	2.4	(2.0, 2.8)	7.7	(6.9, 8.4)	10.8	(10.0, 11.7)	19.1	(17.9, 20.4)	9.4	(8.6, 10.3)	6.3	(6.0, 6.5)
Opioid	**50.0**	**(49.0, 50.9)**	**215.2**	**(212.1, 218.4)**	**458.7**	**(454.8, 462.5)**	**690.3**	**(685.3, 695.2)**	**838.8**	**(833.7, 843.8)**	**1436**	**(1428.6, 1443.4)**	**1509.5**	**(1502.2, 1516.8)**	**674.5**	**(672.7, 676.2)**
Female	41.2	(40.0, 42.5)	214.6	(210.2, 219.0)	476.7	(471.2, 482.2)	680.3	(673.5, 687.2)	805.9	(799.0, 812.8)	1344.9	(1335.0, 1354.7)	1529.3	(1519.7, 1538.9)	684.7	(682.2, 687.1)
Male	44.0	(42.8, 45.3)	147.3	(143.6, 151.0)	307.7	(303.2, 312.2)	484.2	(478.2, 490.1)	629.4	(623.2, 635.6)	1130.2	(1120.7, 1139.7)	1139.9	(1130.2, 1149.7)	484.6	(482.4, 486.7)
Stimulant	**389.2**	**(386.5, 391.9)**	**327.7**	**(323.9, 331.6)**	**379.1**	**(375.5, 382.6)**	**318.2**	**(314.8, 321.5)**	**188.5**	**(186.1, 190.9)**	**154.5**	**(152.0, 156.9)**	**47.9**	**(46.6, 49.2)**	**270.9**	**(269.8, 272.0)**
Female	192.5	(189.8, 195.2)	241.0	(236.4, 245.7)	322.9	(318.4, 327.5)	284.6	(280.1, 289.0)	189.6	(186.3, 193.0)	159.3	(155.9, 162.7)	44.8	(43.2, 46.5)	200.8	(199.4, 202.1)
Male	443.0	(439.0, 447.1)	290.0	(284.9, 295.2)	288.7	(284.3, 293.1)	222.1	(218.1, 226.1)	113.9	(111.2, 116.5)	92.7	(90.0, 95.5)	38.7	(36.9, 40.5)	242.1	(240.6, 243.6)
Unclassified	**22.0**	**(21.4, 22.7)**	**26.6**	**(25.5, 27.7)**	**79.6**	**(78.0, 81.2)**	**167.9**	**(165.4, 170.3)**	**192.5**	**(190.1, 194.9)**	**243.9**	**(240.9, 247.0)**	**206.9**	**(204.2, 209.6)**	**123.4**	**(122.7, 124.1)**
Female	15.7	(14.9, 16.5)	30.5	(28.8, 32.1)	90.6	(88.2, 93.0)	169.0	(165.6, 172.5)	180.9	(177.7, 184.2)	219.3	(215.3, 223.3)	209.2	(205.6, 212.7)	124.0	(123.0, 125.1)
Male	19.2	(18.4, 20.0)	14.7	(13.6, 15.9)	43.3	(41.6, 45.0)	110.6	(107.8, 113.5)	145.5	(142.5, 148.5)	196.7	(192.8, 200.7)	173.4	(169.6, 177.2)	87.8	(86.9, 88.7)
Zoplidem	**0.4**	**(0.3, 0.4)**	**9.1**	**(8.4, 9.7)**	**42.9**	**(41.7, 44.1)**	**102.1**	**(100.2, 104.0)**	**143.4**	**(141.3, 145.4)**	**238.5**	**(235.4, 241.5)**	**190.0**	**(187.4, 192.6)**	**95.3**	**(94.6, 95.9)**
Female	0.4	(0.3, 0.5)	8.5	(7.6, 9.4)	44.5	(42.8, 46.2)	107.1	(104.3, 109.8)	144.9	(142.0, 147.8)	235.5	(231.3, 239.6)	180.8	(177.5, 184.1)	96.4	(95.5, 97.3)
Male	0.2	(0.1, 0.3)	6.6	(5.8, 7.4)	26.0	(24.7, 27.4)	58.3	(56.2, 60.3)	87.3	(85.0, 89.6)	159.6	(156.0, 163.2)	145.9	(142.4, 149.4)	62.7	(62.0, 63.5)
Total	**488.3**	**(485.3, 491.4)**	**680.7**	**(675.2, 686.3)**	**1254.2**	**(1247.8, 1260.6)**	**1763.7**	**(1755.8, 1771.6)**	**1913.0**	**(1905.4, 1920.6)**	**2935.1**	**(2924.6, 2945.7)**	**2817.7**	**(2807.8, 2827.6)**	**1578.5**	**(1575.9, 1581.2)**
Female	271.8	(268.5, 275.0)	593.3	(586.0, 600.6)	1229.7	(1220.8, 1238.5)	1745.2	(1734.2, 1756.2)	1913.2	(1902.6, 1923.8)	2865.9	(2851.5, 2880.3)	2898.1	(2884.9, 2911.3)	1557.0	(1553.3, 1560.7)
Male	528.8	(524.4, 533.2)	529.0	(522.1, 536.0)	856.5	(849.0, 864.0)	1162.4	(1153.2, 1171.6)	1304.7	(1295.7, 1313.7)	2116.5	(2103.5, 2129.5)	2057.2	(2044, 2070.3)	1127.9	(1124.6, 1131.1)

Table 4. Opioid dispensation rates per 1,000 population by jurisdiction.

Opioids	<18 Rate	<18 95% CI	18-24 Rate	18-24 95% CI	25-34 Rate	25-34 95% CI	35-44 Rate	35-44 95% CI	45-54 Rate	45-54 95% CI	55-64 Rate	55-64 95% CI	65+ Rate	65+ 95% CI	Total Rate	Total 95% CI
Audrain County	26.4	(18.4, 34.4)	231.1	(189.8, 272.5)	431.6	(386.4, 476.8)	608.1	(553.3, 662.8)	738.9	(682.7, 795.2)	1157	(1080.5, 1233.4)	1101.9	(1037.5, 1166.2)	572.5	(554.0, 591.1)
Bates County	47.0	(34.0, 60.0)	318.7	(255.6, 381.8)	761.7	(682.4, 841.0)	1001.5	(912.9, 1090.2)	1019.5	(942.1, 1096.9)	1819.6	(1704.6, 1934.5)	1477.3	(1390.6, 1564.0)	876.5	(848.4, 904.6)
Benton County	44.2	(30.2, 58.3)	256.0	(195.6, 316.4)	662.8	(576.6, 749.0)	809.8	(728.5, 891.1)	1184.4	(1105.0, 1263.7)	1572.5	(1489.0, 1656.0)	1299.0	(1235.4, 1362.6)	951.9	(924.2, 979.6)
Bollinger County	38.4	(24.2, 52.6)	137.9	(90.9, 185.0)	342.2	(278, 406.5)	533.0	(459.5, 606.5)	920.6	(835.4, 1005.7)	1435.2	(1320.9, 1549.4)	1132.6	(1040.7, 1224.5)	650.3	(621.9, 678.8)
Boone County	39.1	(34.9, 43.3)	113.3	(106.2, 120.5)	445.6	(428.9, 462.2)	666.1	(642.7, 689.6)	847.5	(821.8, 873.1)	1342.3	(1306.5, 1378.0)	1567.7	(1527.7, 1607.7)	557.4	(550.2, 564.7)
City of Independence	60.1	(54.2, 66.0)	338.6	(316.0, 361.2)	675.3	(649.4, 701.3)	993.0	(959.5, 1026.4)	1160.2	(1128.3, 1192.0)	1962.8	(1917.0, 2008.5)	1693.0	(1655.8, 1730.2)	937.0	(925.9, 948.1)
Cole County	49.7	(43.2, 56.3)	253.3	(229.6, 277.0)	454.4	(428.6, 480.2)	644.2	(613.2, 675.3)	749.1	(717.5, 780.7)	1235.1	(1190.5, 1279.6)	1503.5	(1453.7, 1553.3)	637.8	(626.4, 649.1)
Cooper County	33.2	(21.9, 44.5)	82.5	(55.2, 109.8)	339.0	(292.5, 385.5)	687.0	(615.5, 758.5)	652.6	(590.5, 714.6)	886.2	(806.5, 965.9)	753.5	(688.1, 819.0)	462.7	(442.6, 482.8)
Gasconade County	60.6	(44.0, 77.3)	250.0	(189.2, 310.8)	533.2	(458.7, 607.6)	647.4	(571.6, 723.2)	656.4	(592.3, 720.4)	1198.9	(1105.0, 1292.7)	936.6	(868.1, 1005.2)	614.9	(590.0, 639.8)
Jackson County (exc. Indep & KC)	59.8	(56.0, 63.6)	258.7	(246.0, 271.3)	437.9	(424.8, 451.1)	807.6	(788.5, 826.6)	916.3	(896.8, 935.8)	1533	(1504.2, 1561.8)	1827.6	(1795.7, 1859.5)	715.7	(709.1, 722.3)
Jefferson County	56.3	(52.3, 60.3)	284.7	(269.2, 300.2)	583.6	(565.9, 601.4)	945.9	(923.9, 967.8)	1141.1	(1119.0, 1163.1)	2025.6	(1991.4, 2059.8)	1913.3	(1878.5, 1948.0)	891.6	(883.7, 899.5)
Johnson County	45.2	(37.6, 52.8)	112.9	(99.7, 126.0)	416.4	(385.9, 446.9)	642.2	(602.2, 682.3)	861.8	(817.5, 906.2)	1442	(1376.0, 1507.9)	1367.8	(1306.8, 1428.8)	558.1	(545.3, 570.8)
Kansas City	45.6	(43.1, 48.1)	204.6	(196.4, 212.9)	362.5	(353.9, 371.1)	596.4	(584.1, 608.6)	798.4	(784.6, 812.1)	1395.7	(1375.1, 1416.2)	1454.2	(1433.2, 1475.2)	597.1	(592.7, 601.6)
Lincoln County	51.3	(44.0, 58.7)	413.9	(375.4, 452.5)	792.5	(750.5, 834.4)	1068.6	(1020.0, 1117.1)	1346.7	(1296.7, 1396.6)	2292.8	(2213.8, 2371.8)	2185.1	(2108.5, 2261.8)	990.8	(973.8, 1007.8)
Madison County	60.0	(42.3, 77.8)	254.7	(200.5, 308.8)	1048.6	(924.7, 1172.6)	1212.0	(1096.5, 1327.5)	1724.3	(1604.1, 1844.4)	2511.6	(2351.9, 2671.3)	1762.8	(1651.0, 1874.6)	1152.6	(1114.6, 1190.7)
Miller County	30.6	(21.9, 39.3)	205.8	(165.0, 246.5)	302.3	(261.5, 343.1)	343.8	(302.2, 385.3)	630.2	(579.3, 681.0)	751.3	(691.3, 811.3)	916.6	(856.5, 976.7)	437.0	(420.6, 453.5)
New Madrid County	28.4	(18.5, 38.2)	197.0	(152.4, 241.6)	407.7	(354.0, 461.5)	634.0	(569.6, 698.4)	792.7	(727.2, 858.2)	1134.2	(1051.0, 1217.4)	1064	(990.8, 1137.3)	588.1	(566.3, 609.9)
Pemiscot County	31.0	(21.3, 40.7)	275.8	(224.5, 327.1)	662.8	(593.0, 732.7)	994.4	(910.0, 1078.8)	1525.7	(1429.8, 1621.5)	2207.7	(2082.9, 2332.6)	1783.9	(1683.0, 1884.8)	962.8	(934.4, 991.3)
Perry County	73.1	(57.7, 88.4)	269.1	(214.7, 323.6)	429.2	(375.3, 483.1)	563.7	(504.3, 623.1)	745.2	(681.0, 809.5)	1117.5	(1032.0, 1203.1)	1155.4	(1078.0, 1232.9)	590.2	(568.3, 612.0)
Pettis County	33.8	(26.8, 40.7)	210.2	(181.7, 238.7)	552.2	(512.3, 592.0)	663.4	(618.1, 708.8)	793.7	(749.1, 838.3)	1332	(1266.8, 1397.1)	1331.0	(1273.5, 1388.4)	639.1	(623.9, 654.4)
Saline County	48.9	(37.1, 60.7)	172.1	(140.9, 203.3)	583.9	(526.7, 641.2)	995.0	(918.3, 1071.7)	904.5	(839.7, 969.3)	1592.6	(1500.9, 1684.3)	1489.1	(1410.4, 1567.7)	772.4	(749.9, 795.0)
St. Charles County	63.8	(60.5, 67.0)	285.4	(273.5, 297.3)	528.8	(515.8, 541.9)	764.6	(749.4, 779.9)	858.5	(843.3, 873.6)	1565.1	(1540.8, 1589.3)	1823.2	(1796.8, 1849.5)	736.0	(730.4, 741.6)
St. Louis City	36.9	(34.0, 39.8)	139.1	(131.8, 146.5)	387.9	(377.8, 398.1)	628.9	(613.4, 644.4)	801.6	(785.0, 818.2)	1531	(1505.0, 1557.1)	1360.1	(1335.7, 1384.4)	602.6	(597.3, 608.0)
St. Louis County	50.2	(48.4, 52.0)	227.2	(220.9, 233.6)	441.9	(434.5, 449.4)	571.1	(562.7, 579.6)	681.3	(673.1, 689.5)	1186.5	(1174.6, 1198.4)	1414.8	(1402.8, 1426.9)	626.1	(623.0, 629.2)
Ste. Genevieve County	46.4	(33.4, 59.4)	245.9	(193.0, 298.8)	455.4	(394.8, 516.0)	791.1	(716.1, 866.1)	962.5	(893.3, 1031.6)	1505.2	(1409.1, 1601.3)	1137.8	(1060.3, 1215.3)	725.5	(700.7, 750.3)
Stoddard County	32.2	(23.7, 40.7)	218.9	(182.0, 255.8)	593.8	(542.2, 645.4)	869.1	(808.8, 929.5)	1132.2	(1069.1, 1195.2)	1463.8	(1387.4, 1540.2)	1097.6	(1041.5, 1153.8)	749.1	(729.5, 768.7)
Vernon County	34.2	(24.2, 44.2)	227.0	(183.6, 270.5)	520.5	(461.8, 579.2)	735.1	(666.7, 803.5)	1035.9	(963.5, 1108.2)	1264.1	(1180.8, 1347.5)	1185.3	(1112.9, 1257.7)	679.8	(657.6, 702.0)
Total	**50.0**	**(49.0, 50.9)**	**215.2**	**(212.1, 218.4)**	**458.7**	**(454.8, 462.5)**	**690.3**	**(685.3, 695.2)**	**838.8**	**(833.7, 843.8)**	**1436**	**(1428.6, 1443.4)**	**1509.5**	**(1502.2, 1516.8)**	**674.5**	**(672.7, 676.2)**

Table 5. Opioid dispensation rates per 1,000 population for Boone County by MME category.

Boone County	<18 Rate	<18 95% CI	18-24 Rate	18-24 95% CI	25-34 Rate	25-34 95% CI	35-44 Rate	35-44 95% CI	45-54 Rate	45-54 95% CI	55-64 Rate	55-64 95% CI	65+ Rate	65+ 95% CI	Total Rate	Total 95% CI
<50	**28.1**	**(24.6, 31.7)**	**78.2**	**(72.3, 84.2)**	**266.4**	**(253.5, 279.3)**	**454.6**	**(435.2, 474.0)**	**556.7**	**(535.9, 577.5)**	**898.2**	**(868.9, 927.4)**	**1133.8**	**(1099.8, 1167.8)**	**376.7**	**(370.7, 382.7)**
Female	26.2	(21.2, 31.1)	91.4	(82.5, 100.2)	337.3	(316.8, 357.9)	560.2	(530.1, 590.3)	635.4	(604.7, 666.1)	954.8	(913.0, 996.6)	1284.1	(1236.3, 1331.9)	444.8	(435.8, 453.9)
Male	28.4	(23.4, 33.4)	60.8	(53.2, 68.3)	190.0	(174.7, 205.3)	335.4	(311.6, 359.2)	459.5	(432.1, 486.8)	811.3	(771.1, 851.5)	906.7	(860.1, 953.2)	295.6	(288.0, 303.2)
50-90	**6.4**	**(4.7, 8.1)**	**19.3**	**(16.3, 22.2)**	**70.2**	**(63.6, 76.8)**	**103.2**	**(93.9, 112.4)**	**165.3**	**(153.9, 176.6)**	**268.1**	**(252.1, 284.1)**	**255.6**	**(239.4, 271.7)**	**98.3**	**(95.2, 101.3)**
Female	6.5	(4.0, 8.9)	15.9	(12.2, 19.6)	80.7	(70.6, 90.7)	113.7	(100.2, 127.3)	180.6	(164.3, 197.0)	290.9	(267.8, 314)	261.9	(240.3, 283.5)	108.0	(103.6, 112.5)
Male	6.4	(4.0, 8.7)	22.2	(17.6, 26.8)	59.7	(51.1, 68.3)	91.3	(78.9, 103.7)	146.2	(130.8, 161.7)	239.7	(217.9, 261.5)	243.9	(219.8, 268.1)	86.7	(82.6, 90.8)
>90	*****	*****	**12.6**	**(10.2, 14.9)**	**98.7**	**(90.9, 106.6)**	**91.4**	**(82.7, 100.0)**	**98.7**	**(89.9, 107.4)**	**131.3**	**(120.1, 142.5)**	**120.0**	**(108.9, 131.0)**	**64.2**	**(61.8, 66.7)**
Female	*	*	10.3	(7.3, 13.3)	103.8	(92.4, 115.3)	93.5	(81.2, 105.8)	108.2	(95.6, 120.9)	124.5	(109.4, 139.6)	131.4	(116.1, 146.7)	67.5	(64.0, 71.0)
Male	*	*	14.8	(11.1, 18.6)	93.1	(82.3, 103.8)	87.8	(75.6, 100.0)	87.3	(75.4, 99.2)	138.2	(121.7, 154.8)	102.1	(86.4, 117.7)	60.1	(56.7, 63.6)
Total	**39.1**	**(34.9, 43.3)**	**113.3**	**(106.2, 120.5)**	**445.6**	**(428.9, 462.2)**	**666.1**	**(642.7, 689.6)**	**847.5**	**(821.8, 873.1)**	**1342.3**	**(1306.5, 1378.0)**	**1567.7**	**(1527.7, 1607.7)**	**557.4**	**(550.2, 564.7)**
Female	36.2	(30.5, 42.0)	121.6	(111.4, 131.8)	532.0	(506.1, 557.8)	786.8	(751.1, 822.5)	959.3	(921.6, 996.9)	1420.3	(1369.3, 1471.3)	1737.6	(1682.0, 1793.2)	641.2	(630.3, 652.0)
Male	39.1	(33.3, 45.0)	100.3	(90.5, 110.0)	352.3	(331.5, 373.2)	529.0	(499.1, 558.8)	710.8	(676.8, 744.8)	1227.5	(1178.1, 1277.0)	1308.6	(1252.7, 1364.6)	457.6	(448.2, 467.0)

* indicates the rate has been suppressed.

Table 6. Opioid dispensation rates per 1,000 population for total PDMP by MME category.

Total	<18 Rate	<18 95% CI	18-24 Rate	18-24 95% CI	25-34 Rate	25-34 95% CI	35-44 Rate	35-44 95% CI	45-54 Rate	45-54 95% CI	55-64 Rate	55-64 95% CI	65+ Rate	65+ 95% CI	Total Rate	Total 95% CI
<50	**38.2**	**(37.4, 39.1)**	**151.3**	**(148.7, 153.9)**	**300.1**	**(297.0, 303.2)**	**451.1**	**(447.2, 455.1)**	**544.5**	**(540.4, 548.5)**	**949.9**	**(943.9, 955.9)**	**1133.5**	**(1127.2, 1139.8)**	**463.0**	**(461.5, 464.4)**
Female	31.3	(30.2, 32.4)	156.8	(153.0, 160.5)	325.5	(320.9, 330.0)	457.1	(451.5, 462.8)	531.0	(525.4, 536.6)	909.4	(901.2, 917.5)	1172.5	(1164.1, 1180.9)	483.0	(480.9, 485.0)
Male	33.8	(32.7, 34.9)	96.3	(93.3, 99.3)	181.7	(178.3, 185.2)	294.9	(290.2, 299.5)	393.3	(388.4, 398.2)	712.1	(704.5, 719.6)	821.2	(812.9, 829.5)	315.1	(313.4, 316.8)
50-90	**5.3**	**(5.0, 5.6)**	**40.7**	**(39.3, 42.1)**	**80.9**	**(79.3, 82.5)**	**132.4**	**(130.2, 134.6)**	**180.9**	**(178.6, 183.3)**	**300.9**	**(297.5, 304.3)**	**239.4**	**(236.5, 242.3)**	**126.9**	**(126.1, 127.6)**
Female	4.6	(4.2, 5.0)	39.5	(37.6, 41.4)	82.9	(80.6, 85.2)	127.9	(124.9, 130.9)	174.0	(170.8, 177.2)	276.5	(272.0, 281.0)	227.9	(224.2, 231.6)	124.6	(123.5, 125.6)
Male	4.4	(4.0, 4.8)	30.7	(29.1, 32.4)	58.7	(56.7, 60.7)	99.1	(96.4, 101.8)	141.1	(138.1, 144.0)	251.6	(247.1, 256.1)	201.6	(197.5, 205.7)	98.2	(97.2, 99.1)
>90	**0.6**	**(0.5, 0.7)**	**15.9**	**(15.0, 16.7)**	**66.1**	**(64.6, 67.5)**	**87.1**	**(85.3, 88.8)**	**88.1**	**(86.5, 89.8)**	**141.5**	**(139.1, 143.8)**	**88.7**	**(86.9, 90.5)**	**63.3**	**(62.8, 63.8)**
Female	0.3	(0.2, 0.5)	11.1	(10.1, 12.1)	56.8	(54.8, 58.7)	75.8	(73.5, 78.1)	76.0	(73.9, 78.1)	117.7	(114.8, 120.6)	81.8	(79.5, 84.0)	55.8	(55.1, 56.5)
Male	0.8	(0.6, 0.9)	15.8	(14.6, 17.0)	60.0	(58.0, 62.0)	78.0	(75.6, 80.4)	77.4	(75.3, 79.6)	132.5	(129.3, 135.8)	79.2	(76.6, 81.8)	56.2	(55.4, 56.9)
Total	**50.0**	**(49.0, 50.9)**	**215.2**	**(212.1, 218.4)**	**458.7**	**(454.8, 462.5)**	**690.3**	**(685.3, 695.2)**	**838.8**	**(833.7, 843.8)**	**1436.0**	**(1428.6, 1443.4)**	**1509.5**	**(1502.2, 1516.8)**	**674.5**	**(672.7, 676.2)**
Female	41.2	(40.0, 42.5)	214.6	(210.2, 219.0)	476.7	(471.2, 482.2)	680.3	(673.5, 687.2)	805.9	(799.0, 812.8)	1344.9	(1335.0, 1354.7)	1529.3	(1519.7, 1538.9)	684.7	(682.2, 687.1)
Male	44.0	(42.8, 45.3)	147.3	(143.6, 151.0)	307.7	(303.2, 312.2)	484.2	(478.2, 490.1)	629.4	(623.2, 635.6)	1130.2	(1120.7, 1139.7)	1139.9	(1130.2, 1149.7)	484.6	(482.4, 486.7)

Table 7. Opioid dispensation counts for total PDMP by primary drug ingredient.

Primary Drug Ingredient	Dispensation Count	Rate	95% CI
Buprenorphine	17,572	19.9	(19.6, 20.2)
Butophanol	407	0.5	(0.4, 0.5)
Codeine	30,773	34.9	(34.5, 35.3)
Dihydrocodeine	7	0.0	(0.0, 0.0)
Fentanyl	11,472	13.0	(12.8, 13.2)
Hydrocodone	227,921	258.3	(257.2, 259.3)
Hydromorphone	4,497	5.1	(4.9, 5.2)
Levarphanol	67	0.1	(0.1, 0.1)
Meperidine	402	0.5	(0.4, 0.5)
Methadone	4,974	5.6	(5.5, 5.8)
Morphine	18,221	20.6	(20.3, 20.9)
Opium	310	0.4	(0.3, 0.4)
Oxycodone	145,848	165.3	(164.4, 166.1)
Oxymorphone	1,229	1.4	(1.3, 1.5)
Pentazocine	87	0.1	(0.1, 0.1)
Tapentadol	1,551	1.8	(1.7, 1.8)
Tramadol	120,894	137.0	(136.2, 137.8)
Total	**586,232**	**664.3**	**(662.6, 666.0)**

Appendix B: Sources & Calculations

Population counts obtained from U.S. Census Bureau, 2010 Census.

Dispensation data pulled from the St. Louis County PDMP by DPH staff.

Dispensation rates were calculated per 1,000 population using the formula below; dispensation rates represent projected annual rates based on one quarter of data.

$$\text{Dispensation Rate} = \left(\frac{\# \; dispensations}{\frac{population}{4}} \right) * 1000$$

Morphine milligram equivalent (MME) was calculated using the CDC calculation (formula below).

$$\text{MME} = \; strength * \left(\frac{units}{days \; supply} \right) * MME \; conversion \; factor$$

Appendix C: Suggested Citation

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