State of Wisconsin

Enhanced Prescription Drug Monitoring Program (ePDMP) Statistics Dashboard

(https://pdmp.wi.gov/statistics)

2020 NASCIO State IT Recognition Award Nomination

Category: Data Management, Analytics & Visualizations

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Executive Summary

Substance use disorder and drug misuse, abuse and overdose continue to be significant public health issues in Wisconsin with which communities of all sizes struggle. One of the core components of the State's response was the creation of the Wisconsin Enhanced Prescription Drug Monitoring Program (ePDMP) system. The ePDMP is a successful tool that collects data about controlled substance prescriptions in Wisconsin. It was developed by the Wisconsin Department of Safety and Professional Services (DSPS) in partnership with NIC Wisconsin to create new and disruptive capabilities based on the needs of its users to better combat the ongoing opioid epidemic. While there are many aspects to the ePDMP system, the Statistics Dashboard is the most public-facing component of the ePDMP which provides an unparalleled view into the data collected as part of the ePDMP system operations.

Conceived by DSPS as a foundational module of the ePDMP system, the Statistics Dashboard offers matchless data transparency utilizing advanced data analytics and visualizations about the prescription opioid crisis in the State. It is primarily designed to empower public health officials, community organizations, and others with an interest in helping curb the drug abuse epidemic to efficiently view and download up-to-date data specific to their area of interest and geographic part of the state. The Statistics Dashboard is also publicly accessible making the data available to everyone in addition to public health professionals.

The Statistics Dashboards utilizes a data analytics platform and interactive data visualizations to allow users of various technological abilities to quickly obtain the information they seek. For example, the Statistics Dashboard provides customized information whether the user wants a high-level snapshot about controlled substance prescriptions dispensed in the entire State, wants data specific to how physicians specializing in pain management in their county use the ePDMP website, or wants to quickly review trends in law enforcement activity related to the WI ePDMP.

Prior to the launch of the Statistics Dashboard, DSPS staff spent dozens of hours every three months to create a static document of statewide of controlled substance prescription information. The intent of quarterly document was to provide public health officials and researchers with more current data about the addictive drugs being prescribed and dispensed in the State. However, the creation of the document was entirely manual which limited DSPS's ability to respond to the frequent requests for more granular information from local and county public health officials and epidemiologists.

In response to the need for more current and granular data, DSPS staff began working with state, county, and local public health officials, epidemiologists, and local non-profit organizations from around Wisconsin to identify the information of most importance to them in determining how to tailor their local public health initiatives and interventions. Once the critical information was identified, DSPS staff utilized a deliberate user-led and iterative design process that involved input from the end users to ensure that the Statistics Dashboard would satisfy the users' needs once it was deployed.

The first implementation of the Statistics Dashboard was in Q4 2017 and the final implantation was in January 2019. During that time, the Statistics Dashboard was improved iteratively based on user input. Between December 1, 2017 and June 30, 2020, there were 60,939 page views of the Statistics Dashboard. This means that there was nearly a monthly average of 2,000 page views each month during that time. Since it was implemented, the data available in the Statistics Dashboard shows a remarkable reduction in controlled substance prescribing and potentially dangerous patient behavior in the State.

Project Narrative

Concept

In Wisconsin, one of the core components of the State's response to the prescription opioid epidemic was the creation of the Wisconsin Enhanced Prescription Drug Monitoring Program (ePDMP) system. The ePDMP system is a highly successful tool to help combat the ongoing drug abuse epidemic in Wisconsin and was developed by the Wisconsin Department of Safety and Professional Services (DSPS) in partnership with NIC Wisconsin to create new and disruptive capabilities based on the needs of its users to better combat the ongoing prescription opioid epidemic. The system's primary purpose is to provide data to healthcare professionals as a clinical decision support tool. Secondarily, the Statistics Dashboard component of the system is designed to effectively transform the data into a critical source of public health data as well.

The concept for the Statistics Dashboard was to fully realize the public health value of the controlled substances data being collected by the system. In order to do so, the Statistics Dashboard was designed to rely on advanced analytics and data visualizations to provide timely and efficient access to the most useful information to aid public health officials in crafting effective local strategies and interventions to combat the ongoing prescription drug abuse problem.

Since the inception of the original Prescription Drug Monitoring Program system in 2013, DSPS understood the enormous public health value in the data it was collecting about the controlled substance drugs dispensed to patients in Wisconsin. At that time however, there were no automated or technology-based methodologies available to DSPS to utilize the data outside its primary purpose of clinical decision support.

Despite this limitation, each quarter DSPS staff produced a statewide statistics sheet, like the one displayed to the left. The quarterly document provided a static snapshot of the State's controlled substance dispensing numbers. While it was a step in the right direction, the creation of the document required dozens of hours of staff time and was a completely manual process. The end-result, however, was welcomed by many in the State's public health community as it provided more contemporaneous data than many other public health sources available at the time.

Further, the quarterly statistics began a conversation among public health officials, epidemiologist, researchers and staff at DSPS regarding the potential for better utilizing the data collected by the system for public health purposes. These conversations solidified the need for three specific improvements: (1) a less
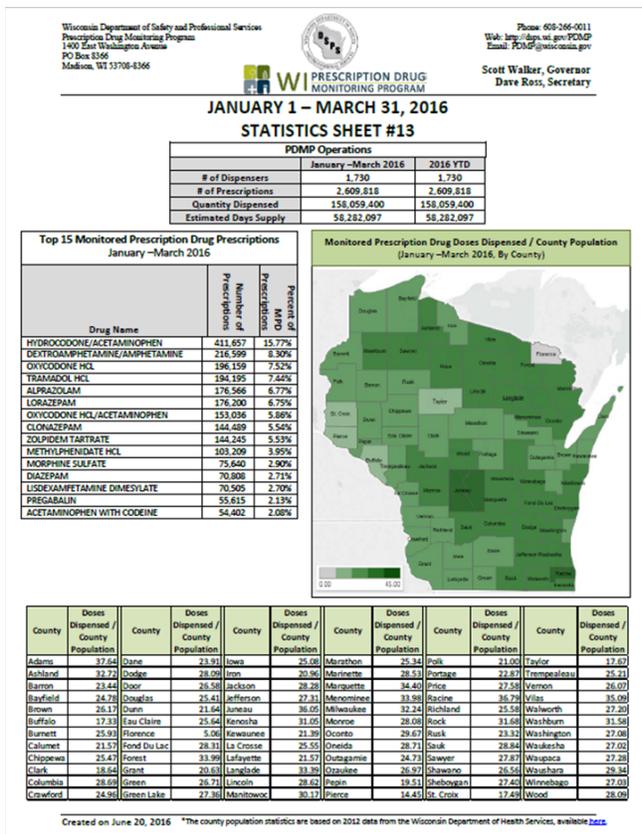
resource-intensive process for DSPS staff to create more contemporaneous data sets, (2) a new ability to deliver more granular and localized data; and, (3) improved opportunities for people of varying technical abilities to utilize the information.

The need for a less resource intensive process to create reports for public health is the foundation for the Statistics Dashboard project. It is based in the decision to move from the production of periodic reports and on-request reports to an always-available web-based dashboard that could produce relevant information to users 24/7/365. The on-demand nature of the Statistics Dashboard not only negated the need to produce the quarterly document, it also eliminated the need for public health officials and others to submit formal requests to DSPS for de-identified data. The reduction in these requests further cut down on the resources needed to support DSPS's public health data initiatives.

The Statistics Dashboard also satisfied the next identified need to produce more granular and localized data. Each community in Wisconsin is unique and has different resources to create varied approaches to combat prescription drug abuse in their area. These differences in approach, and indeed, differences in the prescription drugs abuse rates in their community, require the Statistics Dashboard to include localized data. In addition to the need for geographic granularity in the data, users also noted the need for more granular data about the prescription drugs and healthcare professionals prescribing and dispensing the drugs. So, a one-size-fits-all approach to the data analytics available on the Statistics Dashboard was not an option.

To satisfy this need, the Statistics Dashboard was designed with widgets for each piece of data to enable users to drill down to obtain the more granular information they desire to formulate their public health initiatives. For example, the widget to the left defaults to display the top 15 controlled substances prescriptions dispensed in the State in the most recent quarter. The user can then select a different quarter or different county in the state. The chart will then update to display a pie chart that shows the percentage of the total for each drug above a table listing the totals for each drug. In the table, the user can also then

select any of the drugs to view a second pie chart that breaks down the prescribing of that individual drug by profession (MD, Dentist, Physician Assistant, etc.). So, all told, a user could determine the percentage of the total prescribing for a drug of concern in their county in the most recent quarter of the year. This information enables the user to very specifically tailor their public health initiatives and interventions to maximize their affects.

Another example of the increased granularity of the data visualizations displays the number of times healthcare professionals use the system to query for patient information each month. As you can see in the widget below, the information can be adapted to a specific county and year. Further, a user can narrow the data further based on the specialty of the healthcare professional (internal medicine, pain management, psychiatry, etc.) to further target their initiatives in addition to the time and location
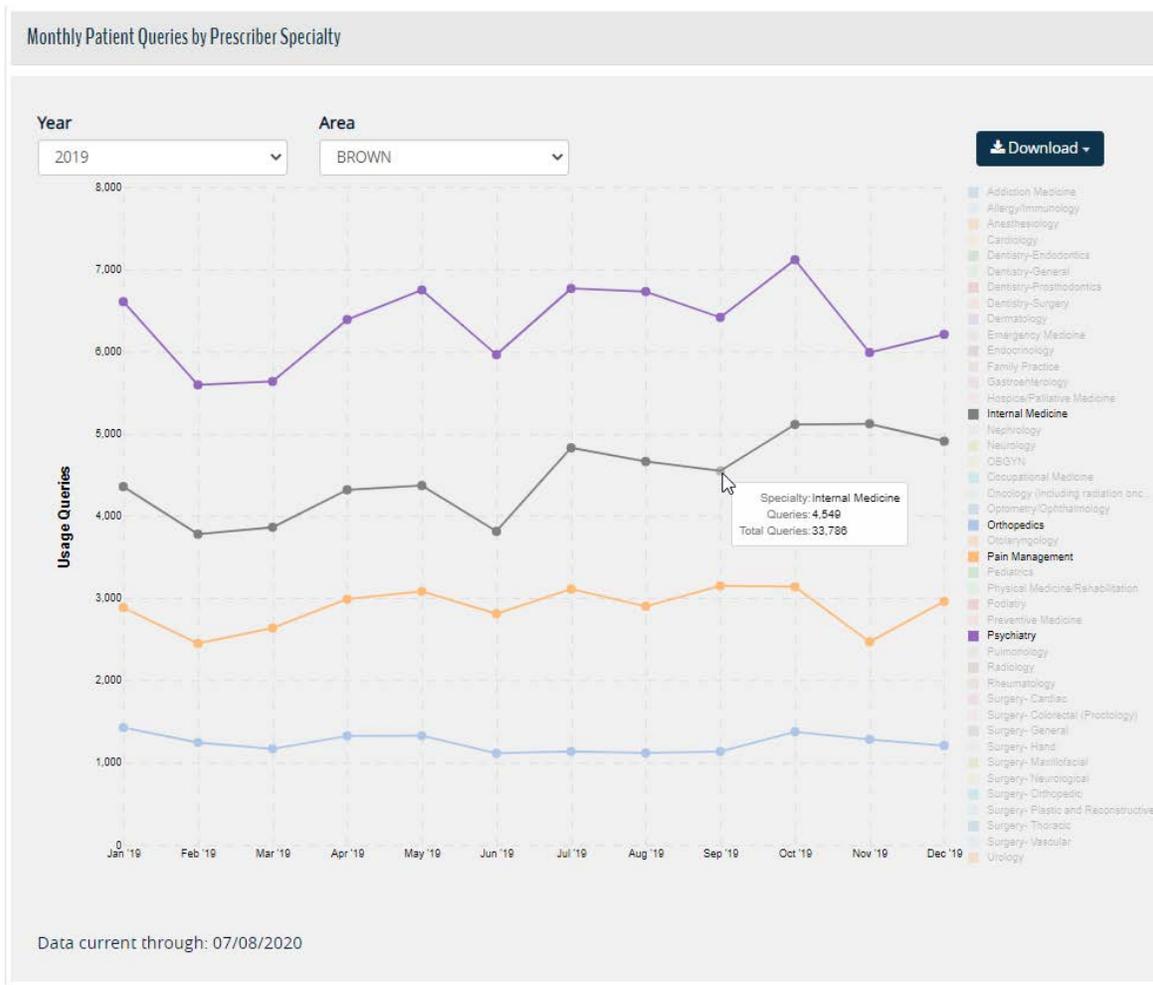
granularity discussed above. Prior to the Statistics Dashboard, and even since its creation, no other system in Wisconsin provides the same granularity of information to the public.

Finally, to achieve the need to make the data accessible to users of all technical capabilities, the Statistics Dashboard has been designed to be easily navigable regards of the technical prowess of the users. In fact, the Statistics Dashboard home screen shown to the right displays the most commonly sought data as an infographic and separates each type of data onto individual pages to assist users'

navigation. One-click will take the user to the type of information that they seek: information about the prescriptions, information about how users utilize the ePDMP, and the alerts law enforcement submit to the ePDMP. From there, each page consists of several widgets relevant to that data type.

In addition to being interactive, each interactive widget also enables users to download the data sets that feeds the data visualizations. This is an important feature for more technologically savvy users who wish to download the data and further refine it using their data software of choice. Further, these more advanced users tend to correlate the data from the Statistics Dashboard with other data sets and have the ability to produce reports and data visualizations with their own systems. Therefore, the Statistics Dashboard is designed to enable those users to efficiently get the data sets they seek without directly interacting with the data visualizations.

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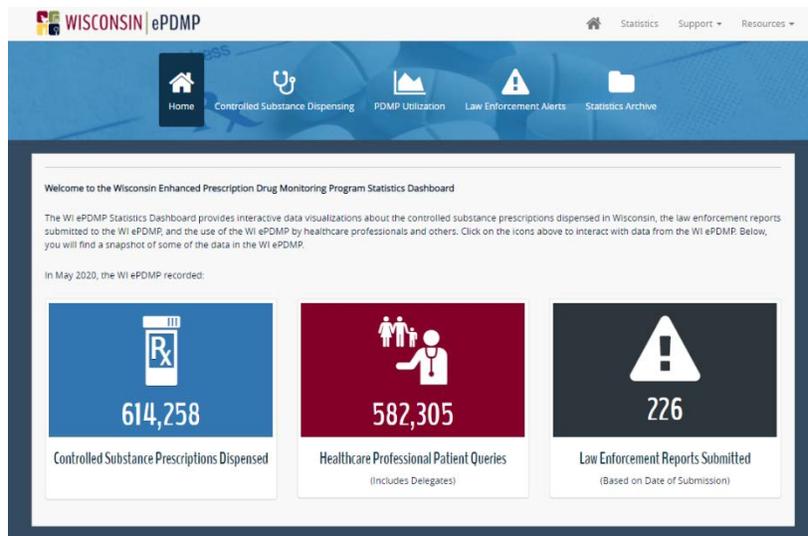
Significance and Impact

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The data analytics and data visualizations of the ePDMP Statistics Dashboard have effectively transformed the data being collected for healthcare clinical decision support purposes into a powerful source of public health data for the State and localities to rely upon in making decisions about how to address the opioid and other drug abuse crisis in Wisconsin.

The initial version of the Statistics Dashboard was fully implemented in Q4 2017 and has been improved iteratively based on user input until the final deployment to fully implement the module in January 2019. Between December 1, 2017 and June 30, 2020, there were 60,939 page views of the Statistics Dashboard. This means that there was nearly a monthly average of 2,000 page views each month during that time.

Recently, the newly created Assembly Committee on Substance Abuse and Prevention introduced a bill to extend a requirement for prescribers to use the ePDMP system. In seeking co-sponsors for the bill, the Committee cited information on the Statistics Dashboard and wrote that "the Wisconsin ePDMP serves as the pivotal resource for prescribers to review prescribing trends and identify issues before they occur. The ePDMP is one of the most important prevention tools we have in our fight against the opioid epidemic."[1]

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[1] Co-Sponsorship Memorandum, LRB-2010 and LRB-4590: The prescription drug monitoring program. Nov. 12, 2019. Available at: http://www.thewheelerreport.com/wheeler_docs/files/19lrb2010csm.pdf.

Finally, the data on the Statistics Dashboard is providing a clear picture that the State's efforts to combat the prescription drug abuse epidemic are working. Specifically, opioid prescribing rates have dropped significantly since their peak in 2015: the number of opioid prescriptions dispensed in Q4 of 2019 was 36%, or over 450,000 prescriptions, lower than those dispensed in the same quartering 2015. Further, the overall occurrence of analytics-driven concerning patient history alerts, including measures that indicate drug seeking behaviors and increased risk for overdose, declined by 41% since the launch of the WI ePDMP in 2017 to September 2019.[2] While there is no way to correlate the improved controlled substance practices in Wisconsin with the ePDMP system or the Statistics Dashboard directly, the Statistics Dashboard provides the critical data the State would otherwise lack in tracking its progress.

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[2] WI ePDMP Statistics Dashboard, Controlled Substance Dispensing. Available at: https://pdmp.wi.gov/statistics/controlled-substance-dispensing.