

Medicare Part D Opioid Prescribing Mapping Tool Methodology

February 22, 2018

Background

The Medicare Part D Opioid Prescribing Mapping Tool is an online interactive mapping tool that presents geographic comparisons of the opioid prescribing rate at the state, county, and ZIP code levels. This mapping tool allows the user to see both the number and percentage of de-identified Medicare Part D opioid claims at the local level and better understand how this critical issue impacts communities nationwide.

Opioid prescribing rates are derived using data from Medicare Part D claims prescribed by health care providers. The mapping tool presents data for 2016 as well as changes in rates from 2013 to 2016. The underlying data tables are available for each calendar year, 2013 through 2016. The data reflect Medicare Part D prescription drug claims prescribed by health care providers. Approximately 70% of Medicare beneficiaries have Medicare prescription drug coverage either from a Part D plan or a Medicare Advantage Plan offering Medicare prescription drug coverage. In 2016, Medicare Part D spending was \$146 billion; U.S. retail prescription drug spending was about \$329 billion. The mapping tool does not contain beneficiary information.

Methods

The measures presented in this mapping tool were aggregated from the Part D Prescriber Summary Table, which is publically available at: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Part-D-Prescriber.html>. The Part D Prescriber Summary Table contains information at the prescriber-level (i.e. one summary record per NPI) and includes overall as well as sub-group summaries (e.g. opioids) of drug utilization, drug costs, and beneficiary counts.

The opioid and long-acting opioid information is based upon opioid drugs included in the Medicare Part D Overutilization Monitoring System (OMS), which can change from year to year. Opioid claims for each calendar year, 2013 through 2016, are identified using the OMS opioid list updated in 2018. For additional information on Medicare Part D OMS visit: <https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovContra/RxUtilization.html>. Long-acting opioid claims are identified using controlled substances including opioids with oral morphine milligram equivalent (MME) data available for download on Centers for Disease Control and Prevention (CDC) Opioid Overdose Data Resources web page at: <https://www.cdc.gov/drugoverdose/resources/data.html>

A list of drug names included as opioids can be found [here](#) as well as from the Part D Prescriber Summary Table, see the “Drug Category Lists”.

The “Part D Prescriber Public Use File: A Methodological Overview” provides a more detailed description of the Part D Prescriber Summary Table and is available at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Downloads/Prescriber_Methods.pdf.

Metrics

- **State Abbreviation:** For the state-level summary, the state abbreviation associated with the Part D prescriber, as reported in National Plan & Provider Enumeration System (NPPES). For the county-level and ZIP code-level summary, the state associated with the first two digits of the FIPS code. If no FIPS was available, the state abbreviation associated with the Part D prescriber, as reported in NPPES. See FIPS for more information. **Restrictions:** States are restricted to the fifty U.S. States and the District of Columbia.
- **ZIP Code:** The ZIP code associated with the Part D prescriber, as reported in NPPES. **Restrictions:** ZIP Codes are restricted to ZIP codes located within the fifty U.S. States and the District of Columbia, and ZIP codes that are included in the 2016 Census Bureau boundary files available at: https://www.census.gov/geo/maps-data/data/cbf/cbf_zcta.html.
- **FIPS:** The state county FIPS code associated with the Part D prescriber. The state county FIPS code is derived using the Part D prescriber ZIP code cross walked to the U.S. Department of Housing and Urban Development (HUD) USPS ZIP code to county crosswalk file available at: https://www.huduser.gov/portal/datasets/usps_crosswalk.html. The ZIP code to county crosswalk for the 4th quarter of the data year was used to assign the state county FIPS code. For Part D Prescriber ZIP codes that match to more than one state county FIPS, the state county FIPS was selected based on the largest population ratio. **Restrictions:** FIPS are restricted to FIPS located within the fifty U.S. States and the District of Columbia.
- **Rural and Urban Delineation:** Rural-Urban Commuting Area Codes (RUCAs), are a Census tract-based classification scheme that utilizes the standard Bureau of Census Urbanized Area and Urban Cluster definitions in combination with work commuting information to characterize all of the nation's Census tracts regarding their rural and urban status and relationships. The Part D Prescriber ZIP code was cross walked to the United States Department of Agriculture (USDA) 2010 Rural-Urban Commuting Area Codes available at: <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx>. The urban classification was defined using RUCA codes: 1.0, 1.1, 2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1, and 10.1 and rural classification was defined using 4.0, 4.2, 5.0, 5.2, 6.0, 6.1, 7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, 10.0, 10.2, 10.3, 10.4, 10.5, and 10.6.
- **Part D Prescribers:** The number of providers prescribing Medicare Part D drugs.
- **Part D Opioid Prescribers:** The number of Medicare Part D providers prescribing opioid drugs.
- **Overall Claims:** The number of Medicare Part D drug claims, including original prescriptions and refills.
- **Opioid Claims:** The number of Medicare Part D opioid drug claims, including original prescriptions and refills.
- **Long-Acting Opioid Claims:** The number of Medicare Part D opioid drug claims that are considered long-acting, including original prescriptions and refills
- **Opioid Prescribing Rate:** The number of Opioid Claims divided by the Overall Claims and multiplied by 100.

- Long-Acting Opioid Prescribing Rate: The number of Long-Acting Opioid Claims divided by the Opioid Claims and multiplied by 100.
- Change in Opioid Prescribing and Long-Acting Opioid Prescribing Rates: The percentage point difference in the rate from 2013 to 2016, which is calculated by subtracting the rate in 2013 from the rate in 2016. At each geographic level, the change in the prescribing rate is displayed as an increase, decrease, or no change. At the state level, an increase reflects a percentage point difference of at least 0.10 and a decrease reflects a difference of at least -0.10; at the county and ZIP code-levels, an increase reflects a difference of at least 1.0 and a decrease reflects a difference of at least -1.0.
- Opioid Prescribing Rate and Long-Acting Opioid Prescribing Rate: County Hot Spots and Outliers: The county-level Hot Spots and Outliers maps were created using an exploratory spatial data analysis technique known as local indicator of spatial association (LISA). The LISA map identifies significant spatial clustering (sometimes referred to as hot spots) of similar values around a specific location as well as pockets of dissimilar locations or outliers. The LISA analysis was implemented using the Find Outliers tool in ArcGIS.com. A hot spot (shown in red on the map) reflects a high rate cluster of counties and is defined as a county with a rate that is near other counties with high rates. Conversely, a low rate cluster (shown in dark blue on the map) of counties is defined as a county with a low rate that is near other counties with low rates. Counties that are high rate outliers (shown in pink on the map) reflect a county with a high rate that is near counties with low rates. Conversely, a county that is a low rate outlier (shown in light blue on the map) reflects a county with a low rate that is near counties with high rates. Counties that are shown in white reflect counties with rates that are not statistically significant from the rates of nearby counties.

Data Limitations

Data redaction and suppression have been applied to the mapping tool's underlying source data (Part D Prescriber Summary Table data). Data redaction and suppression are covered in the ["Part D Prescriber Public Use File: A Methodological Overview"](#). The totals for Part D prescribers, opioid claims and overall claims will vary slightly across the state, county, and ZIP code-level data due to the **restrictions** applied at each geographic summary level (see restrictions noted within the "Metrics" section of this document).

The information presented in this mapping tool does not indicate the quality or appropriateness of care provided by individual physicians or in a given geographic region. For instance, high opioid prescribing for beneficiaries with cancer, palliative care and end of life care may be appropriate. In addition, opioids such as Methadone, may be prescribed for pain management as well as part of drug addiction detoxification and maintenance program. The mapping tool does not distinguish the various reasons for opioid prescribing.

Finally, the number of claims reflect prescriptions that have been filled by the beneficiary. The mapping tool does not measure whether a beneficiary took the medication.

How to Use the Mapping Tool

The Medicare Part D Opioid Prescribing Mapping Tool is designed to allow the user to explore opioid prescribing rates, changes in rates, rates across rural and urban areas, and “hot spots” at the state, county, and ZIP code-levels. The user can navigate around the map by clicking and dragging to a point of interest, as well as zoom in to explore lower levels of geography (counties or ZIP code areas) or zoom out to explore higher levels of geography (states). Zooming in or out can be done by scrolling the mouse wheel, typing the “+” or “-” keys on the keyboard, or by clicking the “+” or “-” buttons on the mapping tool. The user can obtain more information about a particular place by clicking on the map, where a pop-up box displays opioid prescribing rates at the current and higher levels of geography, as well as the number of opioid claims, overall claims, and Part D prescribers in that area. For the maps that display rates across rural/urban areas, the user can click on the pop-up box and then move the slider bar to compare rural opioid prescribing rates to urban opioid prescribing rates. Rural opioid prescribing rates are shown to the left of the slider bar and urban opioid prescribing rates are shown to the right of the slider bar. The web browsers that currently support the mapping tool include: Internet Explorer 9 and higher (limitations of using Internet Explorer 9 can be found here: <https://doc.arcgis.com/en/arcgis-online/reference/browsers.htm>), Edge, Firefox, Chrome, Safari, iOS Safari, Chrome for Android.

The data for the mapping tool can be downloaded here: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Downloads/Medicare_Opioid_Data.zip

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