



Minnesota Board of Pharmacy



2017 Annual Report

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Executive Summary

2017 marked the 8th year of operations of the Minnesota Prescription Monitoring Program (PMP). In 2009, [MN Stats. §152.126](#) required the Board of Pharmacy (Board) to develop and maintain a database of controlled substance prescriptions for the purpose of promoting public health and welfare by detecting abuse, misuse, and diversion of controlled substance prescriptions. The goal of the PMP is to assist in improving patient care and reducing the misuse of controlled substances.

Additionally, Minnesota law mandated the Board to appoint an advisory task force, made up of representatives from health related licensing boards, other state agencies, professional associations and members of the public. The Task Force advises the Board on the development and operation of the PMP including, but not limited to:

- (1) technical standards for electronic prescription drug reporting;
- (2) proper analysis and interpretation of prescription monitoring data;
- (3) an evaluation process for the program; and
- (4) criteria for the unsolicited provision of prescription monitoring data by the board to prescribers and dispensers.

In mid-2014, a change in [MN Stats. §152.126](#) became effective which allowed the PMP to participate in the interstate exchange of data with prescribers and pharmacists in other states. During 2017, numerous states were connected using the PMP InterConnect solution provided by the National Association of Boards of Pharmacy. Prescribers and pharmacists with an account to access the MN PMP can now access data in 37 of the 45 states which utilize the PMP InterConnect solution.

In 2016, legislation was passed that mandated certain MN licensed prescribers and pharmacists to register for a PMP system user account no later than July 1, 2017. In addition, those same prescribers and pharmacist are required to maintain their accounts. Maintenance begins with account activation and includes annual account profile updates. Failure to activate the account or update the profile may result in disciplinary action by the applicable health licensing board.

As the number of approved system account holders continues to grow, so does the number of queries of patient controlled substance prescription histories. Annual survey results continue to show prescribers and pharmacists are changing their prescribing and dispensing habits in part because of checking the PMP database.

This next year the PMP staff will continue to work with dispensers on improving the quality of the data being reported and ensuring all data is reported in a timely manner. Additionally, the current PMP system will be replaced with one that is more robust which includes an enhanced reporting tool to provide prescribers and pharmacists with an interactive patient's controlled substance history report. These improvements are designed to provide more information in a meaningful way and at the same time encourage increased and more frequent use of the database while providing patient care.

Operational Findings

- Over 7.4 million prescriptions, for federally scheduled II-V controlled substances, were reported as dispensed to the PMP database in 2017. That number reflects a 5.1% decrease from 2016.
- The top 1% of prescribers contributed to 21.56% of all schedule II-V controlled substances reported to the MN PMP.
- Of the top 100 prescribers of controlled substance, 98% have requested and obtained access to the MN PMP.
- Between January 2017 and December 2017, there was a significant increase in new system account applications received, with an average of 46.3 applications per day, up from 21.5 in 2016.
- The overall number of approved accounts in 2017 reached 29,170, an increase of roughly 2,301 of which almost 1,317 were for delegate accounts for health care providers and pharmacy staff.
- With a 51% increase in the number of delegate accounts, there was also a 35% increase in their system utilization.
- At the end of 2017, there were 26,530 MN licensed prescribers and pharmacists approved for system accounts, an increase of approximately 21% from 2016.
- The total number of patient queries conducted by permissible data users, including health care providers and pharmacists, increased from 176,645 in 2011 to 1,244,173 in 2017.
- In 2017, the average number of patient queries conducted annually by health care providers and pharmacists showed an increase for all but one provider group as compared to 2016.
- In 2017, patient-requested reports dropped to 263, a 28% decrease from 2016. These reports were mailed directly to the patient or to a third-party provider at the patients' request.
- In 2017, the program saw a 3% increase from 2016, in the number of search warrants served by law enforcement, requesting data on an individual's prescription history, pharmacy's dispensing history, and prescriber's prescribing history.
- 2017 was the third full year the MN PMP officially participated in a system that enabled sharing PMP data across state lines. MN enabled authorized account holders to query data in five additional states. MN PMP account holders conducted more than 1,252,221 queries to other participating states and more than 3,655,122 queries were received from other participating states.
- 2017 was the third full year the MN PMP identified multiple prescriber and dispenser episodes by patients and notified the health care providers involved with that patient's care. Throughout 2017, the number of patients seeing 5 or more prescribers and 5 or more pharmacies in a 90 day period continued to decrease.

Introduction

There is growing evidence that prescription drug monitoring programs (PDMP/PMP) play an important role in the fight against prescription drug abuse. PMPs have proven to be effective in reducing prescription drug abuse, misuse, and diversion, assisting in identifying inappropriate prescribing or dispensing, and aiding in drug investigations, amongst other efforts.

To begin addressing prescription drug abuse in the State, on May 25, 2007, the Governor signed into law [MN Stats. §152.126](#), which required the Minnesota Board of Pharmacy (Board) to establish an electronic system for the reporting of controlled substance prescriptions that are dispensed to residents of the state. The Board subsequently implemented the Minnesota Prescription Monitoring Program (PMP). Collection of data from dispensers of controlled substances began on January 4, 2010 with authorized access to the data commencing on April 15, 2010. [MN Stats. §152.126](#) also required the Board to appoint an advisory task force. This task force consists of at least one representative of the Department of Health and Department of Human Services; each health-related licensing board that licenses prescribers; professional associations representing the medical community, pharmacy community, nurses, and dentists; a consumer privacy or security advocate; a consumer or patient rights organization; and an association of medical examiners and coroners. The advisory task force advises the Board on the development and operation of the Minnesota Prescription Monitoring Program, including technical standards for reporting and proper analysis and interpretation of PMP data.

This annual report serves as an overview of the utilization of the database by prescribers, pharmacists and other permitted account holders, as well as controlled substance prescription dispensing activities in the state. The report intends to educate individuals regarding the controlled substance prescription dispensing landscape in Minnesota as well as PMP database utilization by prescribers, pharmacists and their delegates.

Prescription data assessed in this report consists of the timeframe 1/1/17 – 12/31/17. Similar to previous annual reports, the term “controlled substance” refers to those medications that are classified federally as schedule II-V controlled substances only, unless otherwise noted. In comparing prescription counts to previous years, one must take into consideration a law change which occurred in 2014. Prior to July 1, 2014, dispensers were only required to report Minnesota schedule II-IV controlled substances to the Minnesota PMP database. Effective July 1, 2014, dispensers were required to report schedule V controlled substances as well as butalbital and tramadol. Tramadol and schedule V controlled substances were included in the 2014 Annual Report based on the timeframe of 9/1/14-12/31/14, as the system underwent an update to allow for the reporting of the additional medications. In the 2015 Annual Report, these medications, as well as schedule II-IV controlled substances were included for the full calendar year (1/1/15 – 12/31/15). In 2016, legislation passed to require dispensers to report gabapentin to the MN PMP. However, since gabapentin is not a federal controlled substance, it is not included for the purposes of this report.

Prescription data in the PMP database is as accurate as the records submitted by dispensers. There are various required fields and validation checks in place to aid pharmacies in clean data submission. Pharmacies may edit, remove, or submit prescription records at any time to accurately reflect dispensing histories. As a result, previous and future queries of the database may result in differing output of aggregate data. An example of why a pharmacy may submit a historical upload is if the pharmacy experienced technical issues and was later made aware that data was not being reported to the PMP database. An example of prescription records being removed from the database is if prescriptions were reported to the database, yet the patient never picked the medications up from the pharmacy. In this example, the pharmacy would void the prescriptions in the database to reflect their actual dispensing activity.

In the interest of patient privacy, when less than ten of a particular medication is dispensed, it is reported as "<10" throughout the report.

Operations

In 2017, the PMP completed its eighth year of operation. Currently, the PMP is staffed by three full time staff; Program Manager, Program Administrator and Pharmacist Consultant. The Board receives an annual appropriation, for operation of the PMP, from the state government special revenue fund. The health-related licensing boards apportion between the Board of Medical Practice, Board of Nursing, Board of Dentistry, Board of Podiatric Medicine, and the Board of Pharmacy an amount paid through fees by each respective board. Each board's apportioned share is based on the number of prescribers and pharmacists licensed collectively by these boards. The Board is currently administering a 2016 Harold Rogers Prescription Drug Monitoring Program grant, from the U.S. Department of Justice/Office of Justice Programs/Bureau of Justice Assistance, to enhance the current electronic system, provide funding for participating in outreach/education events, and provide small sub-grants to healthcare entities wishing to integrate access to the PMP data into their electronic health systems.

Prescription data is submitted to the PMP database by dispensing prescribers and pharmacies. All entities dispensing controlled substances in or into the State of Minnesota are required to report data daily, and dispensers who do not dispense a controlled substance on any given day are required to submit a "zero report" each day. PMP staff and a contracted vendor audit the submission of data as well as the data itself to ensure compliance in reporting and data integrity. Noncompliant pharmacies are communicated with by various means and a lack of response to the request to comply are referred to the Board's regulatory section for further consideration. At the end of 2017, the Board licensed over 2,100 pharmacies. Of them, over 1,600 were required to report data to the PMP. Current law allows an exemption from reporting when;

1. The pharmacy is a licensed hospital pharmacy that distributes controlled substances for inpatient hospital care only;
2. The individuals resides in a health care facility as defined in section [151.58](#), subdivision 2, paragraph (b), when a drug is distributed through the use of an automated drug distribution system according to section [151.58](#);
3. The individuals receives a drug sample that was packaged by a manufacturer and provided to the dispenser for dispensing as a professional sample pursuant to Code of Federal Regulations, title 21, part 203, subpart D;
4. The pharmacy or facility never dispenses controlled substances in or into the State of Minnesota.

In additional, Federal regulations CFR 42 prohibits an Opioid Treatment Program facility from reporting the dispensing of controlled substances to the PMP.

In an effort to stress the importance of accurate data in the PMP database, the PMP launched an initiative in the fall of 2015 to better address the quality of prescription data reported to the PMP. All Minnesota licensed pharmacies and uploaders (those who submit data on behalf of the pharmacy) received communication reminding them of the requirement to submit accurate data. Included in the communication was the notice that all dispensers must correct prescription errors inadvertently

submitted to the PMP within seven days of the initial submission. The notice informed dispensers and uploaders that PMP staff would be auditing for error resolution and that failure to correct errors may result in notification to the Board's regulatory section for further consideration. Some examples of errors the PMP may receive include invalid national drug code (NDC) numbers, missing patient first or last name, and invalid patient date of birth. Uploaders and/or pharmacies receive system-generated notices when errors occur in their submissions. The data integrity initiative was implemented to ensure pharmacies and uploaders are responding accordingly to these system generated error notices. Data integrity and compliance in reporting are ongoing initiatives by MN PMP staff.

Prescription Data

In 2017, 7,421,993 federally scheduled II-V controlled substance prescriptions were reported to the PMP database as dispensed. These prescriptions resulted in 419,855,007 total units of controlled substances dispensed. Total units refers to the summation of all tablets, capsules, milliliters, grams, etc. reported as dispensed. Table 1 lists the top twenty controlled substance medications reported in 2017 by prescription count. Hydrocodone/acetaminophen continues to be the leading controlled substance reported, with over 940,000 prescriptions and 49 million units reported. However, in comparison to 2016, the number of hydrocodone/acetaminophen prescriptions reported has decreased by roughly 13.3%.

Table 1. Top Twenty Controlled Substance Prescriptions Reported as Dispensed (Generic), 2017

| Drug | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 | 2015 Quantity Dispensed | 2016 Quantity Dispensed | 2017 Quantity Dispensed | % Change from 2016 to 2017 |
|--------------------------------|------------------|------------------|------------------|----------------------------|-------------------------|-------------------------|-------------------------|----------------------------|
| HYDROCODONE/ACETAMINOPHEN | 1,241,901 | 1,086,445 | 942,200 | -13.3% | 66,880,839 | 58,087,539 | 49,285,828 | -15.2% |
| DEXTROAMPHETAMINE/AMPHETAMINE | 710,348 | 745,202 | 793,790 | 6.5% | 32,987,581 | 34,228,059 | 35,614,531 | 4.1% |
| OXYCODONE HCL | 674,376 | 668,445 | 645,076 | -3.5% | 49,824,073 | 48,172,634 | 44,482,319 | -7.7% |
| TRAMADOL HCL | 664,211 | 622,628 | 572,182 | -8.1% | 54,330,628 | 50,051,937 | 44,896,769 | -10.3% |
| LORAZEPAM | 566,678 | 544,364 | 520,813 | -4.3% | 26,303,026 | 24,717,151 | 22,939,383 | -7.2% |
| OXYCODONE HCL/ACETAMINOPHEN | 624,057 | 544,585 | 462,538 | -15.1% | 35,176,485 | 30,981,364 | 26,448,399 | -14.6% |
| ZOLPIDEM TARTRATE | 524,754 | 479,508 | 444,737 | -7.3% | 17,699,576 | 16,206,215 | 14,813,119 | -8.6% |
| METHYLPHENIDATE HCL | 408,039 | 409,054 | 412,998 | 1.0% | 20,693,866 | 20,369,805 | 20,060,355 | -1.5% |
| CLONAZEPAM | 438,375 | 421,855 | 401,368 | -4.9% | 27,199,411 | 25,374,297 | 23,740,502 | -6.4% |
| ALPRAZOLAM | 368,967 | 357,091 | 334,042 | -6.5% | 20,183,844 | 19,244,094 | 17,446,595 | -9.3% |
| MORPHINE SULFATE | 193,622 | 186,762 | 176,039 | -5.7% | 16,693,794 | 11,344,000 | 9,513,114 | -16.1% |
| CODEINE PHOSPHATE/GUAIFENESIN | 164,314 | 166,135 | 163,842 | -1.4% | 29,048,416 | 28,387,231 | 27,889,585 | -1.8% |
| LISDEXAMFETAMINE DIMESYLATE | 139,626 | 160,617 | 162,459 | 1.1% | 4,443,912 | 5,073,582 | 5,111,706 | 0.8% |
| DIAZEPAM | 182,616 | 175,320 | 161,296 | -8.0% | 7,935,420 | 7,420,452 | 6,579,934 | -11.3% |
| PREGABALIN | 122,014 | 138,246 | 145,453 | 5.2% | 10,185,673 | 11,425,334 | 11,948,731 | 4.6% |
| ACETAMINOPHEN WITH CODEINE | 184,296 | 160,689 | 139,220 | -13.4% | 8,568,016 | 7,475,862 | 6,347,519 | -15.1% |
| HYDROMORPHONE HCL | 97,143 | 94,248 | 96,239 | 2.1% | 7,289,892 | 6,898,324 | 6,426,667 | -6.8% |
| BUPRENORPHINE HCL/NALOXONE HCL | 56,863 | 66,598 | 81,957 | 23.1% | 2,536,640 | 2,739,201 | 3,288,431 | 20.1% |
| PHENTERMINE HCL | 67,205 | 72,954 | 79,927 | 9.6% | 2,580,409 | 2,846,184 | 3,118,513 | 9.6% |
| FENTANYL | 97,366 | 86,953 | 72,902 | -16.2% | 970,701 | 861,960 | 711,409 | -17.5% |
| TOTAL | 8,167,519 | 7,817,061 | 7,421,993 | -5.1% | 487,371,166 | 456,256,835 | 419,855,007 | -8.0% |

Dispensed by County

The database was queried by Minnesota County based on the address the recipient provided to the dispenser. Notably, data in the database is as reliable and accurate as the reporting dispenser's records. Hennepin County, with the largest population, had the greatest volume of reported prescriptions in 2017. A correlation was noted between the population of the county and the quantity of prescriptions dispensed for the top six counties. According to population estimates collected by the U.S. Census Bureau, the top ten counties in Minnesota, as of July 1, 2017, by population were: Hennepin (1,252,024); Ramsey (547,974); Dakota (421,751); Anoka (351,373); Washington (256,348); St. Louis (200,000); Stearns (157,822); Olmsted (154,930); Scott (145,827); and Wright (134,286).⁽¹⁾ Figure 1 shows the top ten recipient residence counties based on the number of prescriptions reported as dispensed.

Figure 1. Top Ten Minnesota Recipient Counties by Prescription Count

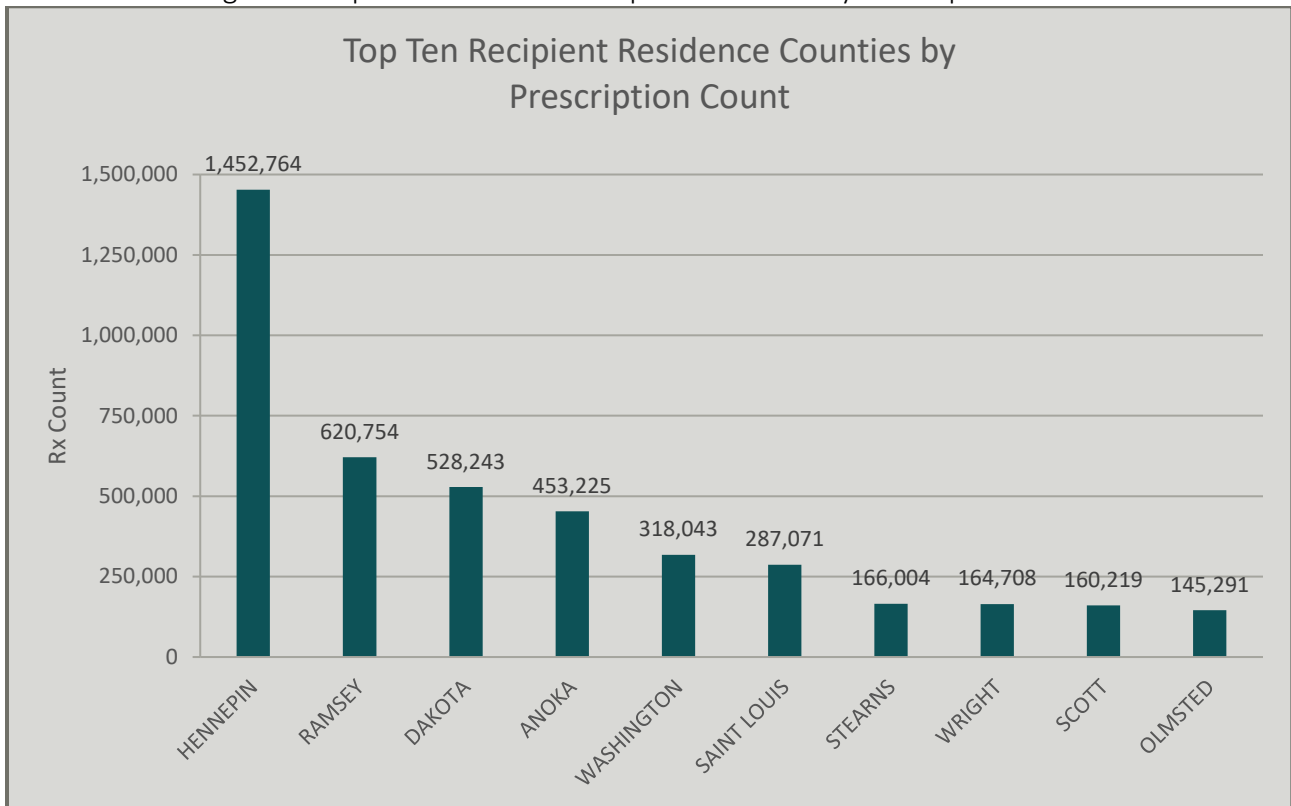


Table 2 shows the total number of controlled substance prescriptions reported as dispensed per recipient residence county in 2017, as well as the county's corresponding population, as of July 1, 2017. When assessing the crude rate, the county with the highest rate of prescriptions dispensed was Mille Lacs County with 1,799.6 prescriptions per 1,000 persons. The county with the lowest rate of prescriptions dispensed was Houston County with 618.5 prescriptions per 1,000 persons. The state crude rate was 1,223.3 prescriptions per 1,000 persons (prescriptions reported as dispensed to recipients residing in all Minnesota Counties divided by the state population). The rates portrayed are regardless of age or whether or not Minnesota residents filled controlled substance prescriptions in 2017.

Table 2. Controlled Substance Prescriptions Dispensed by Minnesota Recipient Residence Counties ⁽¹⁾

| Geography | 2017 Population | 2017 Rx Count | Rate per 1,000 residents | Geography | 2017 Population | 2017 Rx Count | Rate per 1,000 residents | Geography | 2017 Population | 2017 Rx Count | Rate per 1,000 residents |
|------------------|-----------------|---------------|--------------------------|-------------------|-----------------|---------------|--------------------------|-----------------|-----------------|---------------|--------------------------|
| MINNESOTA | 5,576,606 | 6,822,053 | 1,223.3 | HUBBARD | 21,018 | 24,344 | 1,158.2 | PINE | 29,203 | 41,488 | 1,420.7 |
| AITKIN | 15,829 | 26,771 | 1,691.3 | ISANTI | 39,582 | 62,219 | 1,571.9 | PIPESTONE | 9,087 | 15,546 | 1,710.8 |
| ANOKA | 351,373 | 453,225 | 1,289.9 | ITASCA | 45,137 | 72,291 | 1,601.6 | POLK | 31,619 | 50,025 | 1,582.1 |
| BECKER | 34,098 | 46,278 | 1,357.2 | JACKSON | 9,946 | 11,814 | 1,187.8 | POPE | 10,970 | 15,009 | 1,368.2 |
| BELTRAMI | 46,513 | 59,997 | 1,289.9 | KANABEC | 16,024 | 28,116 | 1,754.6 | RAMSEY | 547,974 | 620,754 | 1,132.8 |
| BENTON | 39,937 | 50,231 | 1,257.8 | KANDIYOHI | 42,743 | 49,298 | 1,153.4 | RED LAKE | 4,030 | 5,319 | 1,319.9 |
| BIG STONE | 5,026 | 7,909 | 1,573.6 | KITSON | 4,250 | 5,163 | 1,214.8 | REDWOOD | 15,272 | 17,662 | 1,156.5 |
| BLUE EARTH | 66,973 | 77,855 | 1,162.5 | KOOCHICHING | 12,528 | 21,092 | 1,683.6 | RENVILLE | 14,645 | 18,261 | 1,246.9 |
| BROWN | 25,194 | 30,044 | 1,192.5 | LAC QUI PARLE | 6,685 | 9,686 | 1,448.9 | RICE | 65,968 | 76,765 | 1,163.7 |
| CARLTON | 35,498 | 49,406 | 1,391.8 | LAKE | 10,524 | 14,725 | 1,399.2 | ROCK | 9,490 | 13,224 | 1,393.5 |
| CARVER | 102,119 | 118,473 | 1,160.1 | LAKE OF THE WOODS | 3,744 | 4,916 | 1,313.0 | ROSEAU | 15,327 | 19,306 | 1,259.6 |
| CASS | 29,355 | 43,068 | 1,467.1 | LE SUEUR | 28,111 | 31,279 | 1,112.7 | SAINT LOUIS | 200,000 | 287,071 | 1,435.4 |
| CHIPPEWA | 11,980 | 15,165 | 1,265.9 | LINCOLN | 5,678 | 6,709 | 1,181.6 | SCOTT | 145,827 | 160,219 | 1,098.7 |
| CHISAGO | 55,308 | 75,074 | 1,357.4 | LYON | 25,831 | 28,933 | 1,120.1 | SHERBURNE | 94,570 | 122,614 | 1,296.5 |
| CLAY | 63,569 | 79,840 | 1,256.0 | MAHONOMEN | 5,596 | 8,159 | 1,458.0 | SIBLEY | 14,869 | 16,723 | 1,124.7 |
| CLEARWATER | 8,878 | 13,770 | 1,551.0 | MARSHALL | 9,356 | 12,353 | 1,320.3 | STEARNS | 157,822 | 166,004 | 1,051.8 |
| COOK | 5,398 | 5,840 | 1,081.9 | MARTIN | 19,850 | 31,368 | 1,580.3 | STEELE | 36,887 | 51,719 | 1,402.1 |
| COTTONWOOD | 11,295 | 15,943 | 1,411.5 | MCLEOD | 35,884 | 47,437 | 1,322.0 | STEVENS | 9,634 | 9,406 | 976.3 |
| CROW WING | 64,424 | 90,909 | 1,411.1 | MEEKER | 23,131 | 28,296 | 1,223.3 | SWIFT | 9,407 | 12,059 | 1,281.9 |
| DAKOTA | 421,751 | 528,243 | 1,252.5 | MILLE LACS | 25,872 | 46,558 | 1,799.6 | TODD | 24,515 | 27,328 | 1,114.7 |
| DODGE | 20,762 | 16,943 | 816.1 | MORRISON | 33,064 | 47,590 | 1,439.3 | TRAVERSE | 3,319 | 5,841 | 1,759.9 |
| DOUGLAS | 37,575 | 52,720 | 1,403.1 | MOWER | 39,566 | 47,137 | 1,191.4 | WABASHA | 21,608 | 24,476 | 1,132.7 |
| FARIBAULT | 13,784 | 20,298 | 1,472.6 | MURRAY | 8,346 | 10,817 | 1,296.1 | WADENA | 13,669 | 22,767 | 1,665.6 |
| FILLMORE | 20,980 | 18,747 | 893.6 | NICOLLET | 33,966 | 39,301 | 1,157.1 | WASECA | 18,787 | 22,872 | 1,217.4 |
| FREEBORN | 30,535 | 34,935 | 1,144.1 | NOBLES | 21,944 | 20,182 | 919.7 | WASHINGTON | 256,348 | 318,043 | 1,240.7 |
| GOODHUE | 46,304 | 61,466 | 1,327.4 | NORMAN | 6,597 | 10,269 | 1,556.6 | WATONWAN | 10,840 | 13,124 | 1,210.7 |
| GRANT | 5,941 | 8,585 | 1,445.0 | OLMSTED | 154,930 | 145,291 | 937.8 | WILKIN | 6,324 | 8,214 | 1,298.9 |
| HENNEPIN | 1,252,024 | 1,452,764 | 1,160.3 | OTTER TAIL | 58,345 | 81,055 | 1,389.2 | WINONA | 50,873 | 47,906 | 941.7 |
| HOUSTON | 18,660 | 11,541 | 618.5 | PENNINGTON | 14,238 | 21,978 | 1,543.6 | WRIGHT | 134,286 | 164,708 | 1,226.5 |
| | | | | | | | | YELLOW MEDICINE | 9,867 | 13,184 | 1,336.2 |

Table 3 shows the number of controlled substance prescriptions dispensed to Minnesota recipients by federal schedule, as well as the average number of prescriptions per Minnesota resident, if every resident in the State of Minnesota were to receive one prescription.

Table 3. Prescription Count and Average of Federally Scheduled Prescriptions Dispensed per Population

| Schedule | 2015 Rx Count to MN Recipient | 2016 Rx Count to MN Recipient | 2017 Rx Count to MN Recipient | % Change from 2016 to 2017 | 2015 Rx per MN Population* | 2016 Rx per MN Population* | 2017 Rx per MN Population* |
|-----------------|--------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| II | 4,200,242 | 3,977,730 | 3,586,819 | -9.8% | 0.77 | 0.72 | 0.64 |
| III | 365,412 | 350,851 | 334,245 | -4.7% | 0.07 | 0.06 | 0.06 |
| IV | 3,015,815 | 2,859,839 | 2,561,343 | -10.4% | 0.55 | 0.52 | 0.46 |
| V | 334,175 | 352,095 | 339,646 | -3.5% | 0.06 | 0.06 | 0.06 |
| Total | 7,915,644 | 7,540,515 | 6,822,053 | -9.5% | 1.44 | 1.37 | 1.22 |

**Prescription count per MN Population is based on U.S. Census Bureau Population estimates, not on the number of recipients to receive controlled substances.*

Opioids

In Minnesota, more than 3.1 million opioid prescriptions were reported as dispensed in 2017 with hydrocodone/acetaminophen, oxycodone, and tramadol reported as the leading three. Table 4 shows the top twenty opiate agonists, as classified by the American Society of Health-System Pharmacists, AHFS® Pharmacologic-Therapeutic Classification® (2), reported by prescription count in 2017, as well as the number of prescriptions reported in 2015 and 2016. There was roughly a 10% reduction in opioid prescriptions dispensed from 2016 to 2017.

Table 4. Opioids Reported as Dispensed (2017, Top Twenty)

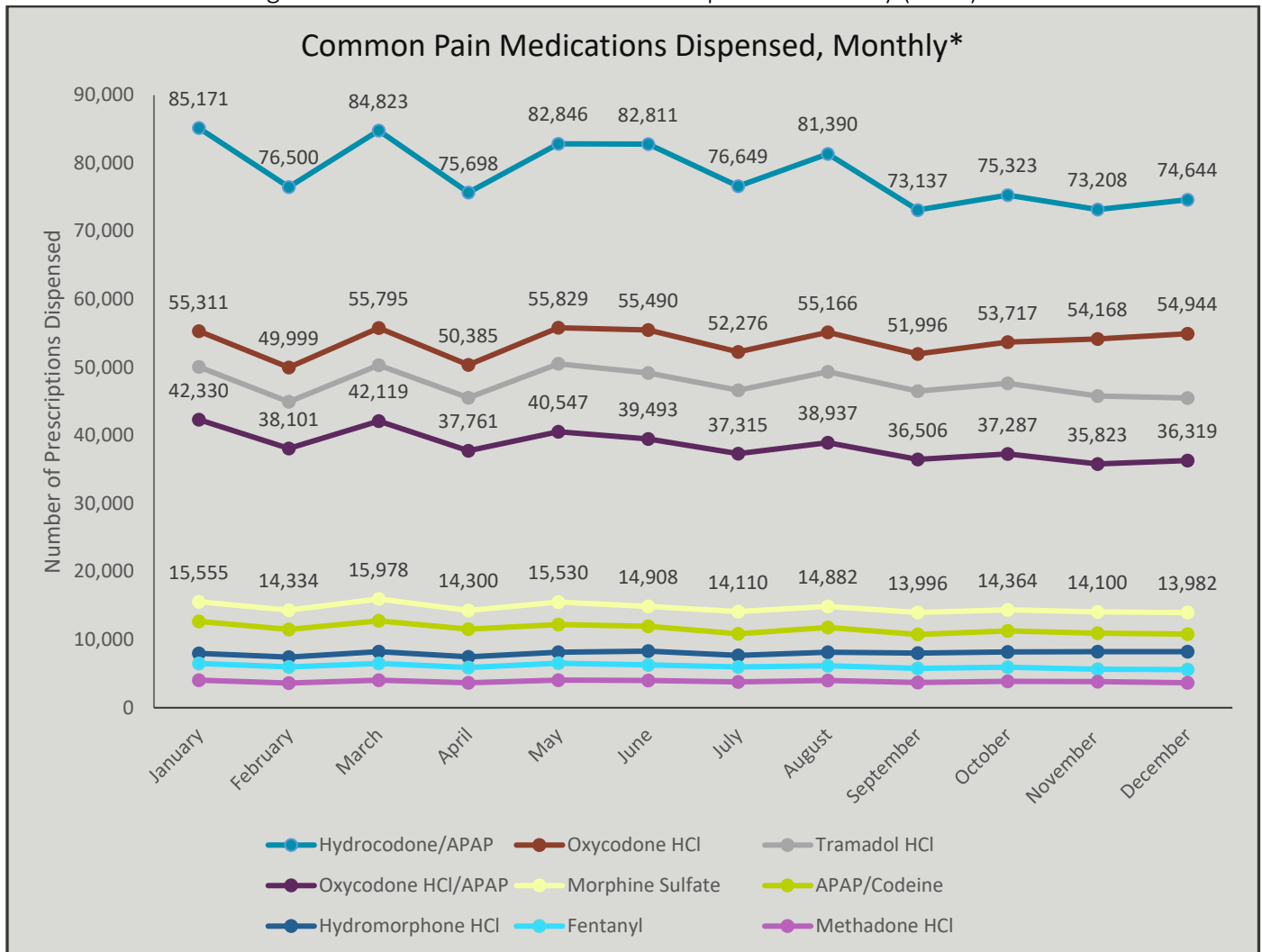
| Drug | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 |
|--------------------------------|------------------|------------------|------------------|----------------------------|
| HYDROCODONE/ACETAMINOPHEN | 1,241,901 | 1,086,445 | 942,200 | -13.3% |
| OXYCODONE HCL | 674,376 | 668,445 | 645,076 | -3.5% |
| TRAMADOL HCL | 664,211 | 622,626 | 572,182 | -8.1% |
| OXYCODONE HCL/ACETAMINOPHEN | 624,057 | 544,585 | 462,538 | -15.1% |
| MORPHINE SULFATE | 193,622 | 186,762 | 176,039 | -5.7% |
| ACETAMINOPHEN WITH CODEINE | 184,296 | 160,689 | 139,220 | -13.4% |
| HYDROMORPHONE HCL | 97,143 | 94,248 | 96,239 | 2.1% |
| FENTANYL | 97,366 | 86,953 | 72,902 | -16.2% |
| METHADONE HCL | 53,367 | 50,395 | 46,319 | -8.1% |
| TRAMADOL HCL/ACETAMINOPHEN | 9,909 | 8,196 | 6,344 | -22.6% |
| HYDROCODONE/IBUPROFEN | 6,571 | 4,901 | 3,510 | -28.4% |
| CODEINE SULFATE | 4,007 | 4,122 | 3,447 | -16.4% |
| BUTALBIT/ACETAMIN/CAFF/CODEINE | 4,535 | 4,062 | 3,428 | -15.6% |
| CODEINE/BUTALBITAL/ASA/CAFFEIN | 4,763 | 4,077 | 3,372 | -17.3% |
| TAPENTADOL HCL | 2,719 | 2,863 | 2,595 | -9.4% |
| OXYMORPHONE HCL | 2,186 | 2,036 | 1,548 | -24.0% |
| HYDROMORPHONE HCL/PF | 903 | 808 | 1,041 | 28.8% |
| HYDROCODONE BITARTRATE | 1,017 | 1,172 | 997 | -14.9% |
| OPIUM/BELLADONNA ALKALOIDS | 1,004 | 1,012 | 832 | -17.8% |
| OXYCODONE MYRISTATE* | 0 | 165 | 709 | 329.7%* |
| TOTAL | 3,871,005 | 3,536,939 | 3,182,673 | -10.0% |

*XTAMPZA ER® is an extended-release oxycodone formulation which was approved by the U.S. Food and Drug Administration (FDA) in 2016.

Common Pain Medications

Figure 2 illustrates the number of common pain medications reported as dispensed each month in 2017. Hydrocodone/acetaminophen was largely the number one opioid dispensed each month in 2017.

Figure 2. Common Pain Medications Dispensed Monthly (2017)



*Classified as opiate agonists by AHFS® Pharmacologic-Therapeutic Classification©

Table 5 shows the crude rate of opioid prescriptions, by prescription type per 1,000 residents. For every 1,000 Minnesota residents, regardless of age or whether or not they had any prescriptions filled, there were 517.5 opioid prescriptions reported. The crude rate is based on prescriptions reported per recipient residence county and the county's population, per U.S. Census Bureau population estimates. The rate is shown for the full calendar year and is portrayed by county and statewide. The prescription types included in Table 5 consist of a subset of opiate agonists as categorized by AHFS classification.

Table 5. Crude Rate of Opioids Dispensed per 1,000 Residents by MN Recipient Residence County⁽¹⁾

| COUNTY | All Opioid Rate | Hydrocodone Rate | Oxycodone Rate | Tramadol Rate | Codeine Rate | Morphine Rate | Fentanyl Rate | Hydromorphone Rate |
|------------------|-----------------|------------------|----------------|---------------|--------------|---------------|---------------|--------------------|
| STATEWIDE | 517.5 | 155.3 | 180.0 | 93.7 | 24.7 | 28.2 | 11.7 | 15.5 |
| AITKIN | 971.4 | 309.4 | 364.4 | 136.1 | 32.2 | 61.7 | 30.2 | 23.6 |
| ANOKA | 562.4 | 160.1 | 230.2 | 84.8 | 23.9 | 28.9 | 8.3 | 16.3 |
| BECKER | 561.1 | 238.5 | 129.2 | 99.9 | 29.7 | 31.1 | 14.1 | 10.3 |
| BELTRAMI | 580.6 | 225.2 | 85.0 | 185.3 | 34.7 | 27.7 | 9.8 | 7.0 |
| BENTON | 567.0 | 187.2 | 166.2 | 117.4 | 29.9 | 39.8 | 12.0 | 6.0 |
| BIG STONE | 692.6 | 258.7 | 105.7 | 182.5 | 54.7 | 36.2 | 42.8 | 6.0 |
| BLUE EARTH | 433.1 | 117.4 | 129.1 | 120.3 | 17.0 | 19.8 | 10.2 | 14.4 |
| BROWN | 485.0 | 164.0 | 135.3 | 99.9 | 24.0 | 27.2 | 13.1 | 9.0 |
| CARLTON | 692.6 | 294.6 | 146.1 | 145.6 | 27.4 | 39.6 | 13.9 | 11.7 |
| CARVER | 428.4 | 150.9 | 137.7 | 65.4 | 21.8 | 24.1 | 9.4 | 13.8 |
| CASS | 684.3 | 269.0 | 163.0 | 136.4 | 37.8 | 39.3 | 16.3 | 12.1 |
| CHIPPEWA | 593.1 | 194.8 | 132.9 | 138.5 | 31.6 | 33.6 | 37.3 | 13.7 |
| CHISAGO | 638.2 | 195.5 | 238.0 | 95.8 | 23.6 | 35.6 | 15.5 | 21.6 |
| CLAY | 415.5 | 153.8 | 97.5 | 96.3 | 18.9 | 21.1 | 11.4 | 10.5 |
| CLEARWATER | 693.6 | 244.0 | 136.7 | 216.9 | 33.3 | 18.7 | 28.8 | 10.4 |
| COOK | 567.1 | 220.5 | 153.9 | 98.7 | 29.6 | 28.7 | 16.9 | 10.9 |
| COTTONWOOD | 668.4 | 210.4 | 105.3 | 209.8 | 35.8 | 30.2 | 67.7 | 5.5 |
| CROW WING | 622.7 | 221.2 | 202.4 | 100.3 | 25.6 | 37.3 | 16.1 | 12.6 |
| DAKOTA | 493.4 | 137.7 | 193.2 | 73.8 | 24.6 | 26.5 | 10.4 | 16.9 |
| DODGE | 334.5 | 63.8 | 126.4 | 91.7 | 10.8 | 16.0 | 8.0 | 16.6 |
| DOUGLAS | 615.5 | 208.9 | 171.0 | 148.8 | 33.1 | 27.4 | 13.7 | 7.6 |
| FARIBAULT | 716.2 | 198.7 | 184.8 | 224.5 | 25.6 | 61.3 | 11.2 | 6.3 |
| FILLMORE | 436.4 | 96.3 | 124.5 | 144.0 | 15.8 | 23.8 | 15.1 | 13.6 |
| FREEBORN | 521.7 | 126.4 | 142.2 | 174.5 | 14.4 | 33.0 | 15.3 | 11.6 |
| GOODHUE | 637.0 | 148.5 | 226.2 | 141.5 | 25.6 | 44.5 | 21.3 | 23.1 |
| GRANT | 636.3 | 206.2 | 194.1 | 149.3 | 30.8 | 28.3 | 13.0 | 14.1 |
| HENNEPIN | 449.5 | 120.3 | 187.3 | 62.2 | 22.8 | 24.4 | 7.5 | 17.7 |
| HOUSTON | 273.6 | 106.4 | 44.2 | 81.8 | 7.7 | 12.6 | 14.8 | 4.2 |
| HUBBARD | 505.2 | 180.5 | 124.9 | 107.1 | 27.2 | 26.2 | 15.1 | 12.6 |
| ISANTI | 779.2 | 218.1 | 334.9 | 88.7 | 30.9 | 49.7 | 21.3 | 19.0 |
| ITASCA | 749.4 | 253.6 | 226.4 | 150.4 | 39.0 | 32.8 | 14.5 | 19.6 |
| JACKSON | 449.1 | 171.9 | 61.7 | 161.3 | 25.8 | 13.8 | 10.0 | 3.7 |
| KANABEC | 985.7 | 272.6 | 439.2 | 107.2 | 24.6 | 76.6 | 17.2 | 28.8 |
| KANDIYOHI | 491.5 | 160.8 | 110.0 | 125.3 | 40.6 | 29.8 | 12.0 | 7.3 |
| KITSON | 508.0 | 171.8 | 97.6 | 115.5 | 34.8 | 36.9 | 37.9 | 4.2 |
| KOOCHICHING | 718.6 | 250.2 | 185.3 | 166.0 | 39.4 | 34.7 | 19.2 | 12.0 |
| LAC QUI PARLE | 688.1 | 253.6 | 123.4 | 179.7 | 28.6 | 38.3 | 49.5 | 9.4 |

| COUNTY | All Opioid Rate | Hydrocodone Rate | Oxycodone Rate | Tramadol Rate | Codeine Rate | Morphine Rate | Fentanyl Rate | Hydromorphone Rate |
|-------------------|-----------------|------------------|----------------|---------------|--------------|---------------|---------------|--------------------|
| STATEWIDE | 517.5 | 155.3 | 180.0 | 93.7 | 24.7 | 28.2 | 11.7 | 15.5 |
| LAKE | 713.6 | 295.9 | 154.2 | 131.6 | 33.4 | 38.9 | 27.5 | 18.1 |
| LAKE OF THE WOODS | 706.5 | 224.1 | 138.9 | 220.1 | 41.1 | 24.3 | 39.0 | 6.1 |
| LE SUEUR | 494.6 | 138.0 | 167.5 | 113.0 | 23.2 | 21.1 | 12.7 | 15.5 |
| LINCOLN | 494.4 | 150.1 | 85.9 | 183.3 | 18.7 | 17.6 | 28.7 | 8.6 |
| LYON | 442.9 | 167.7 | 74.8 | 115.4 | 21.7 | 24.7 | 25.6 | 5.0 |
| MAHNOMEN | 547.5 | 236.1 | 116.5 | 105.4 | 39.7 | 17.3 | 18.8 | 8.8 |
| MARSHALL | 568.1 | 181.2 | 127.8 | 146.9 | 39.3 | 30.4 | 23.3 | 5.0 |
| MARTIN | 701.4 | 234.5 | 178.7 | 184.8 | 28.5 | 37.8 | 23.7 | 11.0 |
| MCLEOD | 611.2 | 196.8 | 182.4 | 115.9 | 37.6 | 41.6 | 15.8 | 11.1 |
| MEEKER | 596.0 | 199.7 | 162.4 | 133.6 | 21.5 | 36.5 | 21.7 | 10.7 |
| MILLE LACS | 939.2 | 295.8 | 358.4 | 136.4 | 41.8 | 51.5 | 14.0 | 22.1 |
| MORRISON | 707.6 | 269.6 | 195.3 | 149.7 | 29.4 | 37.8 | 12.6 | 6.5 |
| MOWER | 501.2 | 122.3 | 164.9 | 137.8 | 14.7 | 29.1 | 11.7 | 14.0 |
| MURRAY | 553.4 | 184.9 | 73.1 | 190.3 | 23.8 | 38.9 | 35.6 | 4.0 |
| NICOLLET | 415.9 | 114.8 | 120.5 | 117.5 | 22.9 | 15.0 | 11.8 | 9.2 |
| NOBLES | 381.5 | 152.3 | 54.5 | 112.8 | 23.6 | 18.5 | 15.5 | 2.2 |
| NORMAN | 573.4 | 193.7 | 118.2 | 139.8 | 31.5 | 38.2 | 27.3 | 16.4 |
| OLMSTED | 364.9 | 69.7 | 127.0 | 108.2 | 11.0 | 15.7 | 7.5 | 22.4 |
| OTTER TAIL | 644.5 | 208.3 | 169.0 | 158.9 | 31.0 | 36.0 | 24.7 | 10.9 |
| PENNINGTON | 671.7 | 243.7 | 132.8 | 166.6 | 51.9 | 38.3 | 20.3 | 7.4 |
| PINE | 815.8 | 263.7 | 290.2 | 125.7 | 26.2 | 60.2 | 17.9 | 18.1 |
| PIPESTONE | 729.2 | 284.5 | 155.3 | 174.6 | 30.9 | 46.7 | 29.8 | 4.3 |
| POLK | 652.6 | 229.2 | 155.0 | 147.5 | 41.2 | 29.6 | 33.8 | 6.6 |
| POPE | 637.2 | 217.7 | 165.7 | 134.3 | 26.4 | 39.1 | 35.3 | 12.6 |
| RAMSEY | 498.9 | 121.4 | 204.4 | 76.4 | 26.6 | 28.8 | 9.7 | 19.7 |
| RED LAKE | 579.7 | 207.9 | 139.7 | 142.2 | 30.5 | 31.0 | 13.4 | 5.5 |
| REDWOOD | 508.4 | 174.7 | 110.6 | 119.0 | 23.6 | 24.3 | 42.3 | 8.3 |
| RENVILLE | 591.1 | 237.5 | 134.5 | 109.8 | 47.7 | 28.4 | 19.9 | 8.7 |
| RICE | 517.0 | 152.4 | 180.9 | 106.6 | 18.4 | 34.9 | 8.2 | 9.1 |
| ROCK | 653.0 | 234.5 | 133.7 | 178.5 | 23.3 | 37.0 | 33.2 | 1.4 |
| ROSEAU | 591.4 | 178.6 | 143.2 | 147.4 | 46.4 | 33.5 | 24.5 | 5.9 |
| SAINT LOUIS | 616.9 | 256.4 | 141.1 | 120.7 | 23.3 | 29.3 | 13.0 | 19.3 |
| SCOTT | 448.5 | 136.3 | 171.8 | 64.5 | 22.2 | 22.4 | 7.5 | 17.0 |
| SHERBURNE | 569.4 | 178.9 | 219.0 | 84.8 | 24.0 | 30.9 | 9.9 | 13.5 |
| SIBLEY | 546.4 | 192.5 | 155.4 | 107.3 | 29.4 | 23.1 | 18.0 | 9.6 |
| STEARNS | 458.8 | 155.6 | 128.4 | 101.4 | 25.0 | 28.1 | 10.8 | 5.0 |
| STEELE | 519.3 | 151.1 | 151.3 | 158.0 | 17.3 | 23.4 | 7.9 | 9.1 |
| STEVENS | 392.9 | 151.3 | 103.5 | 94.8 | 19.9 | 10.6 | 6.9 | 3.5 |

| COUNTY | All Opioid Rate | Hydrocodone Rate | Oxycodone Rate | Tramadol Rate | Codeine Rate | Morphine Rate | Fentanyl Rate | Hydromorphone Rate |
|-----------------|-----------------|------------------|----------------|---------------|--------------|---------------|---------------|--------------------|
| STATEWIDE | 517.5 | 155.3 | 180.0 | 93.7 | 24.7 | 28.2 | 11.7 | 15.5 |
| SWIFT | 584.5 | 212.0 | 136.1 | 125.1 | 30.7 | 29.6 | 27.9 | 17.1 |
| TODD | 582.1 | 226.6 | 145.4 | 105.4 | 30.7 | 36.8 | 19.0 | 5.7 |
| TRAVERSE | 772.8 | 329.6 | 153.7 | 144.9 | 76.8 | 17.2 | 35.3 | 9.0 |
| WABASHA | 519.2 | 111.6 | 158.5 | 177.4 | 19.3 | 20.4 | 13.7 | 13.6 |
| WADENA | 824.3 | 286.0 | 211.8 | 155.8 | 60.3 | 39.0 | 47.0 | 16.3 |
| WASECA | 490.9 | 135.3 | 150.1 | 144.7 | 19.5 | 18.7 | 10.1 | 11.5 |
| WASHINGTON | 513.3 | 142.3 | 201.5 | 74.7 | 26.2 | 26.7 | 10.5 | 19.8 |
| WATONWAN | 565.5 | 172.4 | 175.9 | 143.5 | 25.1 | 25.0 | 14.8 | 6.6 |
| WILKIN | 559.8 | 196.1 | 109.6 | 136.6 | 38.1 | 41.4 | 22.9 | 11.2 |
| WINONA | 433.9 | 133.5 | 118.1 | 112.8 | 14.8 | 24.8 | 15.1 | 9.3 |
| WRIGHT | 526.8 | 168.6 | 199.3 | 76.6 | 21.6 | 31.2 | 9.3 | 11.9 |
| YELLOW MEDICINE | 655.0 | 210.9 | 116.1 | 189.7 | 37.6 | 36.7 | 44.2 | 10.5 |

Partial Opiate Agonists

Partial opiate agonists are commonly used to treat pain or opioid dependence. The most frequent partial opiate agonist reported as dispensed in 2017 was buprenorphine/naloxone (i.e. Suboxone®, Bunavail®, Zubsolv®). Table 6 shows the number of partial opiate agonists reported as dispensed, by prescription count, in 2017 as well as the number of prescriptions reported in 2015 and 2016. Of note, if an Opioid Treatment Program dispensed a partial opiate agonist, the dispensing history is not reported to the database as they are prohibited from reporting according to federal regulations CFR 42.

Table 6. Partial Opiate Agonists Reported as Dispensed (2017)

| Drug | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 |
|--------------------------------|---------------|---------------|----------------|----------------------------|
| BUPRENORPHINE HCL/NALOXONE HCL | 56,863 | 66,598 | 81,957 | 23.1% |
| BUPRENORPHINE HCL | 9,383 | 11,014 | 13,853 | 25.8% |
| BUPRENORPHINE | 5,284 | 4,376 | 3,588 | -18.0% |
| BUTORPHANOL TARTRATE | 2,045 | 1,968 | 1,832 | -6.9% |
| PENTAZOCINE HCL/NALOXONE HCL | 312 | 206 | 178 | -13.6% |
| TOTAL | 73,887 | 84,162 | 101,408 | 20.5% |

Stimulants

The stimulants shown below, as categorized by the American Society of Health-System Pharmacists' AHFS classifications, consist of anorexigenic agents and respiratory and central nervous system stimulants.⁽²⁾ In 2017, the leading controlled substance stimulants reported were dextroamphetamine/amphetamine (i.e. Adderall®, Adderall XR®), methylphenidate HCl (i.e. Concerta®, Ritalin®, Metadate®, etc.) and lisdexamfetamine (i.e. Vyvanse®). The top ten stimulants reported as dispensed are shown in Table 7 as well as a comparison of prescriptions reported in 2015 and 2016.

Table 7. Stimulants Reported as Dispensed (2017, Top Ten)

| Drug | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 |
|-------------------------------|------------------|------------------|------------------|----------------------------|
| DEXTROAMPHETAMINE/AMPHETAMINE | 710,348 | 745,202 | 793,790 | 6.5% |
| METHYLPHENIDATE HCL | 408,039 | 409,054 | 412,998 | 1.0% |
| LISDEXAMFETAMINE DIMESYLATE | 139,626 | 160,617 | 162,459 | 1.1% |
| PHENTERMINE HCL | 67,205 | 72,954 | 79,927 | 9.6% |
| DEXMETHYLPHENIDATE HCL | 29,777 | 31,820 | 33,161 | 4.2% |
| MODAFINIL | 25,346 | 26,632 | 28,424 | 6.7% |
| DEXTROAMPHETAMINE SULFATE | 28,668 | 28,117 | 28,043 | -0.3% |
| ARMODAFINIL | 15,934 | 14,200 | 13,020 | -8.3% |
| METHYLPHENIDATE | 6,933 | 4,267 | 2,978 | -30.2% |
| PHENTERMINE/TOPIRAMATE | 3018 | 2704 | 2,969 | 9.8% |
| TOTAL | 1,439,748 | 1,500,030 | 1,562,055 | 4.1% |

Sedatives

The medications in the group of sedatives below consist of anxiolytics, sedatives, hypnotics, and miscellaneous as classified by AHFS pharmacologic-therapeutic classification. ⁽²⁾ Of the controlled substances, zolpidem tartrate (i.e. Ambien®, Ambien CR®, etc.) was the leading sedative reported as dispensed. Table 8 provides an overview of the top five sedatives reported as dispensed, by prescription count, in 2015, 2016, and 2017.

Table 8. Sedatives Reported as Dispensed (2017, Top Five)

| Drug Code | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 |
|-------------------|----------------|----------------|----------------|----------------------------|
| ZOLPIDEM TARTRATE | 524,754 | 479,508 | 444,737 | -7.3% |
| ESZOPICLONE | 48,036 | 49,119 | 49,933 | 1.7% |
| ZALEPLON | 19,585 | 19,392 | 18,647 | -3.8% |
| SUVOREXANT | 2,930 | 5,734 | 6,232 | 8.7% |
| MEPROBAMATE | 462 | 382 | 301 | -21.2% |
| TOTAL | 595,902 | 554,242 | 519,906 | -6.2% |

Benzodiazepines

Benzodiazepines are medications that can have anticonvulsant, anxiolytic, hypnotic, muscle relaxant, and sedative properties. Just over 1.5 million benzodiazepines were reported as dispensed in 2017. The leading medications consist of lorazepam, clonazepam, and alprazolam. Table 9 shows the top ten benzodiazepines reported as dispensed, by prescription count, in 2017, as well as the number of prescriptions reported in 2015 and 2016. There was roughly a 5.5% reduction in benzodiazepines reported from 2016 to 2017.

Table 9. Benzodiazepines Reported as Dispensed (2017, Top Ten)

| Drug | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 |
|-------------------------|------------------|------------------|------------------|----------------------------|
| LORAZEPAM | 566,678 | 544,364 | 520,813 | -4.3% |
| CLONAZEPAM | 438,375 | 421,855 | 401,368 | -4.9% |
| ALPRAZOLAM | 368,967 | 357,091 | 334,042 | -6.5% |
| DIAZEPAM | 182,616 | 175,320 | 161,296 | -8.0% |
| TEMAZEPAM | 71,245 | 67,004 | 61,128 | -8.8% |
| TRIAZOLAM | 10,838 | 10,295 | 9,044 | -12.2% |
| CLOBAZAM | 4,640 | 5,697 | 6,390 | 12.2% |
| CLORAZEPATE DIPOTASSIUM | 3,893 | 3,472 | 3,186 | -8.2% |
| CHLORDIAZEPOXIDE HCL | 2,728 | 2,727 | 2,393 | -12.2% |
| OXAZEPAM | 1,947 | 1,710 | 1,567 | -8.4% |
| TOTAL | 1,656,330 | 1,594,138 | 1,505,907 | -5.5% |

Muscle Relaxants

Of the centrally acting skeletal muscle relaxants, as categorized by AHFS classification, carisoprodol is the only medication that is a controlled substance. The number of carisoprodol-containing prescriptions that were reported to the MN PMP in 2017 are listed in Table 10 below as well as their corresponding counts in 2015 and 2016.

Table 10. Muscle Relaxants Reported as Dispensed (2017)

| Drug Code | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from 2016 to 2017 |
|------------------------------|---------------|---------------|---------------|----------------------------|
| CARISOPRODOL | 26,432 | 22,529 | 18,364 | -18.5% |
| CARISOPRODOL/ASPIRIN/CODEINE | 20 | 13 | 12 | -7.7% |
| CARISOPRODOL/ASPIRIN | <10 | <10 | 0* | n/a |
| TOTAL | 26,460 | 22,547 | 18,376 | -18.5% |

**No prescriptions for carisoprodol/aspirin were reported as dispensed in 2017.*

Antitussives

Of the antitussives (or cough suppressants) categorized by AHFS classification, hydrocodone and codeine are the only medications scheduled as controlled substances. Table 11 shows the top five antitussives reported as dispensed, by prescription count, in 2015, 2016, and 2017.

Table 11. Antitussives Reported as Dispensed (2017, Top Five)

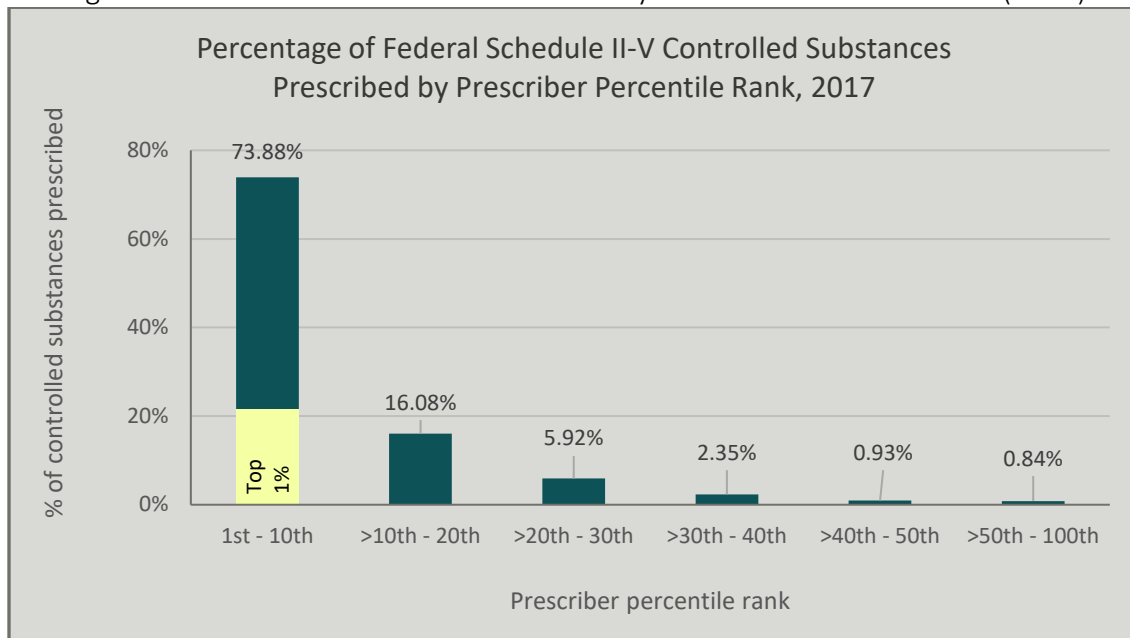
| Drug | 2015 Rx Count | 2016 Rx Count | 2017 Rx Count | % Change from '16 to '17 |
|--------------------------------|----------------|----------------|----------------|--------------------------|
| CODEINE PHOSPHATE/GUAIFENESIN | 164,314 | 166,135 | 163,842 | -1.4% |
| PROMETHAZINE HCL/CODEINE | 11,995 | 10,087 | 8,393 | -16.8% |
| HYDROCODONE/CHLORPHEN P-STIREX | 3,151 | 2,434 | 1,874 | -23.0% |
| HYDROCODONE BIT/HOMATROP ME-BR | 1,255 | 1,287 | 1,288 | 0.1% |
| PROMETHAZINE/PHENYLEPH/CODEINE | 254 | 145 | 128 | -11.7% |
| TOTAL | 181,106 | 180,190 | 175,592 | -2.6% |

Key Findings – Prescribers and Recipients (2017)

Data from the database was analyzed to identify the key findings noted below:

- The top 500 prescribers prescribed 21.8% of all controlled substance prescriptions reported as dispensed and 25.2% of the total quantity reported as dispensed (units reported).
- Of the top 100 prescribers of controlled substances reported, 98% have requested and obtained access to the MN PMP.
- Figure 3 shows the percentage of schedule II-V controlled substance prescriptions written by prescribers by percentile ranking. This is based on unique prescriber identifiers reported by dispensers. Of note, the top 1% of prescribers contributed to 21.56% of all schedule II-V controlled substances reported to the MN PMP.

Figure 3. Controlled Substances Prescribed by Prescriber Percentile Rank (2017)



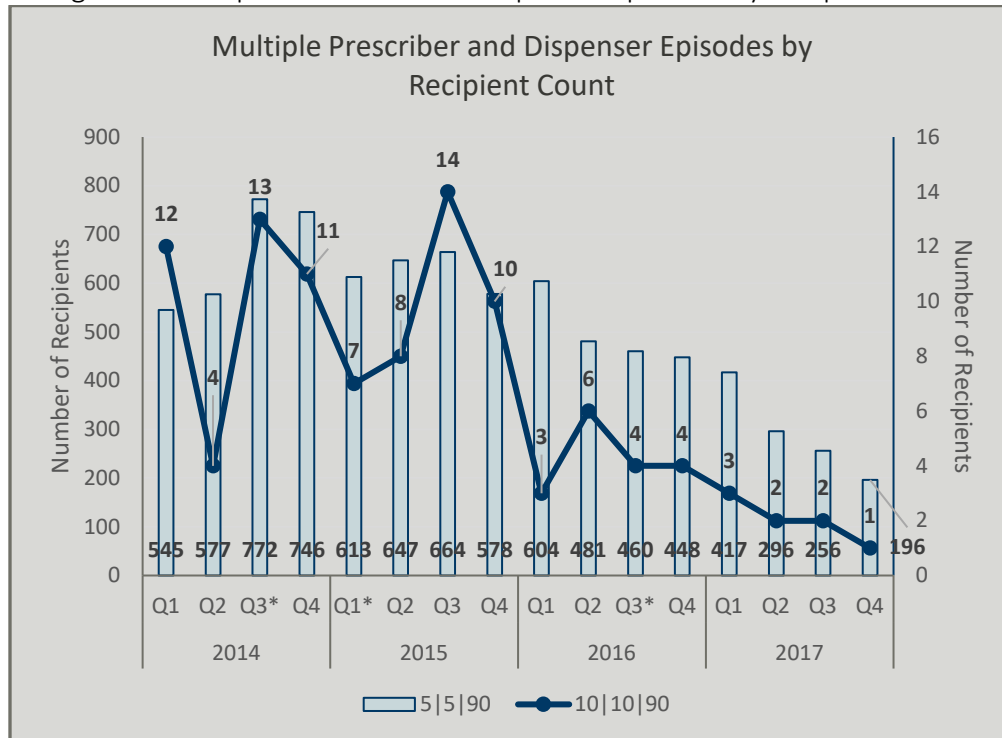
- 61 recipients filled prescriptions from 20 or more different prescribers in 2017. This assessment includes all prescriptions reported to the database (i.e. butalbital and gabapentin).
 - One recipient obtained prescriptions from 53 different prescribers.
- 20 recipients obtained and were dispensed controlled substance prescriptions from 10 or more prescribers AND had their prescriptions filled at 10 or more pharmacies from January to June, and 11 recipients met these criteria from July to December. This assessment includes all prescriptions reported to the database (i.e. butalbital and gabapentin).
- When the criteria is narrowed to 10 or more prescribers AND 10 or more pharmacies in a quarter, the number of recipients meeting this threshold are identified in table 12.

Table 12. Key Findings – Recipient

| Timeframe | Number of Recipients who met Threshold (10/10/90) | Highest Number of Prescribers Identified |
|--------------------|---|--|
| 1/1/17 – 3/31/17 | 3 | 17 |
| 4/1/17 – 6/30/17 | 2 | 15 |
| 7/1/17 – 9/30/17 | 2 | 15 |
| 10/1/17 – 12/31/17 | 1 | 15 |

- Figure 4 shows multiple prescriber and dispenser episodes from 2014 – 2017. The thresholds incorporated consist of 5/5/90 (5 prescribers or more plus 5 dispensers or more in 90 days) as well as 10/10/90 (10 prescribers or more plus 10 dispensers or more in 90 days). A few noteworthy items occurred which may contribute to trends seen in Figure 4. See footnotes beneath Figure 4. This assessment includes all prescriptions reported to the database (i.e. butalbital and gabapentin).

Figure 4. Multiple Prescriber and Dispenser Episodes by Recipient Count



*In Q3 2014, the law changed requiring dispensers to report tramadol and schedule V medications to the PMP.

In Q1 2015, PMP staff began sending unsolicited notices to prescribers and dispensers regarding individuals with high-risk patient behavior, thereby alerting them to view the PMP and to discuss any concerns they may have with their patient. In Q3 2016, the law changed requiring dispensers to report gabapentin to the PMP.

Database Account Access

The following sections will cover PMP system account holders and their use of the PMP database. During the 2016 legislative session, [MN Stats. §152.126](#) was amended to require prescribers and pharmacists practicing within Minnesota to register for a PMP account. By July 1, 2017, every prescriber licensed by a MN health-licensing board practicing within this state who is authorized to prescribe controlled substances, for humans, and who holds a current registration issued by the federal Drug Enforcement Administration, and every pharmacist licensed by the Board and practicing within the state, must register and maintain a user account with the PMP. While viewing this data, it is important to remember that it is unlikely that 100% of prescribers and pharmacists licensed in MN would obtain access to the MN PMP unless the above qualifications are met. At the end of 2017 estimates show that 52% of prescribing health care licensees and 64% of licensed pharmacists have requested and been approved for access to the PMP database. This does not include those licensed but not practicing in MN or whose practice does not warrant or allow for access to the PMP.

Since the program began in 2010, there has been a steady increase in the number of authorized system account holders accessing the PMP database. Table 13 shows the average number of new account requests the PMP has received daily since 2010.

Table 13. Average Number of New Account Requests per Day

| Year | New Account Requests (Average) |
|------|--------------------------------|
| 2010 | 12.2 per day* |
| 2011 | 8.2 per day |
| 2012 | 10.4 per day |
| 2013 | 13.2 per day |
| 2014 | 15.8 per day |
| 2015 | 17.7 per day |
| 2016 | 21.5 per day |
| 2017 | 46.3 per day |

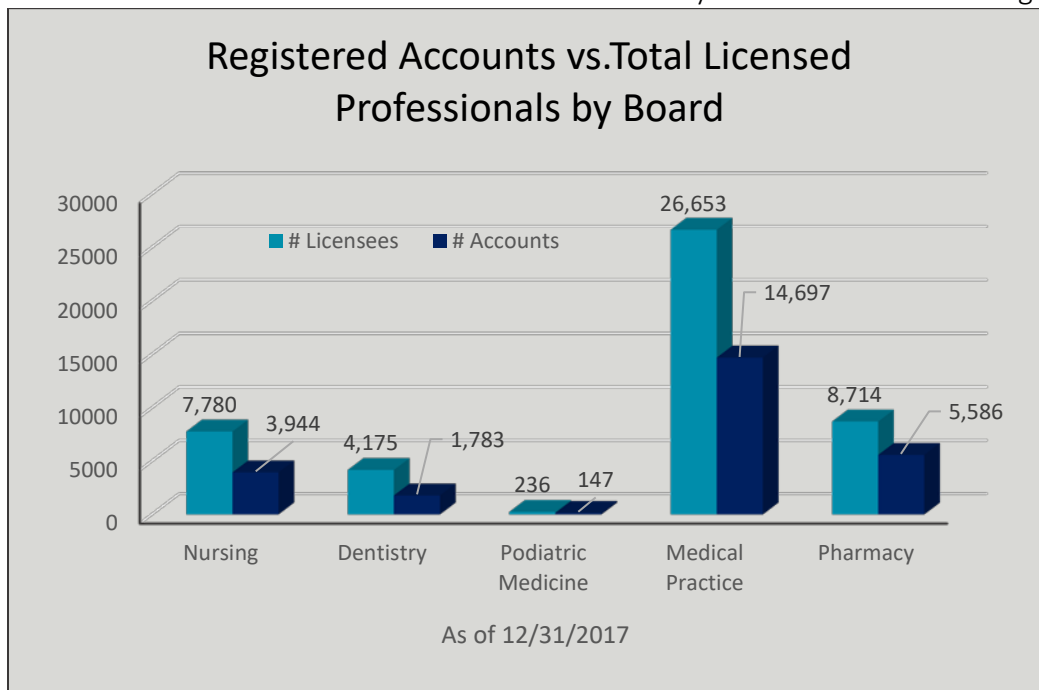
**Accounts requested per day in 2010 are reflective beginning April 1, 2010.*

Access to data was not available prior to this date.

Prescribers and Pharmacists can request an account through the PMP online registration system. After verifying the individual has an active license to dispense or prescribe controlled substances and in the case of prescribers, has a Drug Enforcement Agency (DEA) registration number, the applicant may be granted access to the MN PMP. The Boards of Medical Practice, Pharmacy, Nursing, and Dentistry have successfully integrated automatic registration into their online license renewal system.

The dark blue bar in Figure 5 shows registered accounts in the database arranged by the board that licenses the individual. The teal bar shows the number of individuals that are licensed by that particular board. Note: The number of prescribers includes all prescribers licensed by the various boards regardless of where they practice or if they have a DEA registration to prescribe controlled substances. There are licensees within these licensing boards that do not actively prescribe or treat patients (administrative positions, research, education, etc.). There are also individuals included in the total licensed professional’s column that are licensed in MN but may practice in another state, are retired or not practicing. Licensed professionals included under Dentistry are DMD and DDS, under Pharmacy are RPh, and under Medical Practice are MD, DO, PA’s and Residents. The column representing total licensed professionals by the Board of Nursing represents only APRNs who are eligible to register with the DEA to prescribe controlled substances.

Figure 5. Account Holders vs. Total Licensed Professionals by Health-Related Licensing Boards



Database Utilization

Just as the number of account holders has grown over time, so has the utilization of the database. Figure 6 below shows the total number of queries performed during the past seven years of operation. It also depicts the increase in account holders querying the database over time. 2017 has shown a considerable increase in accounts and utilization of the database.

Figure 6. Total Account Holders Making Queries and Queries Performed (2010-2017)

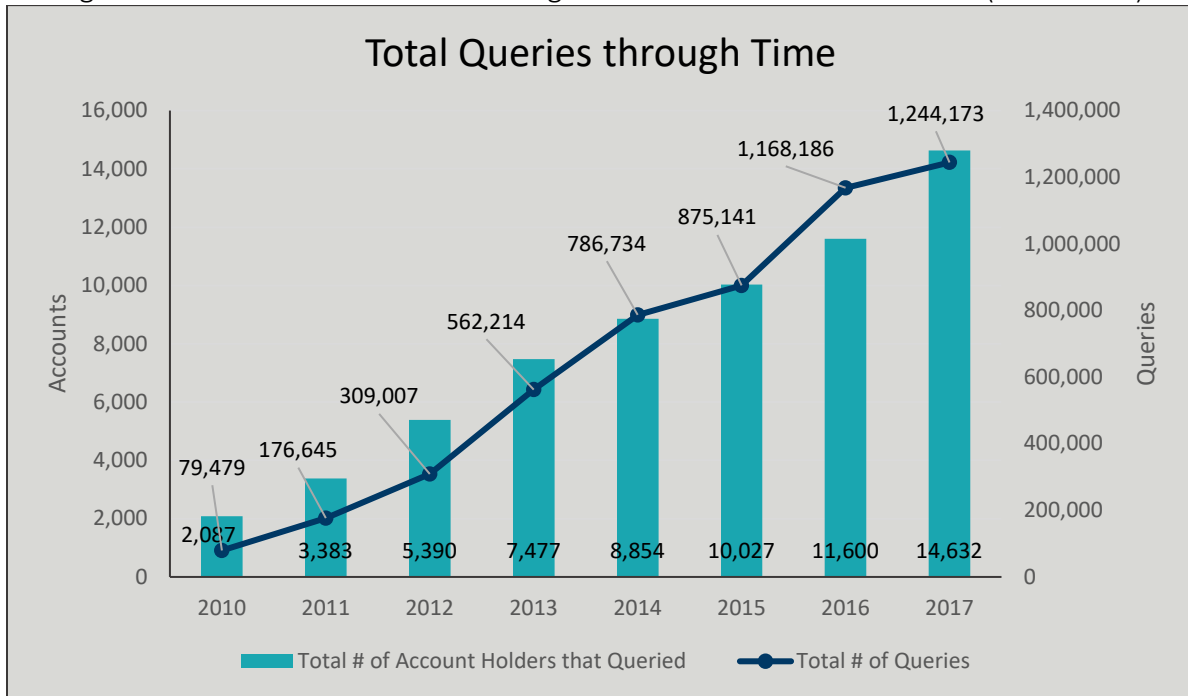
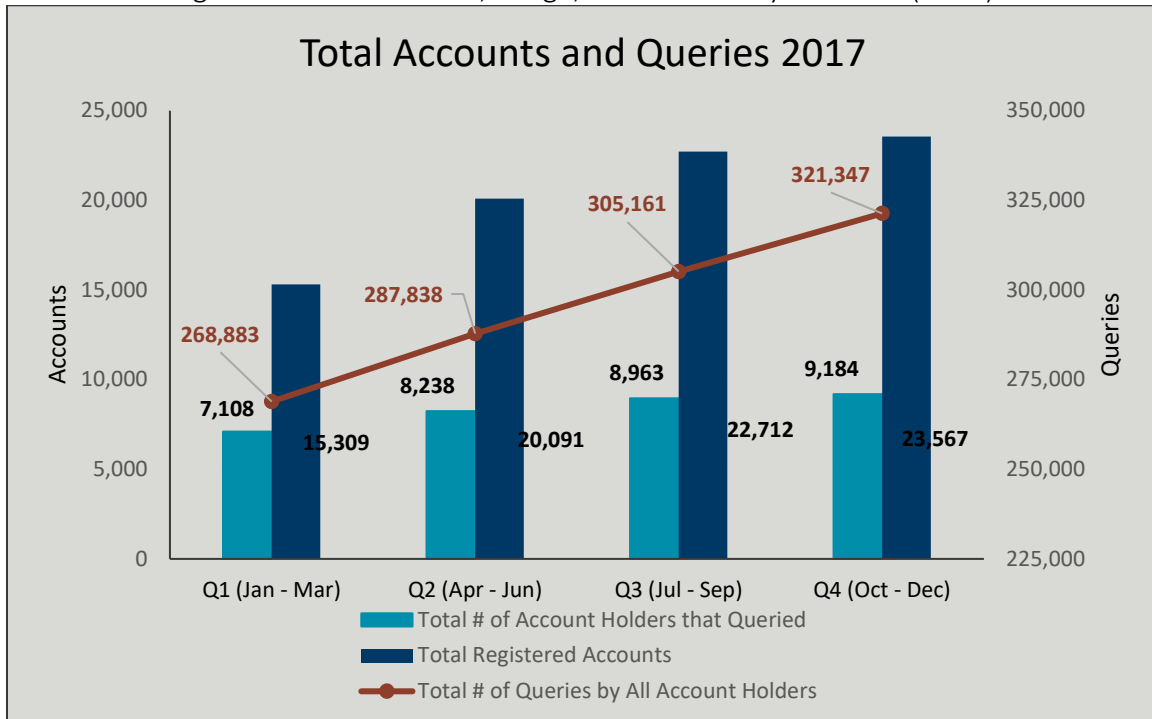


Figure 7 represents the quarterly utilization throughout 2017. It provides the number of registered account holders, the number of account holders that queried during the timeframe, as well as the number of queries performed during each quarter. A steady increase in usage is noted throughout 2017.

Figure 7. Total Accounts, Usage, and Queries by Quarters (2017)



Figures 8a and 8b illustrate the number of queries performed by each PMP system role type throughout time. Each role type has shown increase in usage of the database over the past six years with the most common being pharmacists, medical doctors, doctors of osteopathy, physician assistants, and residents. It is worth noting that a registered account holder (prescribers and pharmacists) who holds a Master Account may not appear to be querying the database when in reality their delegate is requesting data on their behalf.

Figure 8a. Queries by Role Type (2010-2017)

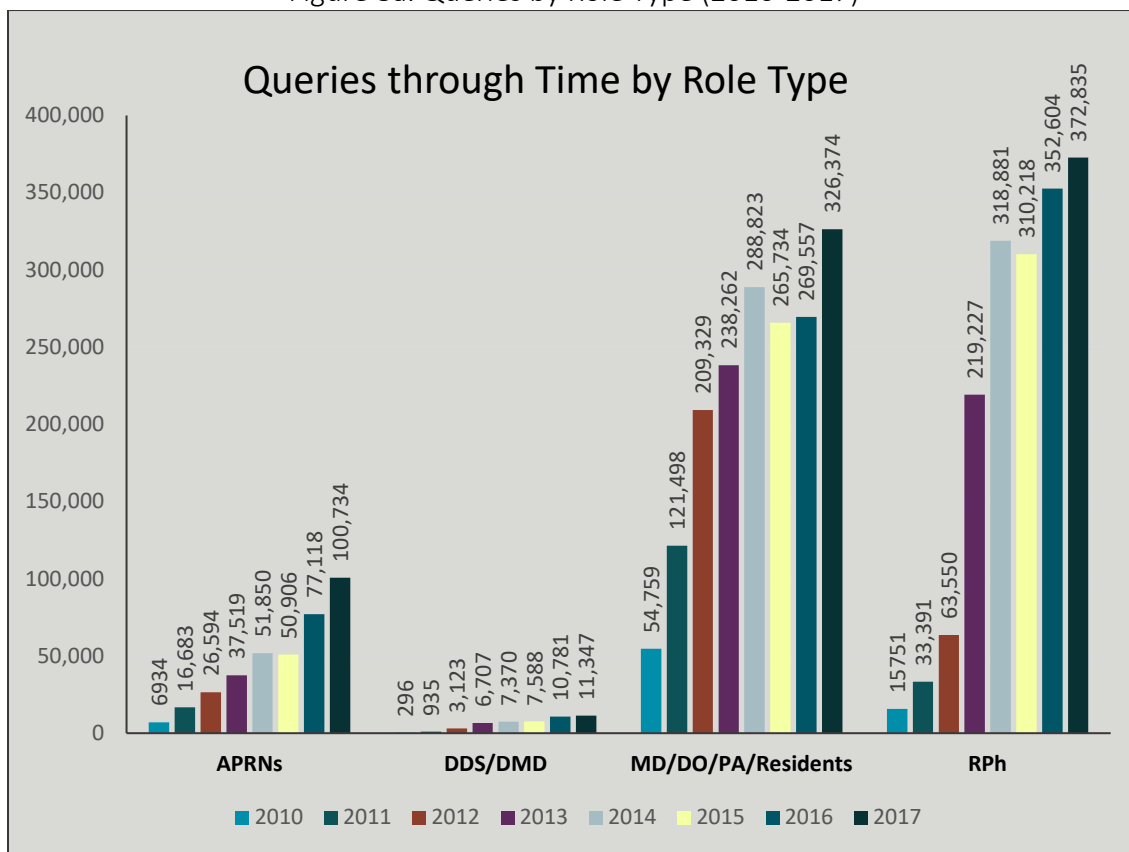
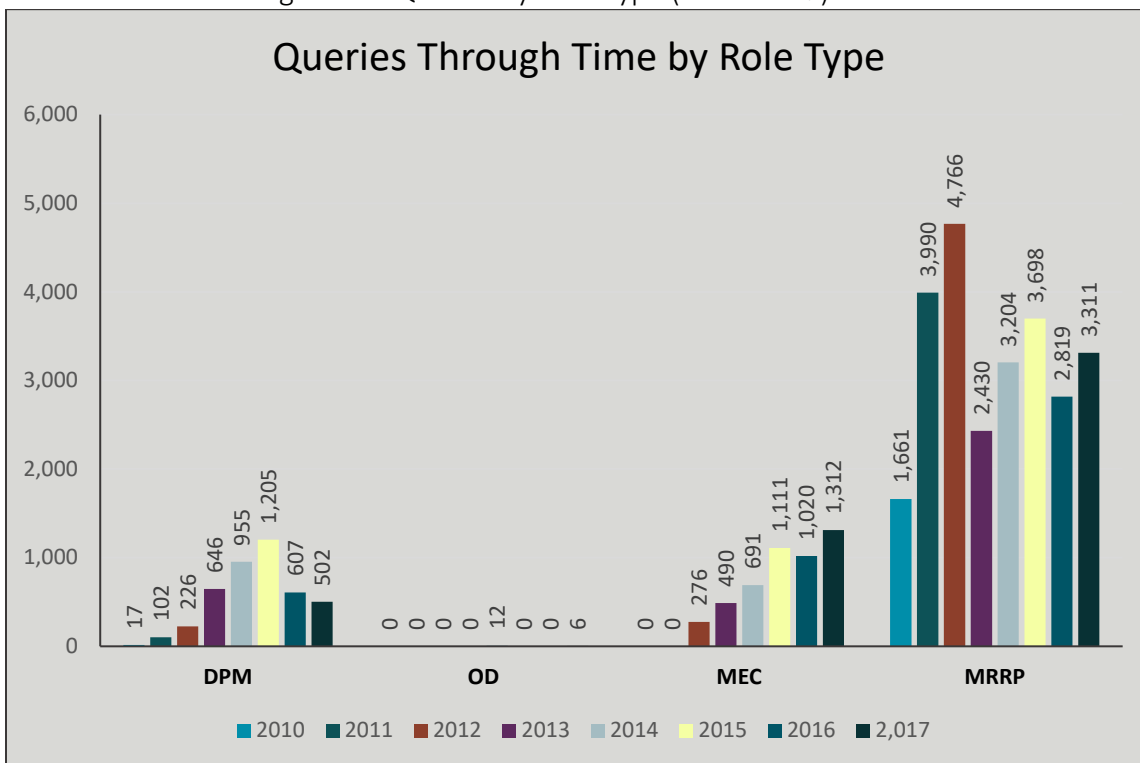
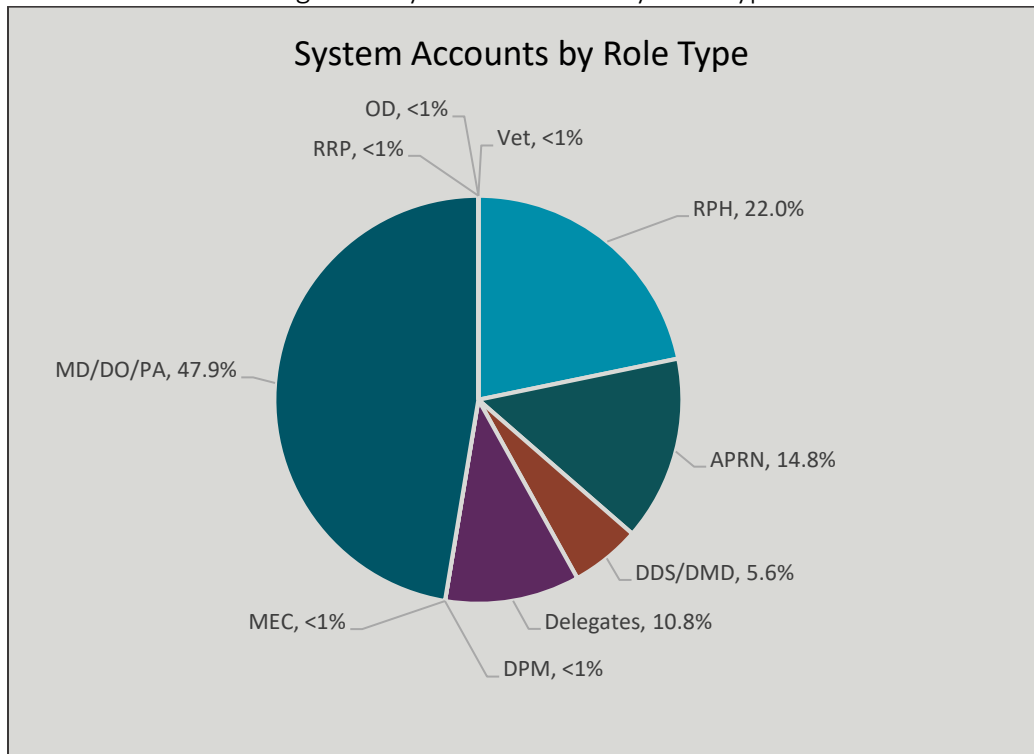


Figure 8b. Queries by Role Type (2010-2017) cont.



At the end of 2017, there were 29,143 registered account holders. The role type of the account holders is shown in Figure 9 with the highest percentage of registered accounts belonging to MDs and RPhs.

Figure 9. System Accounts by Role Type



Delegate Accounts

MN statutes allow for prescribers and pharmacists (Master Account Holders) to delegate the task of accessing the PMP database to an employee under their direction. Delegates must apply for and be granted an individual account which once “linked” to a Master Account Holder’s account, will allow access to the database.

The number of delegate accounts has increased almost sevenfold since 2013. Figure 10 shows the number of individuals that registered for a delegate account from 2013 to 2017, as well as the number of queries and how many delegate account holders performed those queries.

Figure 10. Delegate Accounts and Queries (2013-2017)

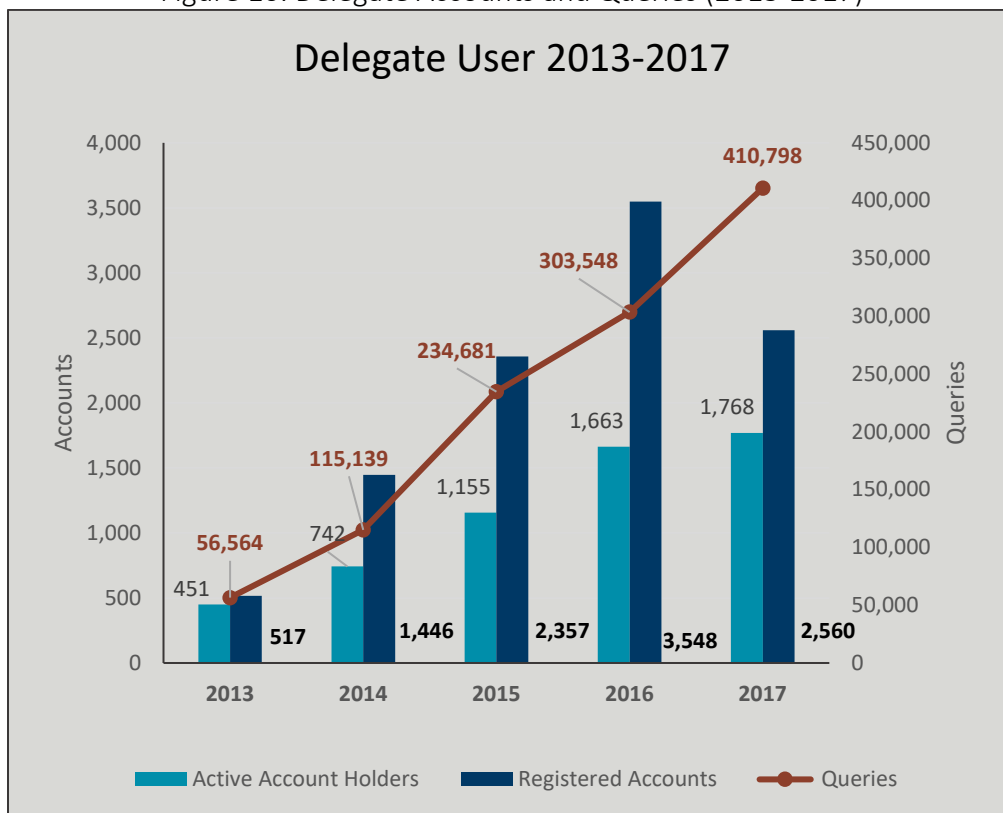
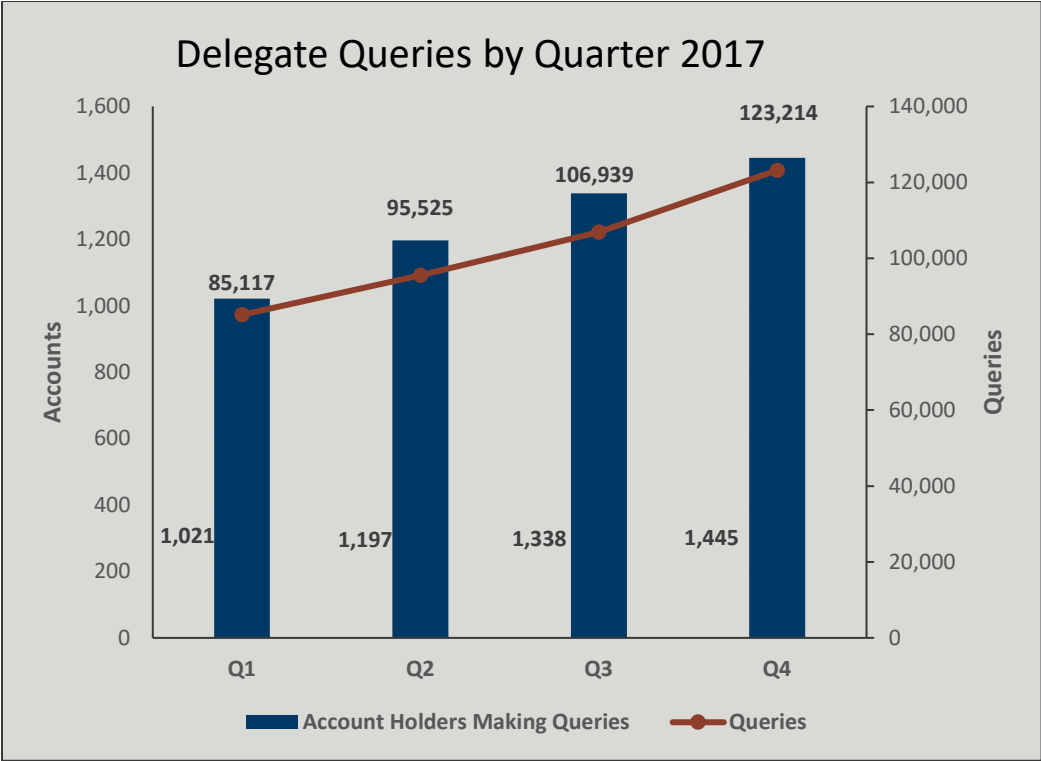


Figure 11 shows the increase in use by quarter in 2017. It is significant to note that as prescriber and dispenser query counts remain relatively static, delegate queries increased by 35% in 2017.

Figure 11. Delegate Accounts and Queries by Quarter (2017)



Other Permissible Use of PMP Data

In addition to prescribers, pharmacists, and their delegates, the law allows others to obtain data from the PMP. Using a valid search warrant, law enforcement officials can receive a report that contains any or all of the following data:

- a recipient's controlled substance prescription history,
- the history of all prescriptions associated with a particular prescriber based on their Federal Drug Enforcement Administration (DEA) registration or
- the history of all prescriptions reported as dispensed by a particular dispenser.

In all cases, the MN Board of Pharmacy staff assigned the duties of administering the PMP, access the database and the resulting report is sent to the requestor. In 2017, law enforcement officials presented the MN PMP with 828 search warrants, a 3% increase from the search warrants received in 2016.

The recipients of the controlled substance prescriptions reported to the PMP are also permitted to obtain information regarding their own prescription history. A request for release of the data, which has been signed in the presence of a notary public and sent to the PMP office, is required. As with requests made by law enforcement officials, the PMP staff access the database and the resulting report is sent to the requestor. A provision was put in place that will also allow the recipient to give consent for release of the report to a third party. Legal counsel, probation officials, MN Health Licensing Boards, and others have used this provision. In 2017, the PMP staff processed 263 requests from recipients or their designee, a 28% decrease in requests from 2016.

Figure 12 shows the number of law enforcement and recipient requests received throughout 2017.

Figure 12. Law Enforcement and Recipient Requests (2017)

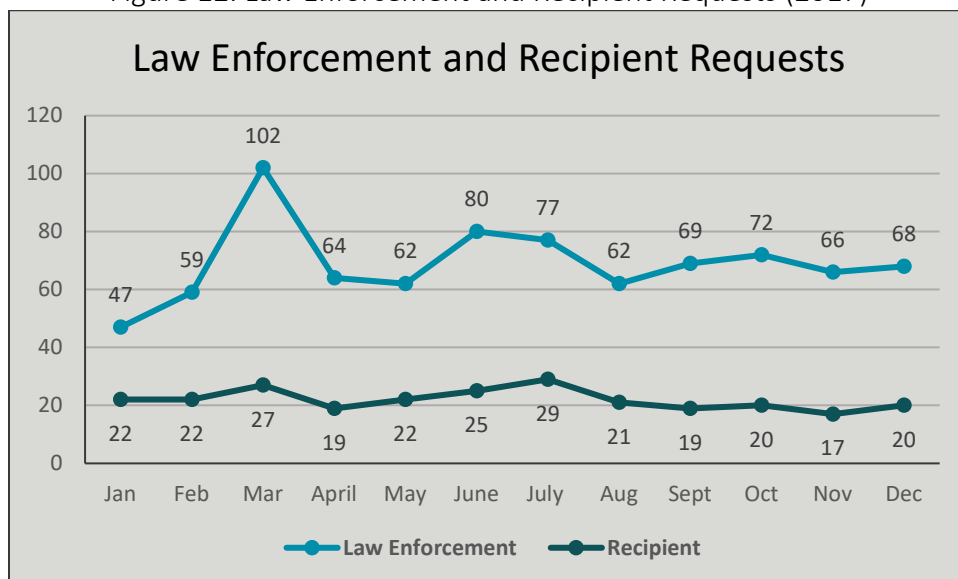
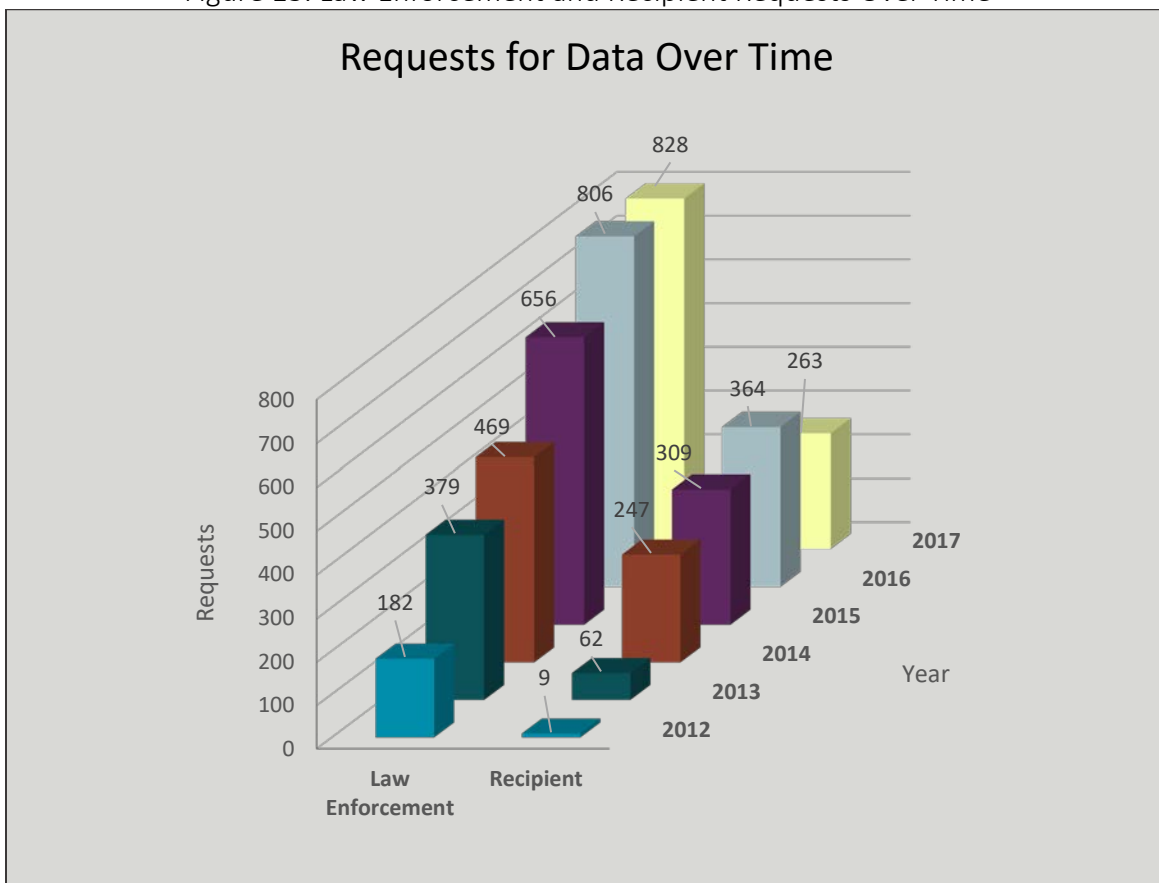


Figure 13 shows the increase in requests received from law enforcement and individuals in the period between 2012 and 2017.

Figure 13. Law Enforcement and Recipient Requests Over Time



Multiple State Data Exchange

The MN PMP has been participating in an interstate data exchange system since July 2014. [MN Stats. §152.126, Subd. 6\(g\)](#) permits the Board to participate in a system, provided that permissible account holders in other states have access to the MN data only as allowed under MN law. The Board chose to utilize the [National Association of Boards of Pharmacy \(NABP\)](#) PMP InterConnect hub solution to facilitate the sharing of prescription monitoring program data across state lines to authorized account holders. It allows participating state PMPs across the United States to share data, providing a more effective means of combating drug diversion and drug abuse nationwide. It should be noted that the “hub” retains no PMP data. The PMP InterConnect merely acts as a pass through for transferring data to the requesting state’s PMP account holder. Each participating PMP controls who, from collaborating states, can access their data based on their own laws and regulations.

At the end of 2017, PMPs in 44 jurisdictions, including MN, were participating in the PMP InterConnect with MN actively exchanging data with 37 of those jurisdictions. Table 14 shows the jurisdictions with which MN is actively exchanging data within the PMP InterConnect. Only approved MN prescribers, pharmacists, and their delegates holding active MN PMP accounts have access to data from participating jurisdictions.

Table 14. Jurisdictions Actively Exchanging PMP Data with MN

| | | | |
|--------------|---------------|-----------------|----------------|
| Alabama* | Iowa* | Nevada* | South Dakota* |
| Alaska* | Kansas* | New Jersey* | Tennessee |
| Arizona* | Kentucky | New Mexico | Texas* |
| Arkansas | Louisiana* | New York | Virginia* |
| Colorado | Maine* | North Dakota | Washington DC* |
| Connecticut* | Maryland | Ohio* | West Virginia |
| Delaware | Massachusetts | Oklahoma | Wisconsin |
| Idaho | Michigan* | Pennsylvania* | |
| Illinois* | Mississippi* | Rhode Island | |
| Indiana | Montana | South Carolina* | |

*Some account holders may not be permitted by this jurisdiction to access their data.

Authorized MN PMP account holders made 1,252,221 data requests to other participating jurisdictions in 2017. During this same time, other participating jurisdiction’s authorized PMP account holders made 3,655,122 data request to the MN PMP database. Figure 14 is a breakdown of data requests, by month.

Figure 14. Multiple Jurisdiction Queries 2017

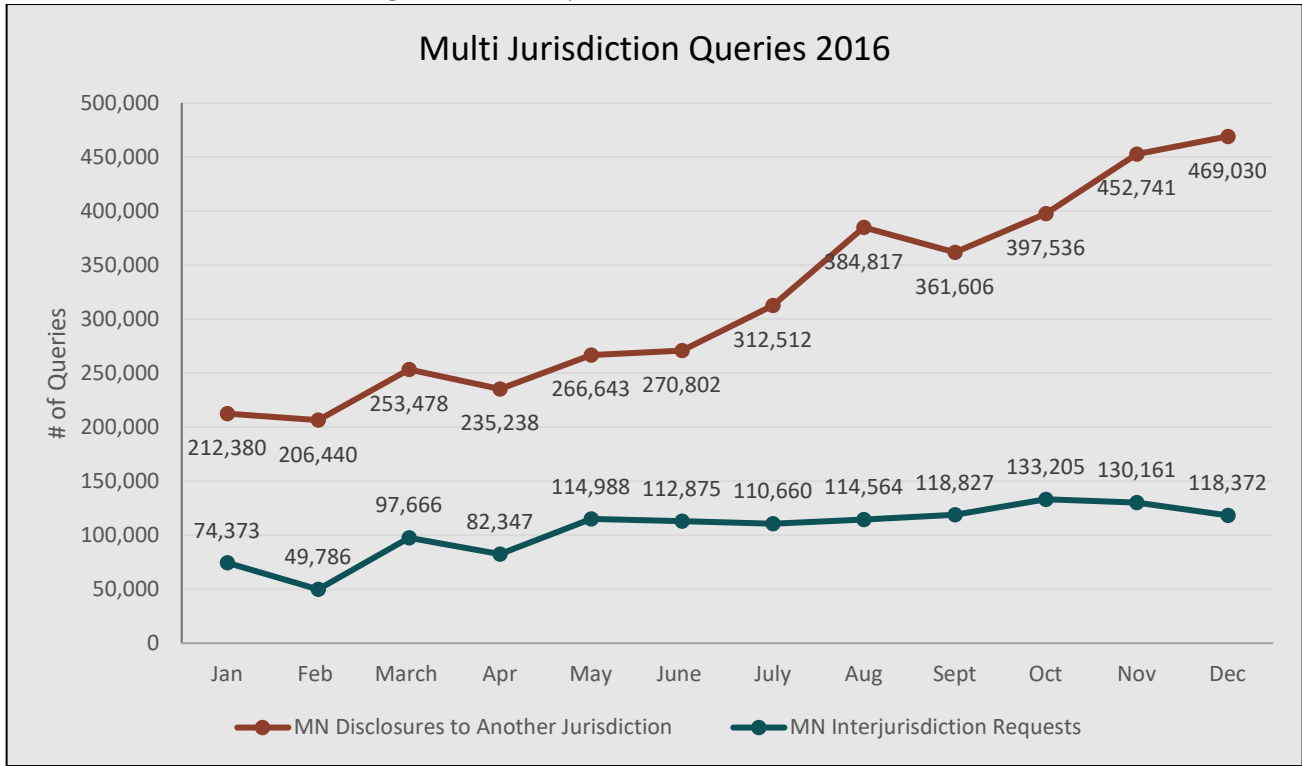
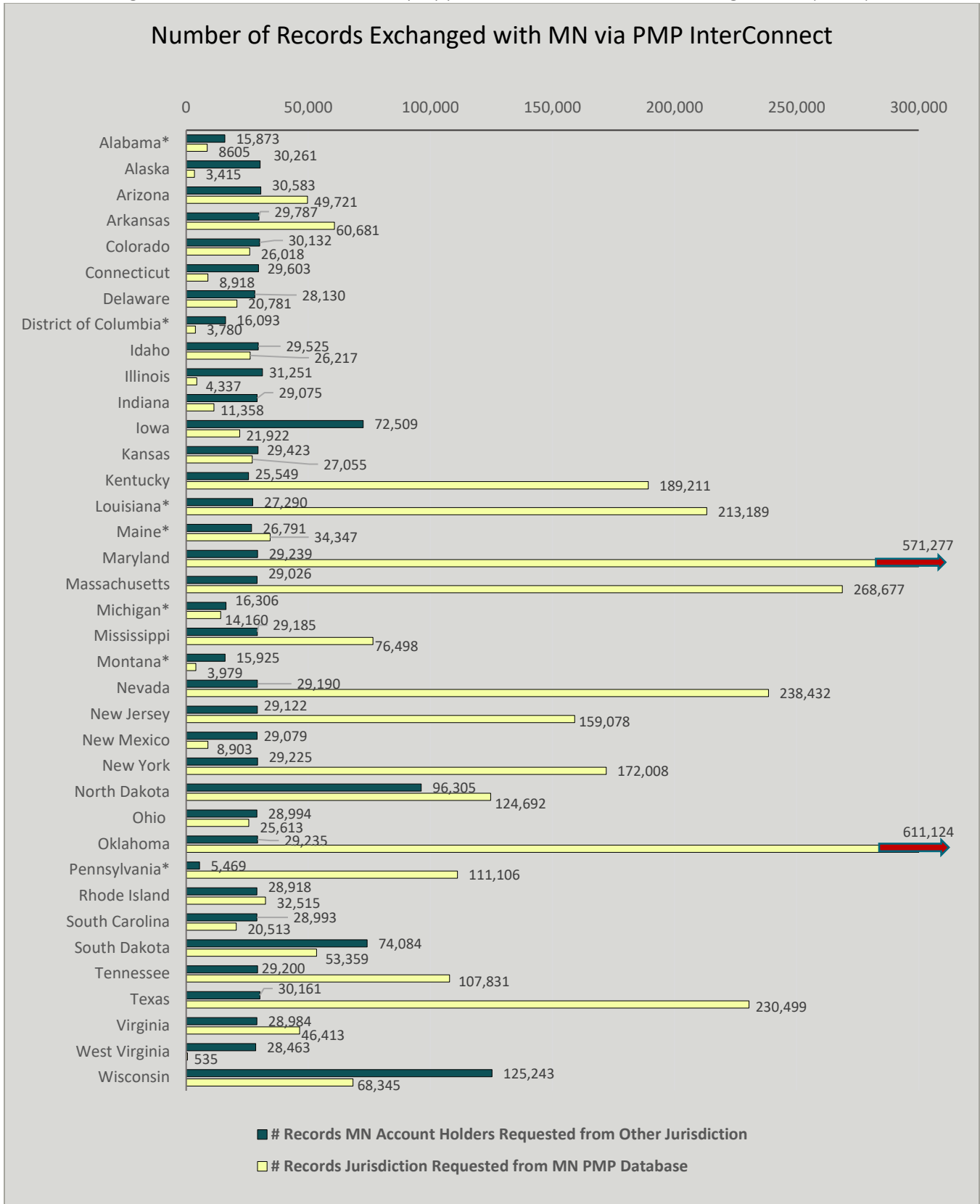


Figure 15 reflects the volume of queries requested by MN account holders to the PMP’s in other jurisdictions, compared to the volume of MN database queries requested by other jurisdiction’s PMP account holders. States that border MN are exchanging data frequently. This information exchange is important for capturing data on individuals who receive prescriptions dispensed across borders. These numbers rise as more jurisdictions are added to the PMP InterConnect (PMPi) and MN establishes connections with other jurisdictions. Note that the following connections occurred during 2017: Louisiana (January), Maine (January), District of Columbia (July), Montana (July), and Pennsylvania (October).

Figure 15. Queries Performed by Approved Account Holders through PMPi (2017)



Key to Abbreviations

APAP: Acetaminophen, the generic of Tylenol®

APRN: Advanced Practice Registered Nurse

DDS: Doctor of Dental Surgery

DO: Doctor of Osteopathy

DMD: Doctor of Medicine in Dentistry

DPM: Doctor of Podiatric Medicine

MD: Medical Doctor

MEC: Medical Examiner/Coroner

MRRP: Minnesota Restricted Recipient Program

OD: Doctor of Optometry

PA: Physician Assistant

RPh: Pharmacist

Rx: Prescription

VET: Veterinarian

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