California Workers' Compensation Institute

Interactive Research

For Members Only April 2018

California Workers' Comp Prescription Drugs: Interactive Research Application

Overview

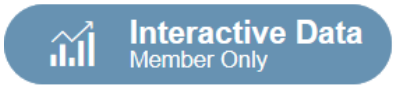
Over the past decade, CWCI has conducted multiple studies that have examined trends in the use of prescription drugs, particularly opioid painkillers, in the California workers' compensation system. This interactive application expands on key exhibits from the most recent report, "California Workers' Compensation Prescription Drug Distributions & Opioid Trends (March 2018), which provides additional background and analyses, and is available to CWCI members who log in to the Research section of our website.

The interactive functionality of the research application is designed to provide our members with a unique tool for examining prescription drug trends and building customized views of the data, which is presented in a series of dashboards that can be accessed by logging on to the application and clicking the tabs at the top of the screen. By changing the global selection settings within the dashboards users can choose to view the pharmaceutical prescription and payment data for:

- the entire state or by region(s);
- all claims or for just indemnity claims;
- different levels of claim development;
- open and/or closed claims;
- specific therapeutic drug groups;
- specific opioid ingredients;
- generics and/or brand drugs;
- specific industries;
- specific accident years; or
- specific service years (fill dates within the same calendar year)

How to Access the Application

CWCI members can use their user name and password to log into the Research section of our website (www.cwci.org), scroll down to "CWCI Prescription Drug Interactive Tool," then click the Interactive Data button to open the application.



(If you haven't set up a member account, select "Your Account" at the top of the home page, click "Add me as a Member User" from the pull-down menu, complete the form, then use the information to log in).

Accessing the Data

After logging on to the application, the first of the four dashboards will appear. At the top of the dashboard are 5 tabs labeled: Claim-Level Use; Top Opioid Drugs Percent Scripts; Service Year Measures; Service Year Detail; and Data and Methods. Clicking on these tabs will allow you to access all four dashboards and the data and methods summary. Pages 3 through 5 of this report include screenshots of the four dashboards and summary information on the metrics that can be accessed using the interactive tool.

Data and Methods

The interactive tool includes background information on the data sources and the methods used to produce the Pharmacy Analysis Drug Application. As noted in this section, the application used data extracted from CWCI's Industry Research Information System (IRIS) database, which contains data on employee and employer characteristics, medical service data, benefits, and administrative costs on approximately 5.3 million California workers' compensation claims.

The prescription drug sample included more than 12.5 million prescriptions ($1.34 billion in payments) dispensed between January 2007 and June 2017. Each drug was identified according to its National Drug Code (NDC) and descriptive detail from Medi-Span's Master Drug Data Base, MDDB®, Version 2.5 Documentation Manual, published by Wolters Kluwer Health. The Medispan data included the therapeutic group, active ingredient name, and availability as a brand or generic drug.

The Dashboards

The dashboards display the prescription drug data from two different perspectives:

1) **Claim-level (or "population-based") utilization by accident year (Dashboard 1).** The claim-level data allow users to measure and compare prescription drug experience for AY 2007 through AY 2016 claims at six levels of claim development: 3, 12, 24, 36, 48, and 60 months post injury. These measures include the percentage of claims with opioid prescriptions, the average number of opioid prescriptions per opioid user, and the average Morphine Milligram Equivalents (MMEs) per opioid prescription and per opioid user.

2) **Service-level utilization by calendar year (Dashboards 2-4).** The service-level data is based on the fill date for the prescription and allows users to examine prescription drug experience within a given calendar year (2007 through June 2017) without regard to the injury dates on the underlying claims. These measures include the percentage of prescriptions, percentage of payments, and average payment per prescription by individual drug name and by therapeutic drug group.

Total opioid use across drugs with different potencies is measured using MMEs. One MME represents the potency of one milligram of morphine, and is calculated by multiplying a given drug's strength (in milligrams) by the morphine equivalent conversion factor for the particular drug, as published by the Centers for Disease Control and Prevention. This is then multiplied by the total number of units consumed per prescription, and aggregated across all opioid prescriptions.

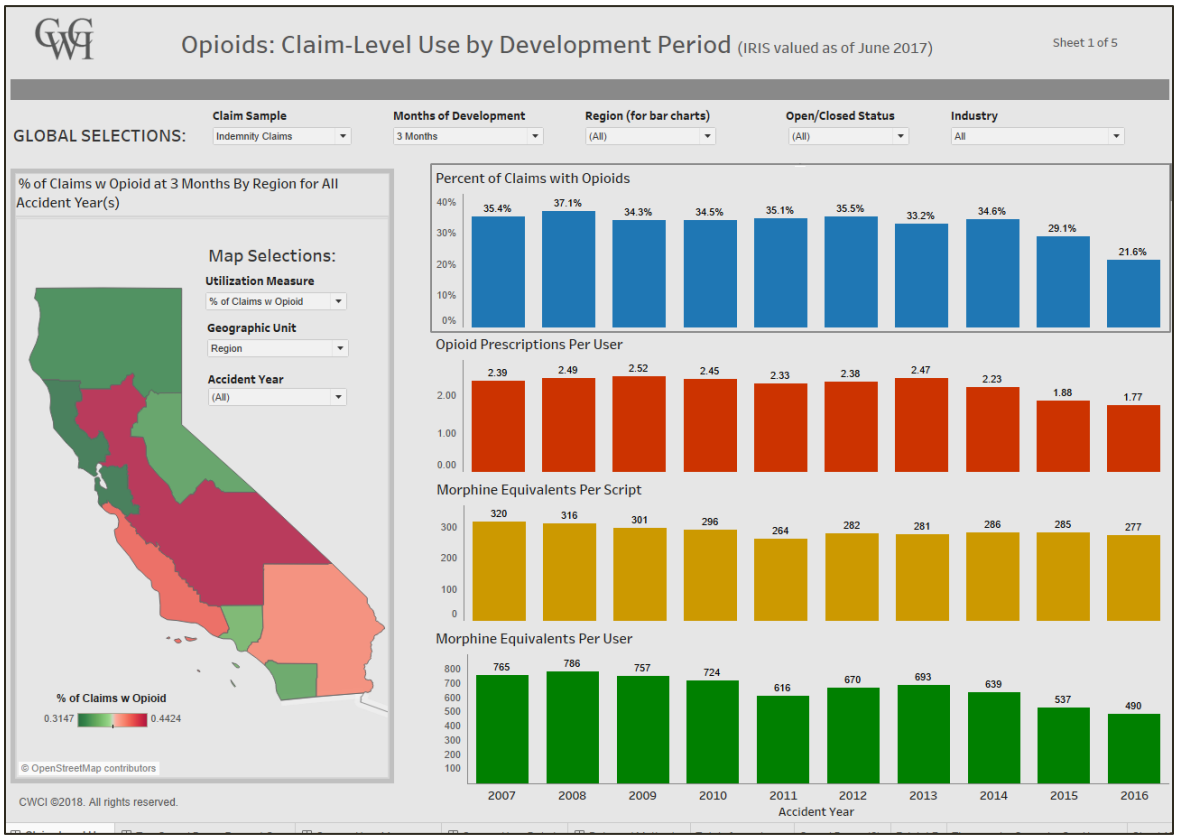
Claim-Level Opioid Use

Logging into the application will take you to the first of the four dashboards, labeled "Opioids: Claim-Level Use by Development Period." This dashboard has accident year data that can be used to track changes in the:

1) percentage of claims with opioid prescriptions;
2) average number of opioid prescriptions per opioid user;
3) average strength per opioid prescription in MMEs; and
4) average number of MMEs per opioid user since the inception of the claim.

The claim-level data in these exhibits reflect the prescription drug experience on claims from each accident year, measured as of June 2017. Global selections above the exhibits allow users to choose data for all claims or indemnity claims; at six levels of development (3, 12, 24, 36, 48 or 60 months post injury); statewide or by region; for open claims, closed claims, or all claims; and by major industry group.

Prevalence and Strength of Opioids in California Workers' Compensation



The Heat Map: The heat map on the left of the dashboard shows claim-level data on opioid use by region and accident year. Claims with opioids were categorized into regions based on the ZIP code on the injured worker's address. Once the global selections are made, regional results will display on the color-coded heat map, with colors ranging from dark green for regions with the lowest valued results to dark red for regions with the highest valued results. The color key on the bottom of the map will note the range of results within the state for the selected metric and a summary of results for each region can be viewed by scrolling over the map. Map selection drop down menus allow users to switch among the four utilization metrics and to isolate results by region, county, for Northern and Southern California and by accident year.

Bar Charts: Data on the selected metrics will also display in the bar charts to the right of the heat map so users can track changes in opioid utilization and strength across accident years.

Service-Level Opioid Use

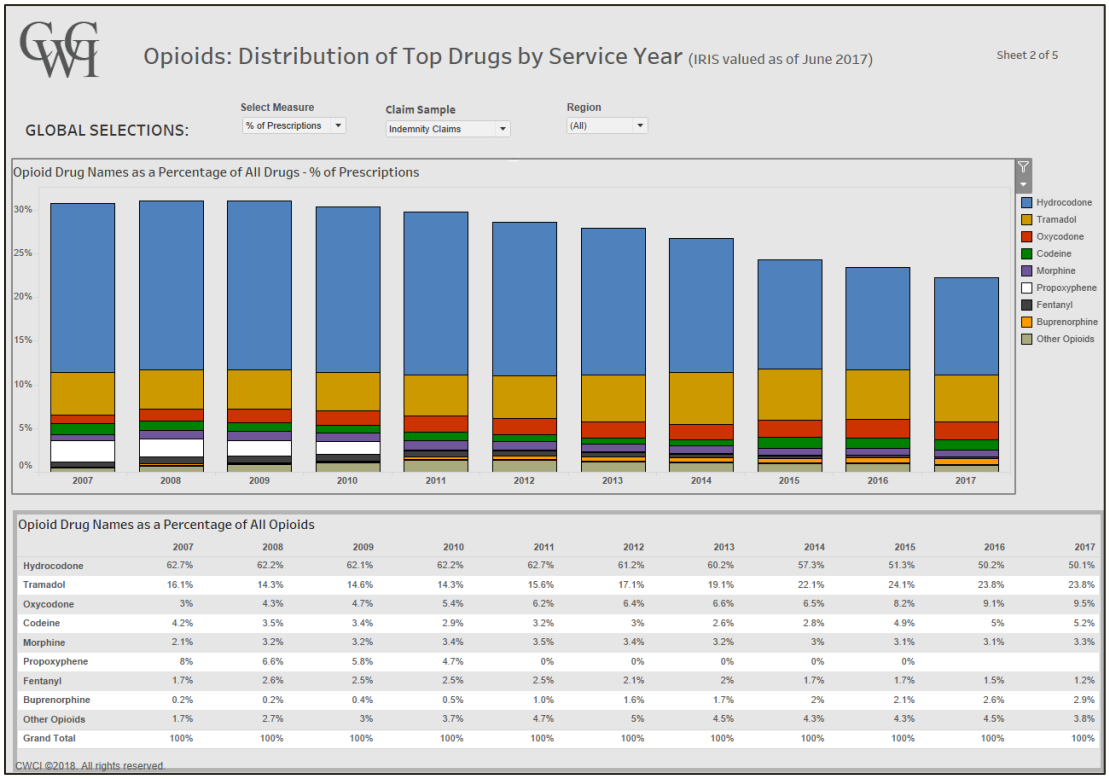
The second, third, and fourth dashboards allow users to track three measures of service-level utilization by calendar year:

1) specific opioid drugs as a percent of all workers' compensation prescriptions;
2) payments for opioids as a percent of all workers' compensation prescription drug payments; and
3) average payment per prescription, by drug name and therapeutic drug group, for opioids and for all drugs.

Dashboard 2 displays the distribution of opioids dispensed by service year (fill date). The bar chart and accompanying table show the eight most common opioids, classified by ingredient, found in the claim sample, as well as a category for "other opioids." The opioid distributions are noted for service years 2007 through June 2017 to show how the mix of opioids used to treat injured workers has changed over time. For example, the screenshot of Dashboard 2 below shows that Hydrocodone, Tramadol, and Oxycodone have been the top three opioids used in California workers' compensation for the past seven years. A notable shift occurred after 2010, however, when the FDA pulled propoxyphene (Darvon and Darvocet) off the market. (Until that point, it was the third most common opioid dispensed to injured workers).

For more detailed data, users can adjust the global selection settings at the top of this dashboard to view results for all claims or indemnity claims; by region; and for all drugs, brand drugs, generic drugs, or drugs where the brand or generic status is unknown. The data in the bar chart and table will automatically adjust as menu selections are changed.

Dashboard 2:



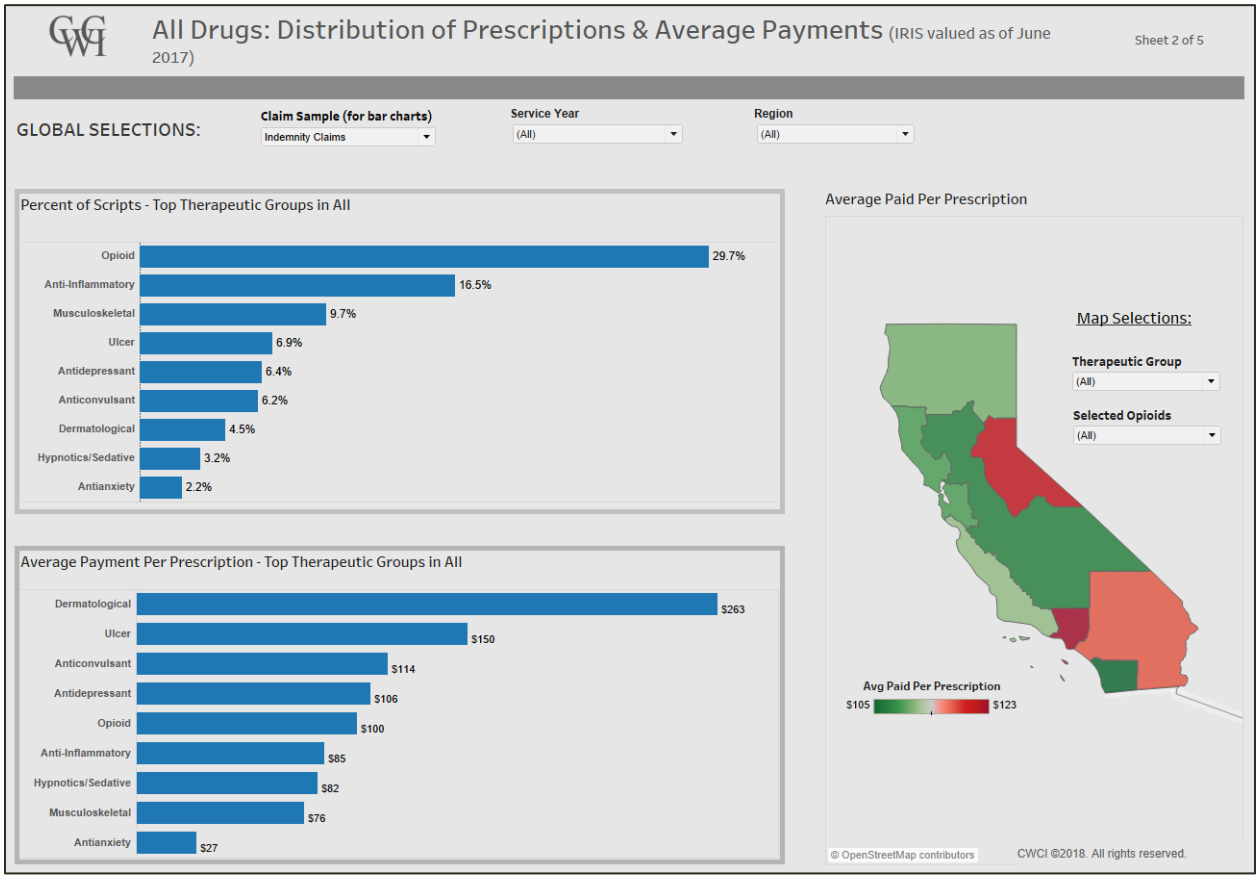
Opioid Drug Names as a Percentage of All Opioids

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Hydrocodone	62.7%	62.2%	62.1%	62.2%	62.7%	61.2%	60.2%	57.3%	51.3%	50.2%	50.1%
Tramadol	16.1%	14.3%	14.6%	14.3%	15.6%	17.1%	19.1%	22.1%	24.1%	23.8%	23.8%
Oxycodone	3%	4.3%	4.7%	5.4%	6.2%	6.4%	6.6%	6.5%	8.2%	9.1%	9.5%
Codeine	4.2%	3.5%	3.4%	2.9%	3.2%	3%	2.6%	2.8%	4.9%	5%	5.2%
Morphine	2.1%	3.2%	3.2%	3.4%	3.5%	3.4%	3.2%	3%	3.1%	3.1%	3.3%
Propoxyphene	8%	6.6%	5.8%	4.7%	0%	0%	0%	0%	0%		
Fentanyl	1.7%	2.6%	2.5%	2.5%	2.5%	2.1%	2%	1.7%	1.7%	1.5%	1.2%
Buprenorphine	0.2%	0.2%	0.4%	0.5%	1.0%	1.6%	1.7%	2%	2.1%	2.6%	2.9%
Other Opioids	1.7%	2.7%	3%	3.7%	4.7%	5%	4.5%	4.3%	4.3%	4.5%	3.8%
Grand Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

The top bar graph on Dashboard 3 allows users to view the distribution of all workers' compensation prescriptions for the top therapeutic drug groups, while the bottom bar graph displays the average amounts paid for drugs within the top groups. The global selection menus allow users to customize their views by selecting either all claims or indemnity claims; results for all service years (2007- June 2017) or for specific service years (based on fill dates); region(s); and one of the brand/generic selections.

The heat map on the right side of Dashboard 3 can be used to display and compare data on the average amounts paid per prescription in different parts of the state. Once the global selections above the exhibits are made, additional detail can be produced from the choices on the map selection drop down menus: the therapeutic drug group menu allows uses to choose from more than 90 selections; and the selected opioid menu allows users to isolate detailed data on any of the eight most common opioids, other opioids, all opioids, or non-opioids. The color key to the left of the heat map will note the range of average payments per prescription within the eight regions of the state for the selected metric, and summary data showing the average payment and percent of the prescriptions that are brand drugs in each region can be viewed by scrolling the cursor over the regions in the map.

Dashboard 3:

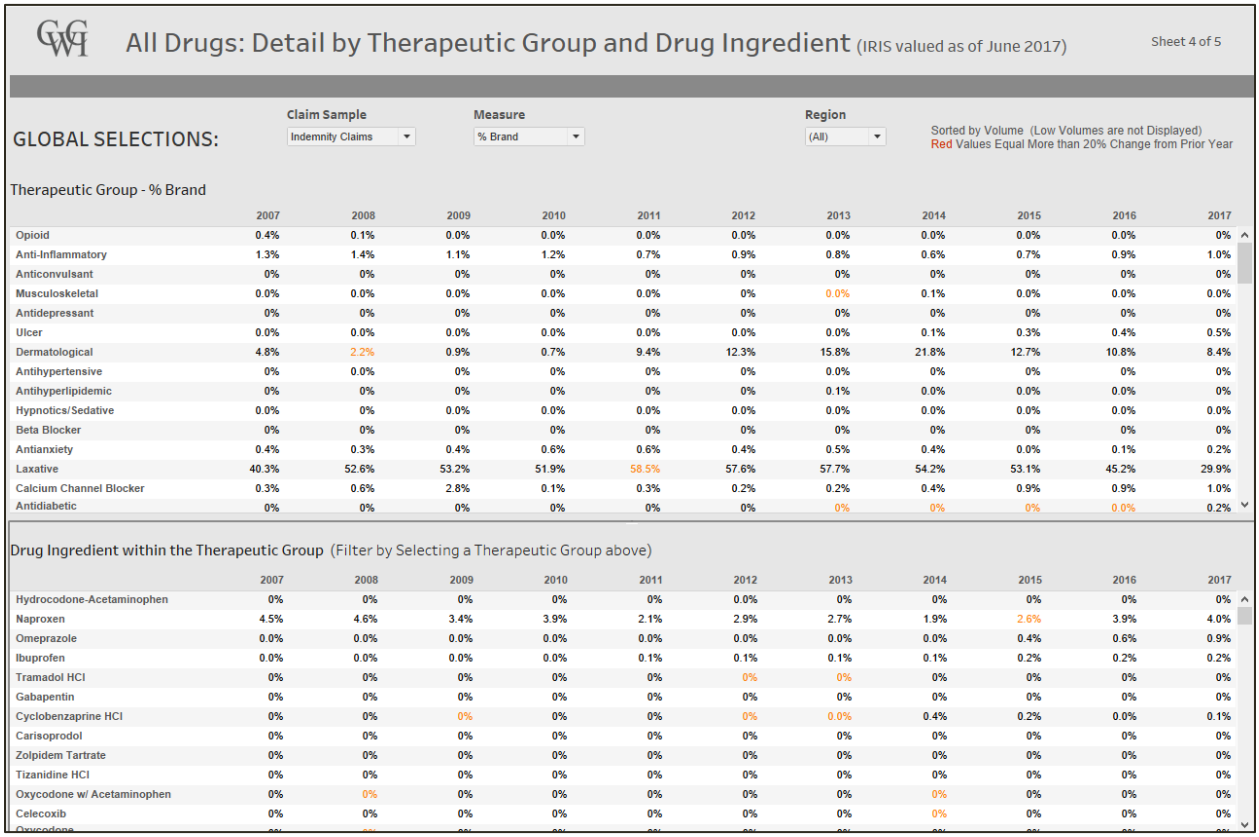


The fourth dashboard provides two lists: the first provides data broken out by therapeutic drug group for service years 2007-June 2017; the second provides detail on the most common drug ingredients within a therapeutic group (the data in the second list will automatically populate when the user clicks on a therapeutic drug group in the first list). The global selections above these exhibits allow users to select from four measures of prescription drug experience over the 10-1/2 year study period:

- percent of prescriptions;
- percent of payments;
- percent of brand prescriptions; and
- average amount paid per prescription

In addition the global selections can be used to view data for all claims or indemnity claims, as well as statewide results or results by region. Summary data for the tabular results, including the percentage change from the prior year, can be viewed by scrolling the cursor over the tables in Dashboard 4.

Dashboard 4:



All Drugs: Detail by Therapeutic Group and Drug Ingredient (IRIS valued as of June 2017)

Sheet 4 of 5

GLOBAL SELECTIONS: Claim Sample: Indemnity Claims; Measure: % Brand; Region: (All)

Sorted by Volume (Low Volumes are not Displayed)
Red Values Equal More than 20% Change from Prior Year

Therapeutic Group - % Brand

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Opioid	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
Anti-Inflammatory	1.3%	1.4%	1.1%	1.2%	0.7%	0.9%	0.8%	0.6%	0.7%	0.9%	1.0%
Anticonvulsant	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Musculoskeletal	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0.0%	0.1%	0.0%	0.0%	0.0%
Antidepressant	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ulcer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.4%	0.5%
Dermatological	4.8%	2.2%	0.9%	0.7%	9.4%	12.3%	15.8%	21.8%	12.7%	10.8%	8.4%
Antihypertensive	0%	0.0%	0%	0%	0%	0%	0.0%	0%	0%	0%	0%
Antihyperlipidemic	0%	0%	0%	0%	0%	0%	0.1%	0.0%	0.0%	0.0%	0%
Hypnotics/Sedative	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Beta Blocker	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Antianxiety	0.4%	0.3%	0.4%	0.6%	0.6%	0.4%	0.5%	0.4%	0.0%	0.1%	0.2%
Laxative	40.3%	52.6%	53.2%	51.9%	58.5%	57.6%	57.7%	54.2%	53.1%	45.2%	29.9%
Calcium Channel Blocker	0.3%	0.6%	2.8%	0.1%	0.3%	0.2%	0.2%	0.4%	0.9%	0.9%	1.0%
Antidiabetic	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0.2%

Drug Ingredient within the Therapeutic Group (Filter by Selecting a Therapeutic Group above)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Hydrocodone-Acetaminophen	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	0%	0%
Naproxen	4.5%	4.6%	3.4%	3.9%	2.1%	2.9%	2.7%	1.9%	2.6%	3.9%	4.0%
Omeprazole	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.6%	0.9%
Ibuprofen	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%
Tramadol HCl	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Gabapentin	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cyclobenzaprine HCl	0%	0%	0%	0%	0%	0%	0.0%	0.4%	0.2%	0.0%	0.1%
Carisoprodol	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Zolpidem Tartrate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tizanidine HCl	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Oxycodone w/ Acetaminophen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Celecoxib	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Oxycodone											

Help in Using the Application or Questions About the Results

The Prescription Drug Interactive Application is the latest tool developed by CWCI as part of an ongoing effort to provide members with analytical tools to enable a more comprehensive, interactive experience based on IRIS data. If you or your staff have questions or would like assistance in using this tool, please call the Institute at 510-251-9470.

CWCI Interactive Research Applications are produced by the California Workers' Compensation Institute.
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