NCCI Holdings, Inc.

NCCI RESEARCH BRIEF

January 2011

*by Barry Lipton, Chris Laws, and Linda Li*

# WORKERS COMPENSATION PRESCRIPTION DRUG STUDY

## 2010 UPDATE

The volume of prescription drugs dispensed by physicians to workers compensation (WC) claimants has risen sharply in recent years—putting upward pressure on WC costs. This study investigates this and other issues associated with WC prescription drug (Rx) costs.

## KEY FINDINGS

- WC costs due to physician-dispensed drugs rose dramatically in 2008.
- Three-fourths of WC repackaged drug costs originate from physicians.
- Lower than expected emergence of Rx costs has prompted us to lower our projected ultimate Rx share of total medical from 19% to 18%.
- After two seemingly abnormal years in which price change was the dominant factor affecting per-claim WC Rx cost increases, utilization change has once again taken its historically dominant role.
- OXYCONTIN® has become the top prescribed (in terms of paid dollars) WC Rx. A successful patent defense, which resulted in the removal of the extended release generic version of OXYCONTIN® from the market, is likely the major contributing factor.

In addition to a new look at physician-dispensed drugs, we have updated prior analyses for:

- The prescription drug share of total medical costs by injury year[a]
- Changes in price, utilization, and cost
- Prescribing patterns
- Drug rankings by overall cost

## HISTORICAL BACKGROUND

Prescription drugs have been a significant driver of WC medical costs for many years. NCCI first examined WC Rx issues in 2003 and found that utilization (as opposed to price) increases were the significant force behind Rx cost increases at that time. In 2007, NCCI found that state cost differences were driven mostly by the mix of drugs prescribed (as opposed to price or number of scripts). Several drugs, such as ACTIQ® and MOBIC® have shown significant changes in market share over the course of these prior studies. For further historical details, please see our previous five studies—available for download at **ncci.com**.

## STUDY DATA

The data used in this study is for services provided between 1996 and 2008 on injuries that occurred between 1994 and 2008, evaluated[b] as of July 1, 2009. "Prescription drug," as used in this study, is defined as a drug identified with a National Drug Code (NDC) or a carrier-specialized drug code.

Drug costs that are bundled with other services and included in codes such as Hospital Revenue Codes, Healthcare Common Procedure Code System (HCPCS), or Current Procedural Terminology (CPT) were not included in this study.

## PHYSICIAN-DISPENSED AND REPACKAGED DRUGS

### National View

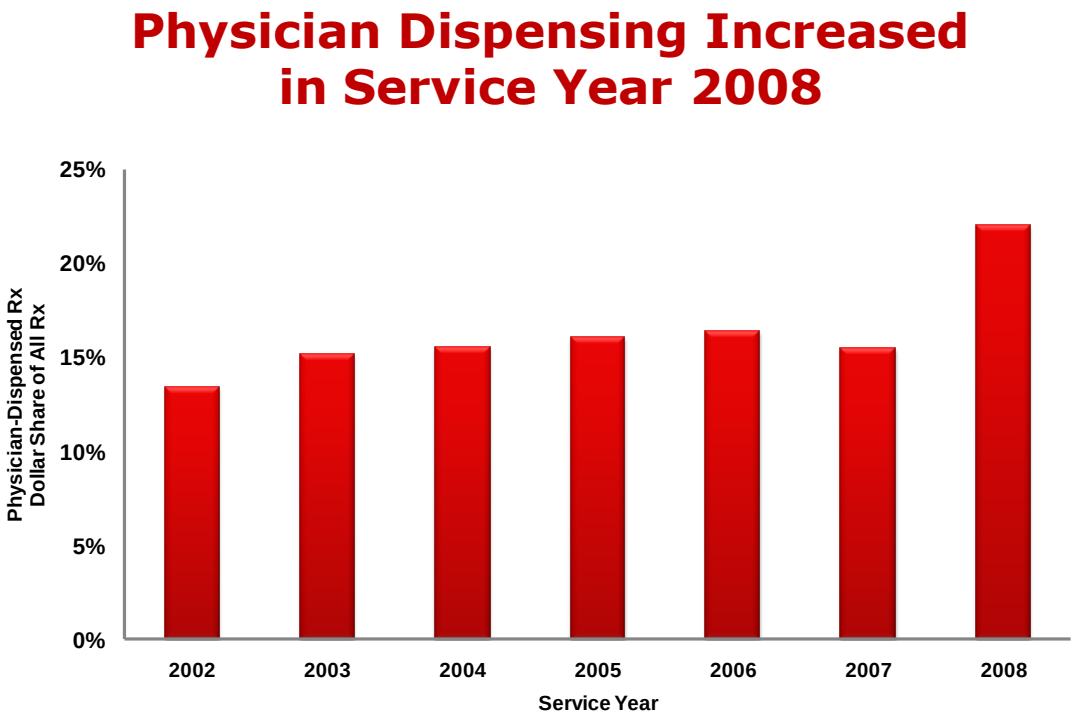
Usually when a doctor prescribes a drug for a patient, the patient purchases the drug from a pharmacy. But sometimes the doctor fills the prescription in their own office. Some reasons for this include:

1. The physician wants the patient to start taking the drug immediately and dispenses enough medication to last until the patient can get to a pharmacy,
2. The physician cannot be sure what the right medication or dosage should be, and dispenses a few days' supply of medication to determine whether that course is effective,
3. It might be inconvenient for the patient to get to a pharmacy, or
4. The physician is looking to increase revenue by retaining some of the business he would otherwise send to pharmacies.

The cost per unit of physician-dispensed drugs is often higher than the cost per unit of the same drug dispensed by a pharmacy. Factors contributing to lower per unit costs for drugs supplied by pharmacies are the economies of scale and the fact that they often provide a larger quantity of drugs per transaction.

WC drug costs have always included some cost for physician-dispensed drugs. Recently, we have seen a sharp increase in these costs in almost every state.

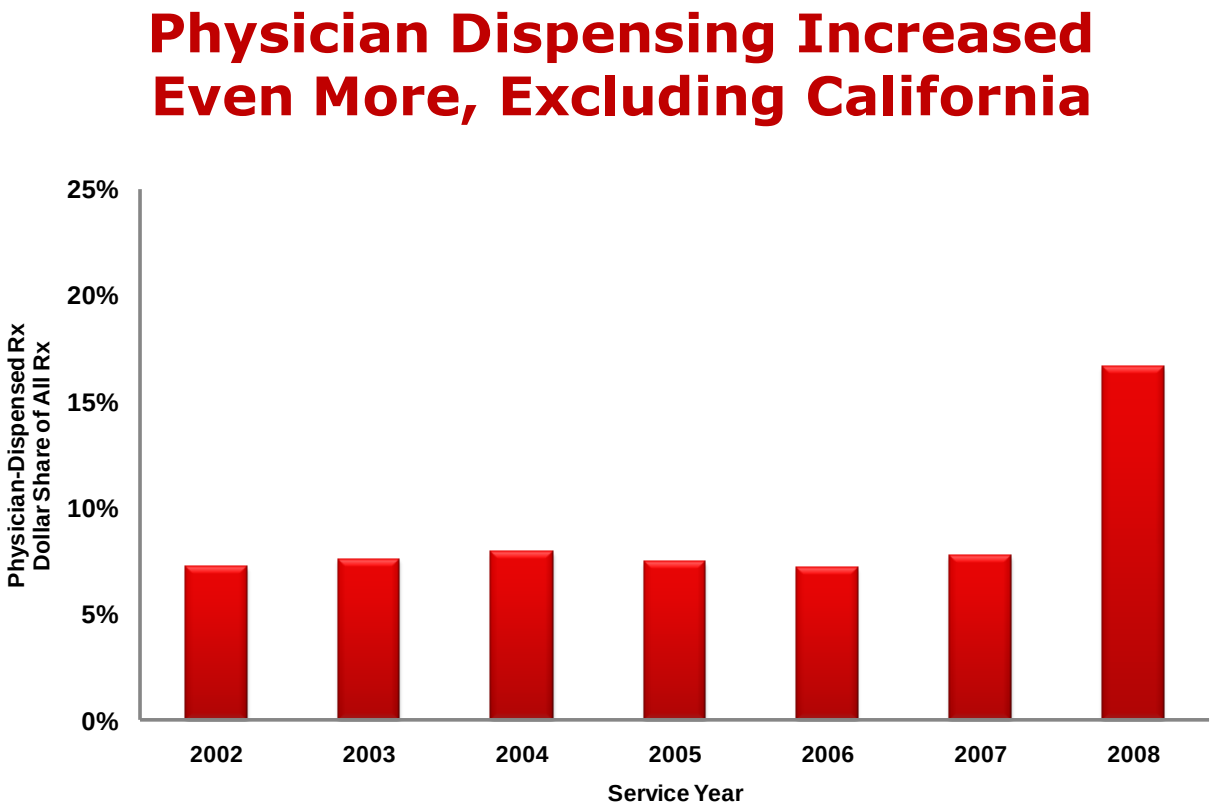
Exhibit 1 shows, by service year,[c] the percentage of WC Rx dollars due to physician dispensing. In Service Year 2008, there is a dramatic increase in the portion of drug dollars associated with drugs dispensed by physicians.




Source: Derived from sample data provided by carriers
1st through 9th relative service year
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI

***Exhibit 1***

California is a large state and, through 2007, had an unusually large share of WC drug costs due to physician-dispensed drugs. As such, California has a big impact on countrywide statistics. Exhibit 2 excludes California and shows an even more dramatic increase for the remaining states.



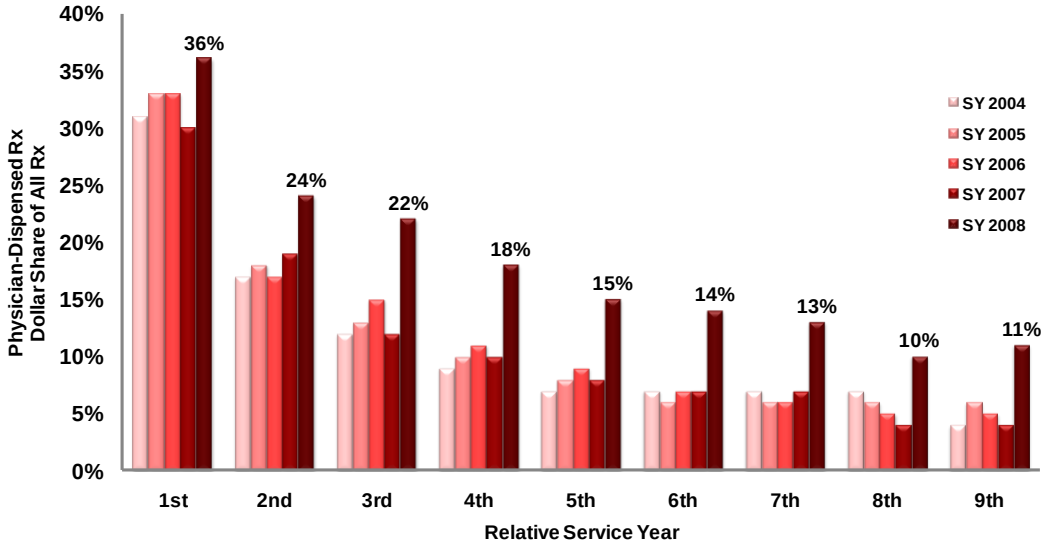

Source: Derived from sample data provided by carriers
1st through 9th relative service year
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus DE, MA, MI, MN, NJ, NY, PA, and WI

***Exhibit 2***

Exhibit 3 examines the increase in physician dispensing across claim age and illustrates two important points:

1. The portion of Rx costs due to physician-dispensed Rx deceases as claims age. The decline as one moves between groupings from left to right illustrates this.
2. Older and newer claims alike are experiencing an increase in Rx costs due to physician dispensing. The increase in Service Year 2008 within each grouping illustrates this.

## Physicians Have Started to Dispense Drugs for Both Newer and Older Claims




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI

***Exhibit 3***

## Regional View

The Service Year 2008 increase in physician dispensing illustrated by earlier exhibits is occurring in almost every state. Exhibits 4 through 6 show the trend in the portion of paid Rx dollars resulting from physician dispensing for Service Years 2006 through 2008 for states with:

- Higher than typical (> 15.5%) physician dispensing shares in 2008
- Typical (≤ 15.5% and ≥ 10.5%) physician dispensing shares in 2008
- Lower than typical (< 10.5%) physician dispensing shares in 2008

While California (Exhibit 4) has shown some decrease over these three years, it remains the state with the highest physician dispensing rate. Oregon (Exhibit 5) also shows a decreasing dispensing rate. These two states are detailed in later exhibits.

Exhibit 7 summarizes the physician dispensing rate by state for Service Year 2008.

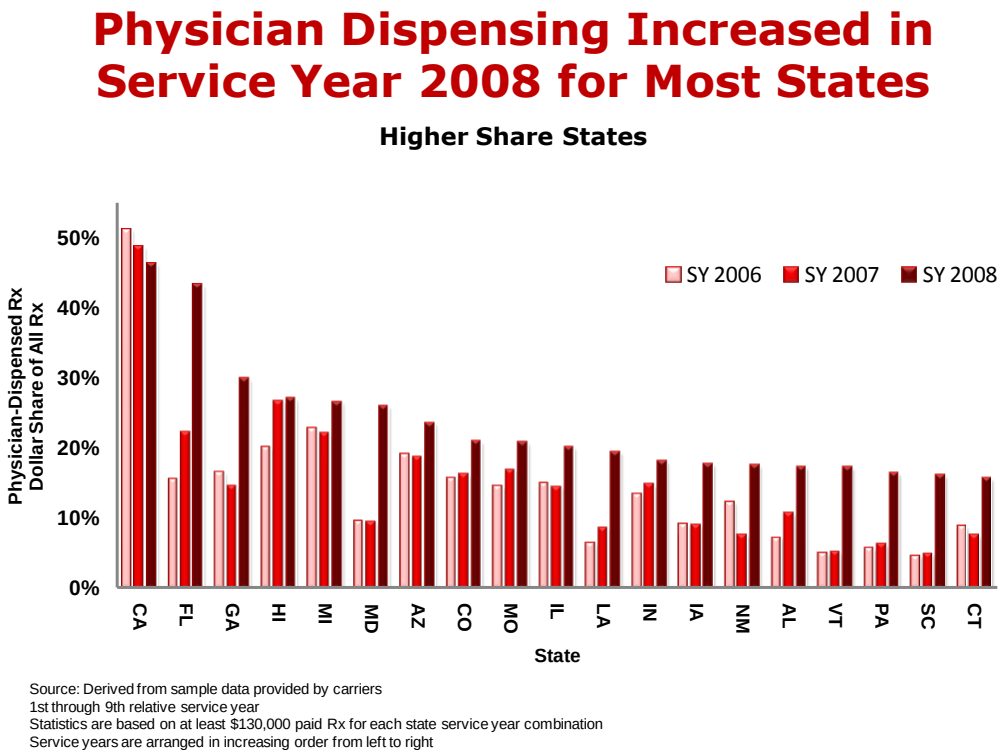
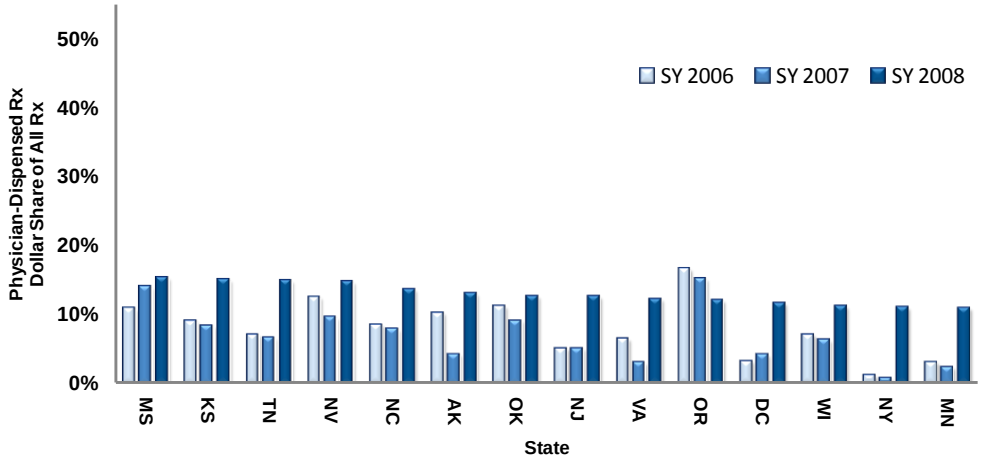



***Exhibit 4***

# Physician Dispensing Increased in Service Year 2008 for Most States

**Typical Share States**

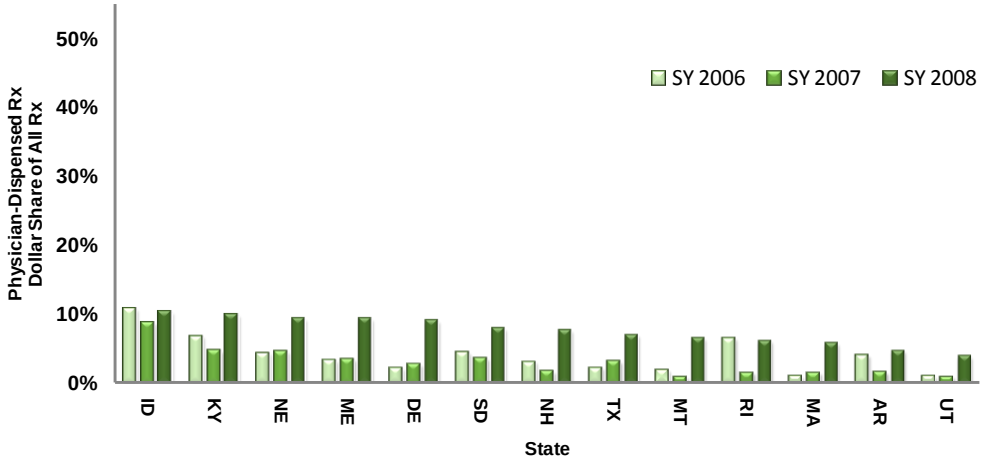



Source: Derived from sample data provided by carriers
1st through 9th relative service year
Statistics are based on at least $130,000 paid Rx for each state service year combination
Service years are arranged in increasing order from left to right

***Exhibit 5***

# Physician Dispensing Increased in Service Year 2008 for Most States

**Lower Share States**

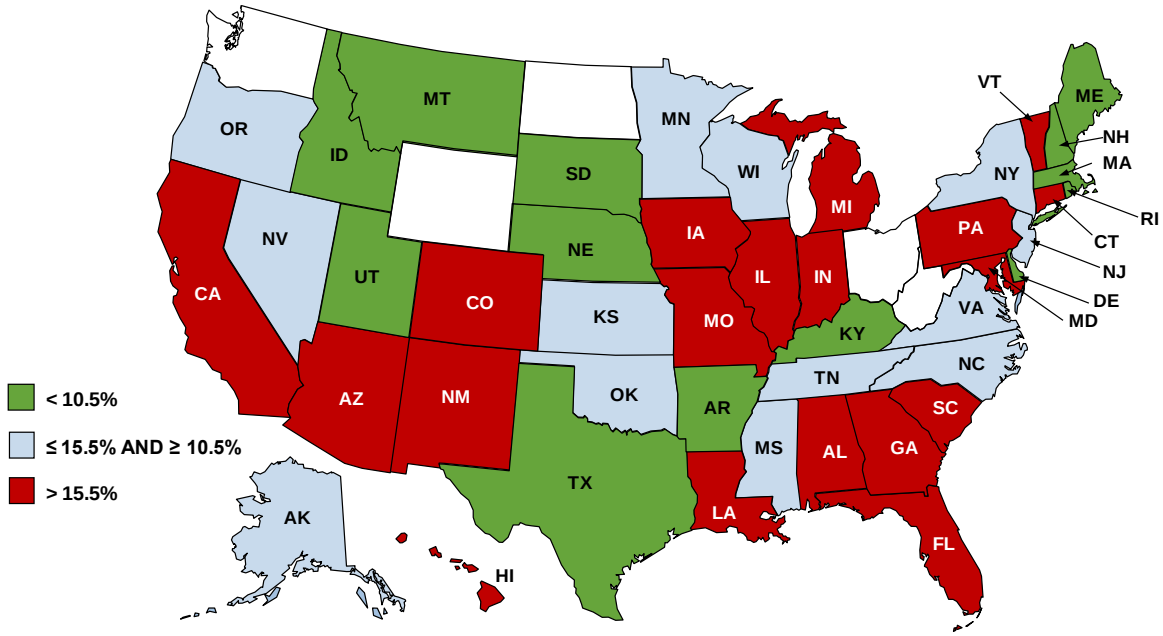



Source: Derived from sample data provided by carriers
1st through 9th relative service year
Statistics are based on at least $130,000 paid Rx for each state service year combination
Services year are arranged in increasing order from left to right

***Exhibit 6***

# Physician-Dispensed Drugs Paid Share of Rx Varies by State

**Service Year 2008**




Source: Derived from sample data provided by carriers
1st through 9th relative service year
Statistics are based on at least $130,000 paid Rx for each state service year combination

***Exhibit 7***

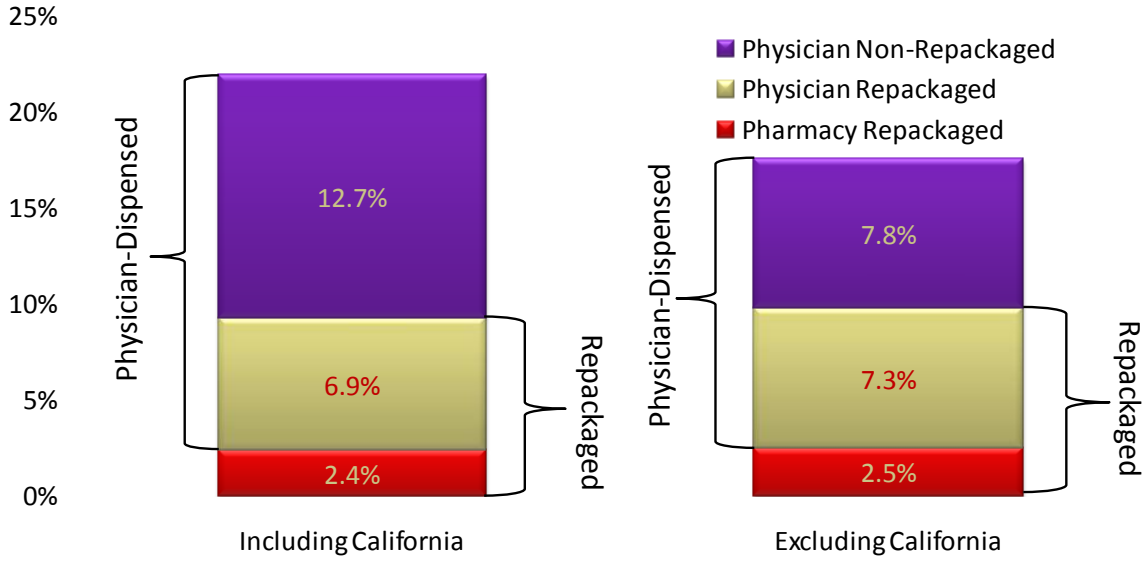
## Drug Repackaging

Any Rx is uniquely identified by a National Drug Code (NDC). NDCs are specific not only to the product (including strength and formulation) and package size but also to the labeler. Labelers are manufacturers, repackagers, and distributors. WC Rx fee schedules are typically based on Average Wholesale Price (AWP). Since each NDC comes with a unique AWP, any firm that repackages a drug can set both a new NDC and a new, possibly artificially inflated, AWP. As a result, WC costs for repackaged drugs have grown out of proportion to the number of prescriptions written for repackaged drugs.

First, we look at who is dispensing repackaged drugs. Exhibit 8 shows that for Service Year 2008, nearly three-fourths of costs due to repackaged Rx were for drugs dispensed by physicians. Including California, nearly two-thirds of physician-dispensed drugs are not repackaged. Excluding California, this share drops to just over one-half. The divergence in physician practice in California from that in other states can partially be explained by a reform enacted in 2007.

## Three-Fourths of Repackaged Drug Costs Come From Physicians

**Shares of Total Workers Compensation Prescription Drug Costs**
**Service Year 2008**




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI

***Exhibit 8***

On March 1, 2007, California changed its policy on Rx reimbursement. Prior to this date, prescription drugs were reimbursed either:

1. According to the Medi-Cal database (if the drug appears in that database), or
2. At a multiple of its AWP plus a dispensing fee (if the drug's NDC did not appear in the database) [1,2].

This allowed repackagers to create new NDCs that did not appear in the Medi-Cal database. These repackaged drugs would then be reimbursed based on the AWP set by the repackager.

After this change took effect, prescription drugs that do not appear in the Medi-Cal database are reimbursed either:

1. According to the Medi-Cal database's entry for the NDC from the original manufacturer (if this original NDC appears in the database), or
2. At 83% of the AWP of the least expensive therapeutically equivalent drug (if this original NDC does not appear in the database)

plus a dispensing fee [1].

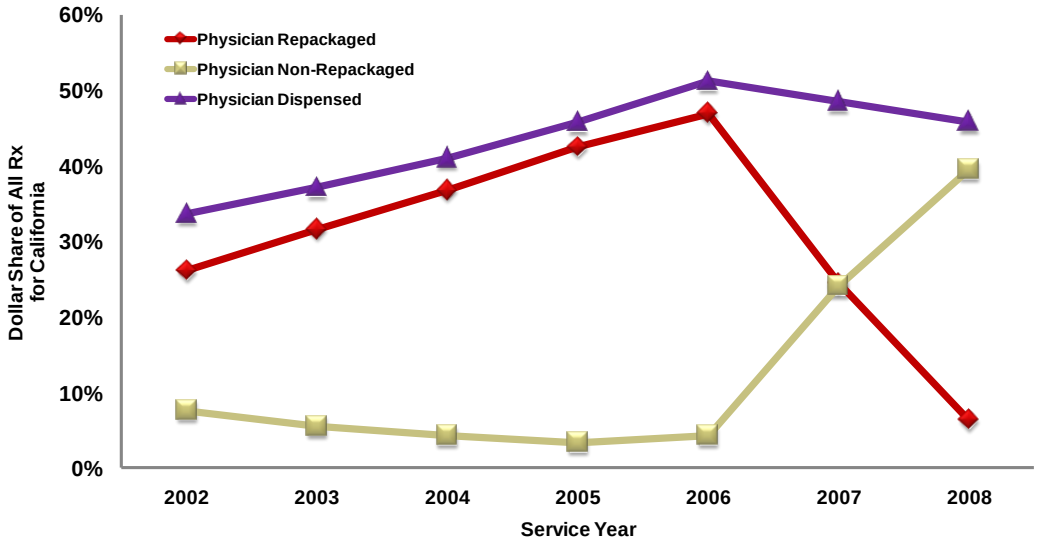
Let's look at the impact that this recent reform had on repackaged and physician-dispensed drugs in California. As displayed in Exhibit 9, the portion of California[d] Rx dollars arising from physician-dispensed repackaged drugs increased dramatically from Service Year 2002 through Service Year 2006. Since the change made repackaged drugs relatively less lucrative, the portion of drug costs attributed to repackaged drugs decreased dramatically in California.

Non-repackaged physician-dispensed Rx shares were relatively small through Service Year 2006. The 2007 reform made non-repackaged drugs relatively more lucrative. As a result, the portion of drug costs attributed to non-repackaged drugs increased sharply in Service Years 2007 and 2008.

The California reform did reverse what had been a systematic increase in the portion of WC Rx costs due to all physician-dispensed drugs. However, the Service Year 2008 share is still at a higher level than was observed three years ago.

A recent CWCI research note [3] also examines WC Rx costs and use in California pre- and post-reform. This study identifies several categories of drugs that show significant Rx share increases coinciding with this reform. One such category is convenience packs, which consist of a drug and medical food compound. The share of all (both physician- and not physician-dispensed) California WC Rx costs attributed to this category rose from less than 0.1% in 2006 to more than 5% in 2008.

# California Reform Reduced Physician-Dispensed Repackaged Drugs




Source: Derived from sample data provided by carriers
Unidentifiable drugs are excluded
1st through 9th relative service year

***Exhibit 9***

Oregon also recently took action aimed at controlling costs of physician-dispensed drugs. Not only has Oregon seen a decline in the share of costs due to physician-dispensed repackaged drugs, but it has also seen a decline in the share arising from physician-dispensed non-repackaged drugs. Exhibit 10 shows the shares by service year for repackaged and non-repackaged physician-dispensed drugs in Oregon. On July 1, 2008, Oregon reduced the reimbursement rate for Rx in WC from 88.0% of average wholesale price with an $8.70 dispensing fee to 83.5% of average wholesale price with a $2.00 dispensing fee [4].

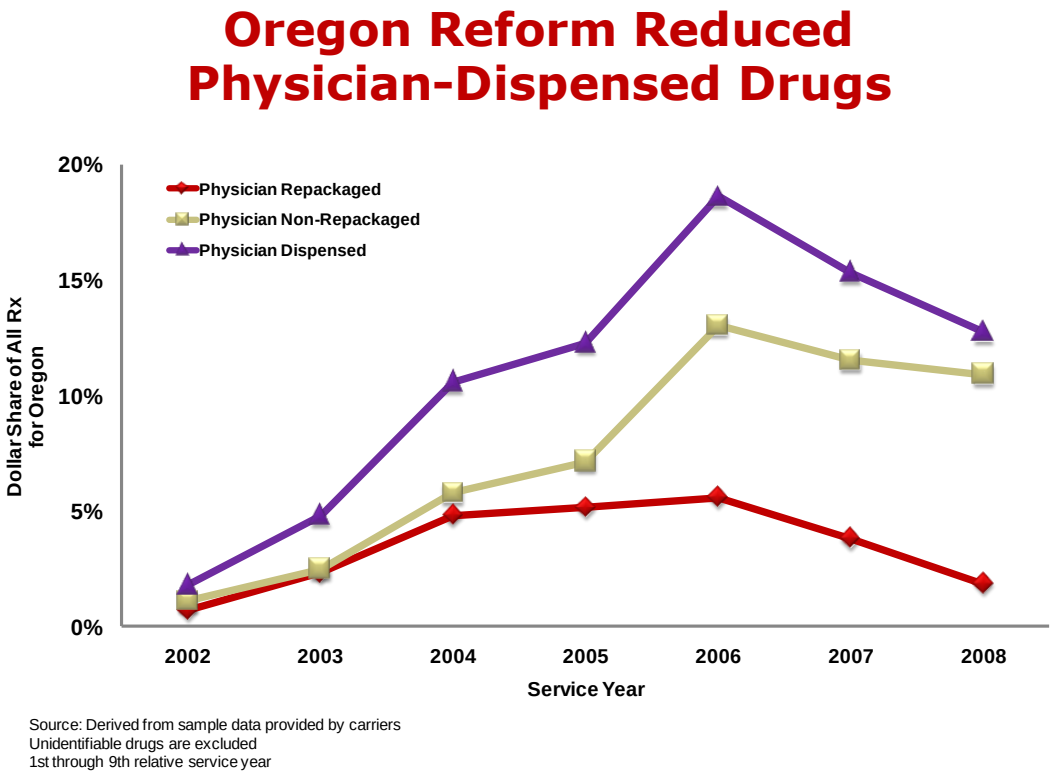
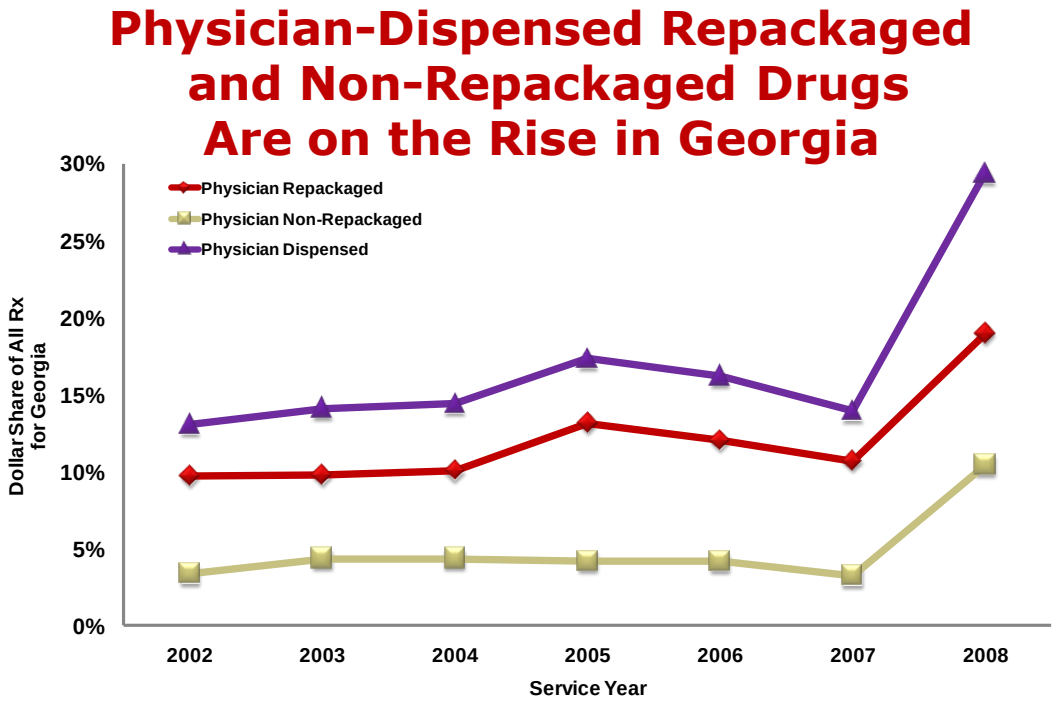



***Exhibit 10***

California and Oregon have had higher than average shares of drug costs due to physician dispensing and have recently taken steps to reduce these costs. Georgia is more typical of the average state with both physician-dispensed repackaged and non-repackaged drugs increasing in Service Year 2008, as shown in Exhibit 11.




Source: Derived from sample data provided by carriers
Unidentifiable drugs are excluded
1st through 9th relative service year

***Exhibit 11***

## Patterns in Physician Dispensing

We now take a focused look at physician dispensing patterns including drugs dispensed, their markup, quantity dispensed, and dispensing regularity. The nationwide average patterns are not necessarily representative of what occurs in any individual state. Because of this, some of the following analyses are presented for just Georgia or Florida. We think that this better illustrates current trends in patterns of workers compensation drug dispensing.

The most popular drugs for physician dispensing are not necessarily the most popular drugs for WC overall. For example, CARISOPRODOL, MELOXICAM, and RANITIDINE HCL were the top three physician-dispensed repackaged drugs in Florida in 2008, while LIDODERM® was highest in rank for all drugs dispensed in Florida. The rankings for other top drugs are shown in Exhibit 12.

### Top Physician-Dispensed Repackaged Drugs

**Florida—Service Year 2008 Ranking**

| Drug Name | Paid Dollars | | Prescription Count | |
|---|---|---|---|---|
| | Physician-Dispensed Repackaged | All Drugs | Physician-Dispensed Repackaged | All Drugs |
| CARISOPRODOL | 1 | 2 | 5 | 7 |
| MELOXICAM | 2 | 3 | 8 | 6 |
| RANITIDINE HCL | 3 | 9 | 7 | 13 |
| TRAMADOL HCL | 4 | 4 | 2 | 3 |
| LIDODERM® | 5 | 1 | 18 | 15 |
| NAPROXEN | 6 | 10 | 3 | 4 |
| OMEPRAZOLE | 7 | 15 | 16 | 31 |
| HYDROCODONE-ACETAMINOPHEN | 8 | 7 | 4 | 1 |
| ETODOLAC | 9 | 20 | 10 | 17 |
| SKELAXIN® | 10 | 6 | 11 | 9 |
| OXYCODONE-ACETAMINOPHEN | 11 | 16 | 17 | 8 |
| CYCLOBENZAPRINE HCL | 12 | 12 | 6 | 5 |
| CEPHALEXIN | 13 | 26 | 9 | 12 |
| ZOLPIDEM TARTRATE | 14 | 19 | 26 | 26 |
| IBUPROFEN | 15 | 24 | 1 | 2 |

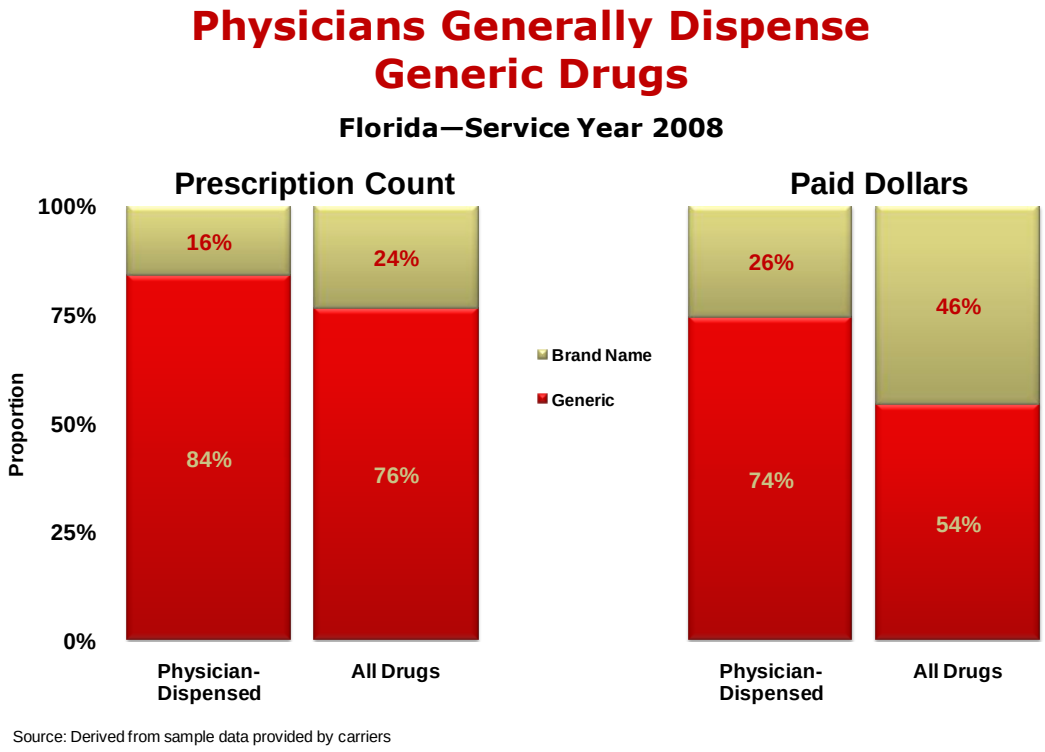
Source: Derived from sample data provided by carriers

***Exhibit 12***

Exhibit 13 looks at the split between generic and brand-name drugs in terms of both costs and number of prescriptions for Florida Service Year 2008 for physician-dispensed drugs. It also makes comparisons between all drugs dispensed and drugs dispensed by physicians.

About three-quarters of all WC Rx are generics, while only a little over half of Rx costs are from generics. This is not surprising since brand name drugs typically cost more than their generic counterparts.

Generics account for a higher proportion of the number of prescriptions dispensed by physicians (84%) than of total prescriptions (76%). At the same time, generics account for an even higher proportion of the costs arising from prescriptions dispensed by physicians (74%) than the costs of all drugs (54%), regardless of who dispensed them.




Source: Derived from sample data provided by carriers

***Exhibit 13***

Exhibit 14 shows average price (defined by reimbursement rates) relativities for several states. This exhibit indicates that:

- The price of physician-dispensed repackaged drugs is generally two to three times the price of comparable pharmacy-dispensed non-repackaged drugs,
- The markup for pharmacy-dispensed repackaged drugs is similar to that for physician-dispensed repackaged drugs, and
- Prices for physician-dispensed non-repackaged drugs tend to be 10% to 20% higher than pharmacy-dispensed non-repackaged drugs.

## Average Prices Relative to Pharmacy-Dispensed Non-Repackaged Drugs

| State | Physician-Dispensed Repackaged | Pharmacy-Dispensed Repackaged | Physician-Dispensed Non-Repackaged |
|---|---|---|---|
| FL | 2.1 | 1.9 | 1.1 |
| GA | 2.0 | 2.0 | 1.1 |
| IL | 2.0 | 2.2 | 1.1 |
| LA | 2.4 | 2.8 | 1.2 |
| MD | 2.8 | 2.7 | 1.0 |
| NC | 1.8 | 1.8 | 1.0 |
| VA | 2.7 | 2.3 | 1.2 |
| SC | 1.8 | 2.1 | 1.1 |
| WI | 3.0 | 2.8 | 1.4 |
| TX | 2.1 | 2.0 | 1.1 |

Source: Derived from sample data provided by carriers

***Exhibit 14***

The markup on some repackaged drugs is much higher than the average. Exhibit 15 shows that the price for physician-dispensed repackaged CARISOPRODOL is generally more than five times the price when this drug is dispensed from a pharmacy and has not been repackaged.

# Markups for Some Repackaged Drugs Are Much Higher Than Average

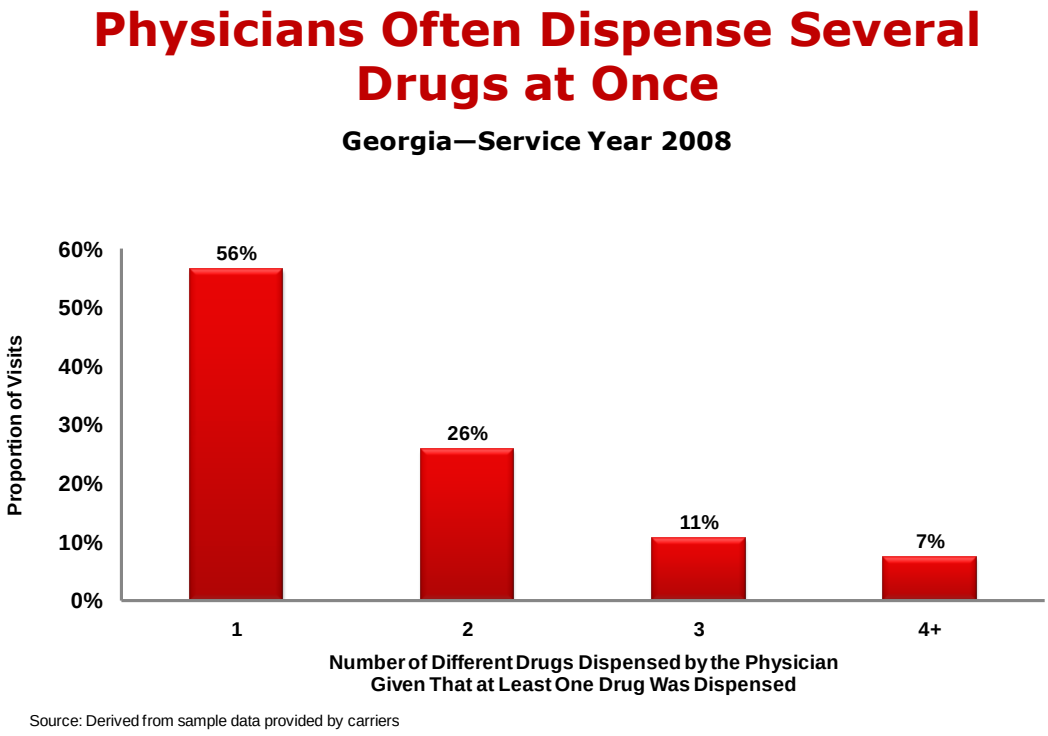
**Unit Prices for CARISOPRODOL in Service Year 2008**

| State | Physician-Dispensed Repackaged | Pharmacy-Dispensed Non-Repackaged | Ratio |
|---|---|---|---|
| FL | $3.78 | $0.53 | 7.1 |
| IL | $3.25 | $0.53 | 6.1 |
| LA | $1.83 | $0.36 | 5.0 |
| MD | $3.06 | $0.58 | 5.3 |
| NC | $5.19 | $0.57 | 9.2 |
| SC | $2.78 | $0.42 | 6.6 |

Source: Derived from sample data provided by carriers

***Exhibit 15***

When physicians dispense drugs, they often dispense more than one drug at the same time. A typical example is Georgia for Service Year 2008, Exhibit 16, where nearly half of the time that physicians dispensed at least one drug, they dispensed more than one.




Source: Derived from sample data provided by carriers

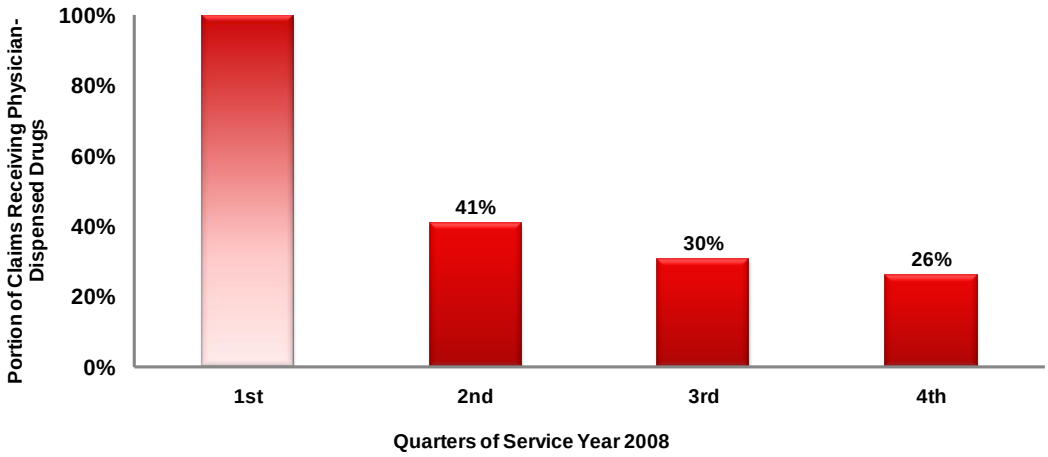
***Exhibit 16***

Claimants often continue to receive physician-dispensed drugs for extended periods. Exhibit 17 looks at the duration of physician dispensing. Claimants who received at least one physician-dispensed drug in the first quarter of Service Year 2008 were identified. For this same set of claimants, the number receiving at least one physician-dispensed drug in the second, third, and fourth quarters are shown.

Of those claimants who received at least one physician-dispensed drug in the first quarter, 26% also received at least one physician-dispensed drug in the fourth quarter. This provides evidence that a significant portion of physician dispensing goes well beyond the initial supply.

## Physicians Frequently Dispense Drugs for Substantial Periods

**Georgia—Service Year 2008**
**For claimants getting physician-dispensed drugs in First Quarter 2008, proportion getting physician-dispensed drugs in subsequent quarters**



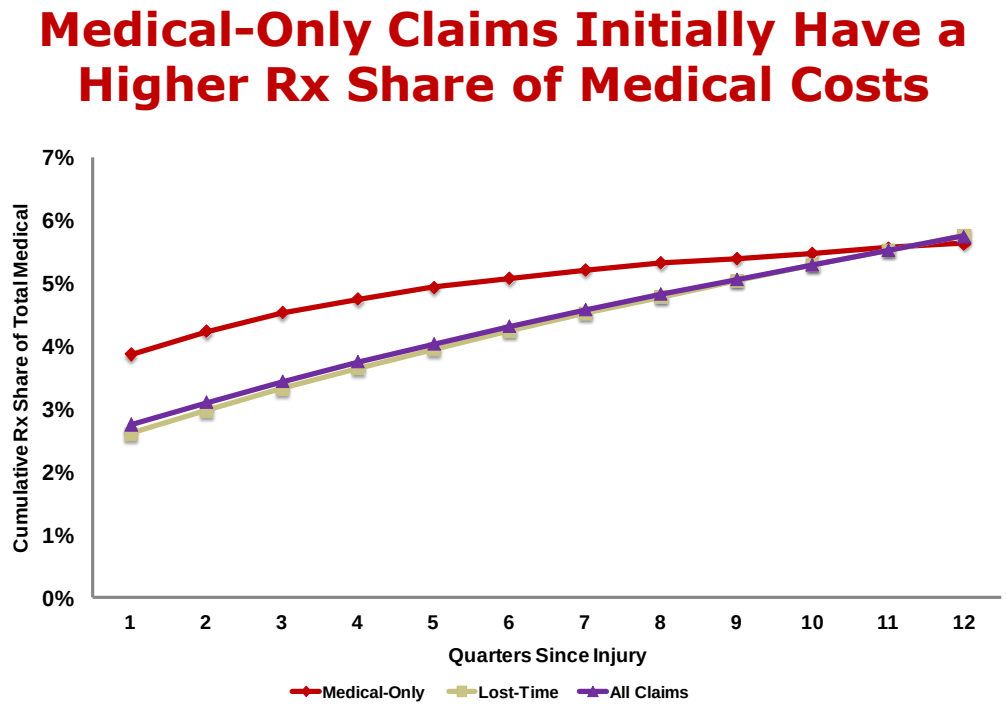

Source: Derived from sample data provided by carriers

***Exhibit 17***

## MEDICAL-ONLY VS. LOST-TIME CLAIMS

Injuries resulting in medical-only claims are generally less severe than injuries resulting in lost-time claims. Therefore, these two types of injuries might be expected to have differing shares of Rx costs relative to total medical costs. Exhibit 18 shows cumulative Rx shares of WC medical costs during the first three years following injury for medical-only and lost-time claims.

Initially, medical-only claims have a higher proportion of medical costs arising from Rx. Three years after injury, the Rx share of medical for lost-time claims has overtaken the Rx share of medical for medical-only claims. The share for all claims, lost-time plus medical-only, closely follows that of lost-time claims.

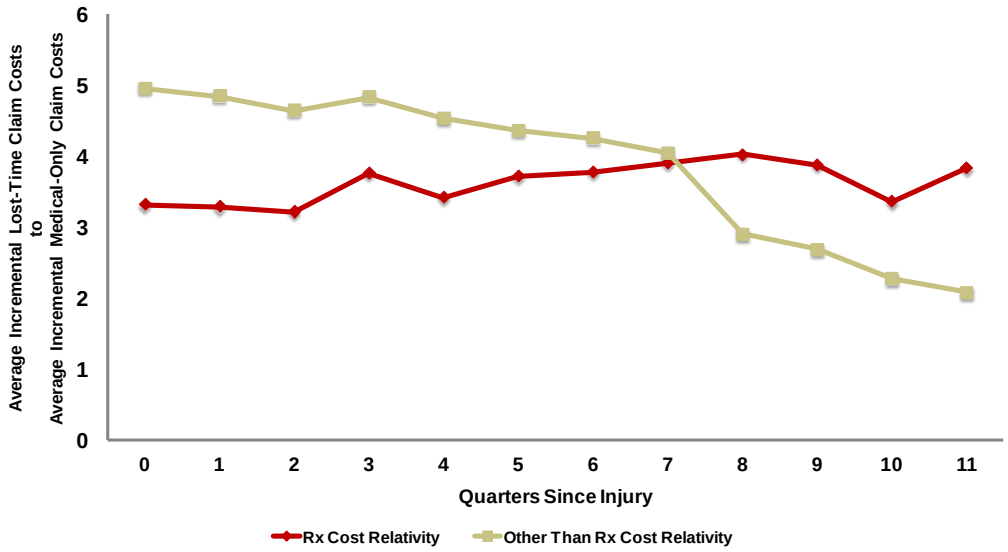



Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
"Lost-Time"—Defined as indemnity amounts of at least $100 paid or $1,000 incurred by the end of the 3rd Relative Service Year
"Medical-Only"—Defined as not "Lost-Time"
Average of Accident Years 2003 through 2005

***Exhibit 18***

While Exhibit 18 shows that a higher proportion of medical costs arise from Rx for medical-only claims than for lost-time claims, Exhibit 19 shows that this difference comes from higher spending on medical costs other than Rx. Lost-time claims typically spend more per medically active claim on all medical services. Initially, lost-time claims have disproportionately more medical costs arising from other than Rx. However, this relationship reverses by the second year following injury.

## Other Than Rx Cost Per Lost-Time Claim Falls Relative to That of Medical-Only




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
"Lost-Time"—Defined as indemnity amounts of at least $100 paid or $1,000 incurred by the end of the 3rd Relative Service Year
"Medical-Only"—Defined as not "Lost-Time"
Geometric average of Accident Years 2003 through 2005

***Exhibit 19***

Exhibit 20 allocates Rx costs into various categories of drugs for both lost-time and medical-only claims. In 2007, NCCI [5] found that the distribution of drug costs across different drug categories varies with relative service year. As such, some of the differences between the distribution for lost-time and medical-only claims can be attributed to when medical services are provided for these two different claim types—with medical-only claims typically receiving more of medical services earlier in the life of the claim.

Exhibit 20 is consistent with this postulation. For instance, in 2007, the share of Anti-Inflammatories was found to drop with relative service year. Exhibit 20 shows that medical-only claims have a relatively higher portion of Rx costs arising from this particular category. Conversely, in 2007, the share of Analgesics was found to increase with relative service year, and Exhibit 20 shows that proportionally more of Rx costs from lost-time claims arise from this category.

# The Distribution of Rx Costs Across Drug Categories Differs by Claim Type

| Drug Category | Lost-Time | Medical-Only |
|---|---|---|
| Analgesics | 35% | 17% |
| Anti-Inflammatories | 13% | 31% |
| Muscle Relaxants | 11% | 18% |
| CNS Drugs | 10% | 3% |
| Psychotherapeutic Drugs | 9% | 2% |
| Gastrointestinal | 5% | 3% |
| Skin Preps | 5% | 4% |
| Sedative/Hypnotics | 4% | 1% |
| Anti-Infectives/Miscellaneous | 3% | 15% |
| Other | 5% | 7% |

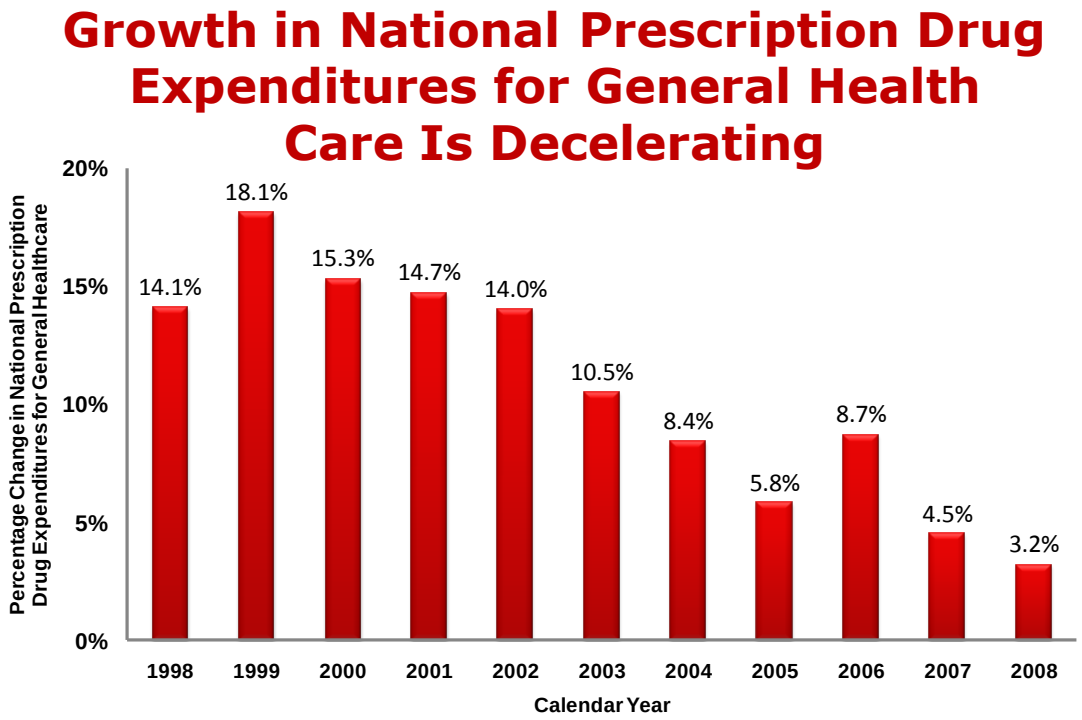
Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
"Lost-Time"—Defined as indemnity amounts of at least $100 paid or $1,000 incurred by the end of the third Relative Service Year
"Medical-Only" —Defined as not "Lost-Time"
Service Year 2006

***Exhibit 20***

## DRUG TRENDS IN GENERAL HEALTHCARE

Total US healthcare spending grew 4.4% in 2008, according to the Centers for Medicare & Medicaid Services (CMS) [6]. Compared to 6.0% growth in 2007, this shows a slowdown in the rate of growth of total US healthcare spending. At the same time, growth in total US healthcare spending on Rx dropped from a 4.5% increase in 2007 to a 3.2% increase in 2008, as shown in Exhibit 21. The CMS [7] cites several factors that contributed to the 2008 deceleration in the growth of US healthcare spending on Rx:

- Effects of the recession
- A lower than usual rate of new product introductions
- Concerns about safety




Source: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Expenditure Data, Historical, NHE Web Tables http://www.cms.hhs.gov/NationalHealthExpendData/downloads/tables.pdf

***Exhibit 21***

## TRENDS IN THE PRESCRIPTION DRUG SHARE OF TOTAL WC MEDICAL COSTS

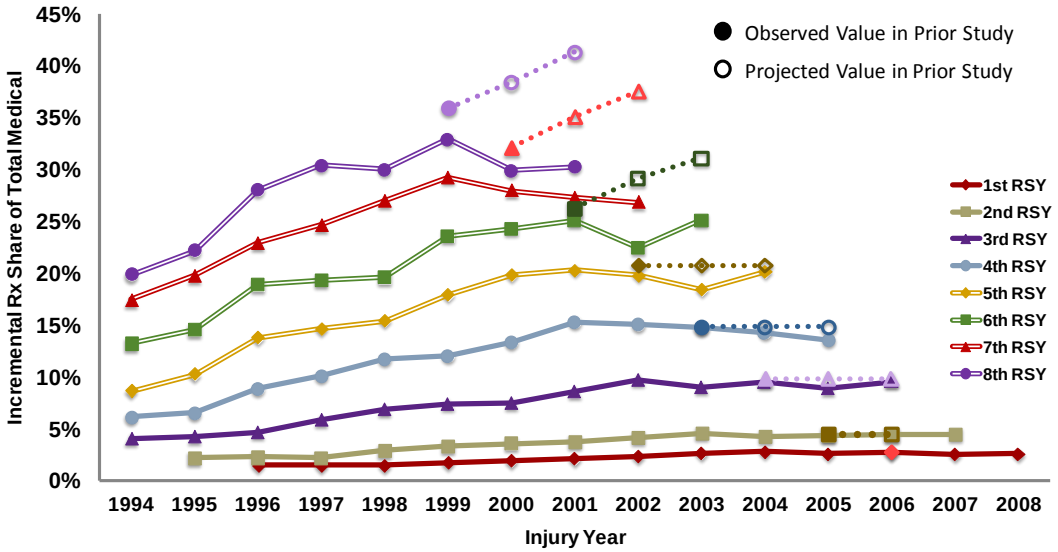
Exhibit 22 shows the incremental Rx share of total medical costs[e] and illustrates two distinct patterns:

1. The incremental Rx share of total medical cost increases with relative service year[f]—that is, as claims age. This is illustrated by the fact that lines representing more mature relative service years have a systematically higher Rx share of total medical.
2. As the injury year increases (moving from left to right along the x-axis), there is a general increase in the Rx share of total medical, with this increase eventually leveling out. This leveling occurs earlier for the less mature relative service years and later for more mature relative service years.

For comparison purposes, Exhibit 22 also shows select values from the 2008 update;[g] both the then last observed service year and select projected values from the 2008 update are shown. Historically observed values are shown as solid markers, while projected values are shown as hollow markers. As can be seen, the 2008 update projected the 1st through the 5th relative service years to remain flat, while expecting subsequent relative service years to trend at historical rates.

Taking the 7th relative service year (red line with triangular markers), for example, one can see that the projections were in line with the observed trends as of the 2008 update. Actual emergence was much lower than projected, with an apparent flattening in the increase of the Rx share of total medical through the 8th relative service year.

# Rx Share of Medical Costs Is Emerging Lower Than Previously Projected




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
Prior Study: "Workers Compensation Prescription Drug Study—2008 Update" available at **ncci.com**

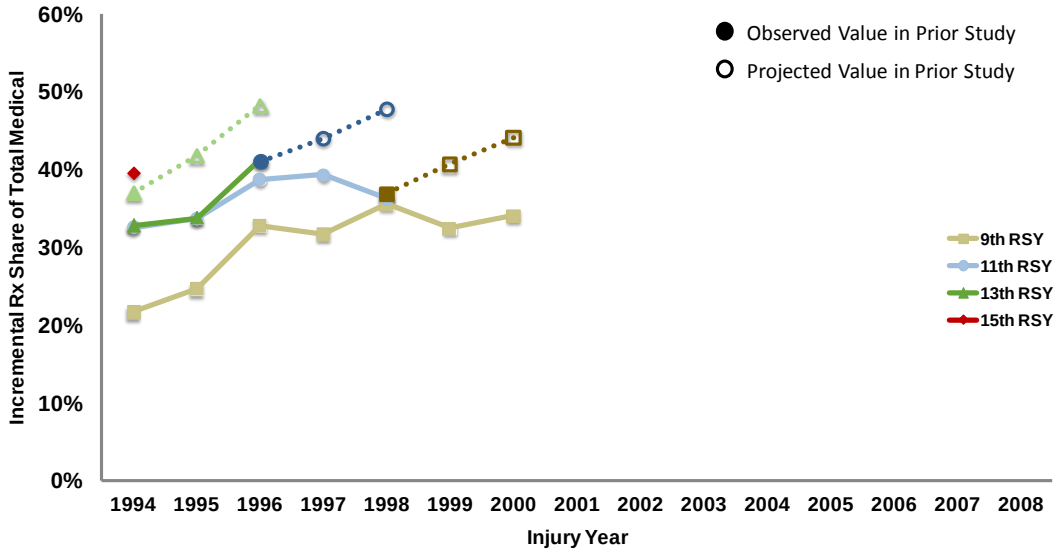
***Exhibit 22***

Exhibits 23 and 24 are similar to Exhibit 22 but display the 9th and subsequent relative service years. The long-tailed nature of WC exaggerates the impact of the high (currently upwards of 40%) incremental Rx share in these older relative service years and makes them of particular interest.

Additionally, Exhibits 23 and 24 show that the systematic increase in the Rx share of total medical by relative service year breaks down for these more mature relative service years. Only future updates will tell if this breakdown points toward an upper limit or is simply a current anomaly.

These exhibits do not provide sufficient evidence that the more mature relative service years have reached a turning point. As such, we assume that we will continue to see an upward trend in the older relative service years, but we have selected ultimate levels that are lower than those in the 2008 update.

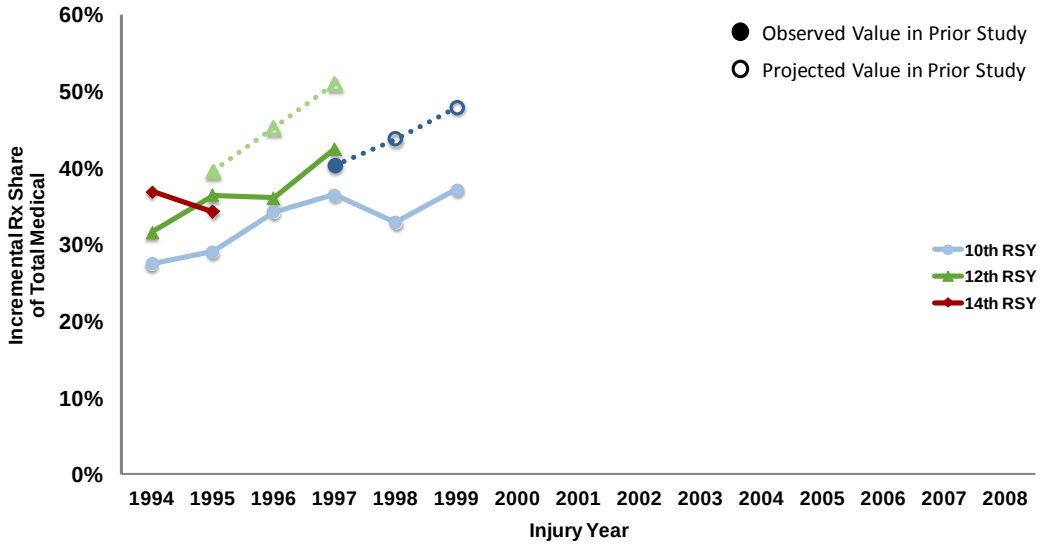
# Rx Share of Medical Costs Is Emerging Lower Than Previously Projected




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
Prior Study: "Workers Compensation Prescription Drug Study—2008 Update" available at **ncci.com**

***Exhibit 23***

# Rx Share of Medical Costs Is Emerging Lower Than Previously Projected




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
Prior Study: "Workers Compensation Prescription Drug Study—2008 Update" available at **ncci.com**

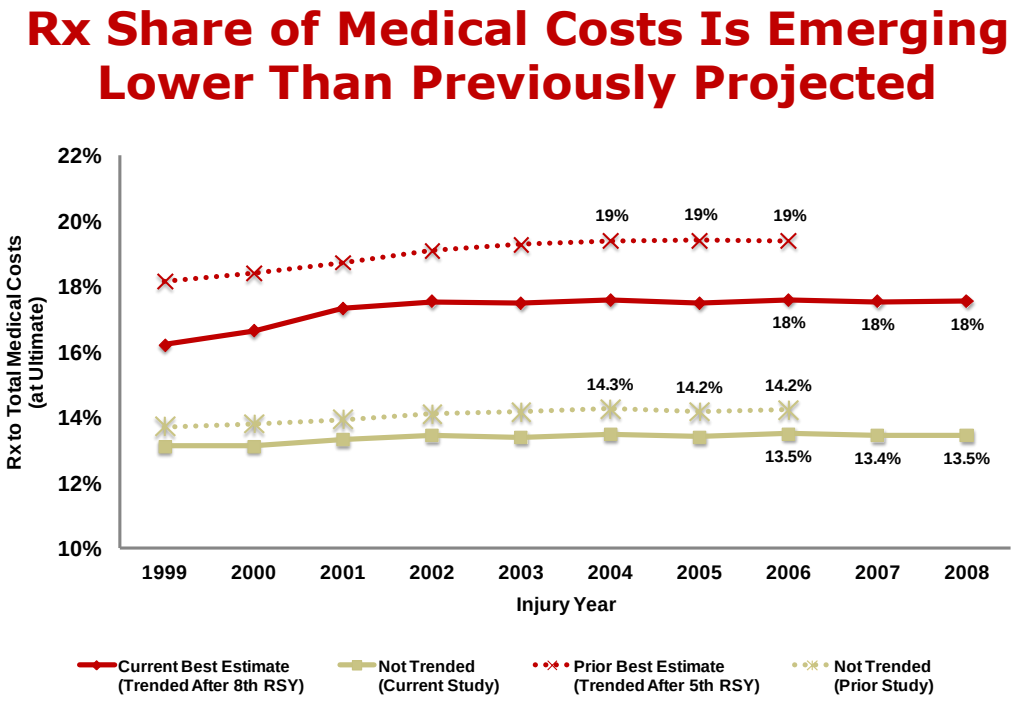
***Exhibit 24***

### Estimating the Prescription Drug Share of Total Medical Costs—Two Scenarios

The patterns observed in Exhibits 22, 23, and 24—when combined with a total medical payout pattern—can be used to estimate the ultimate prescription drug share of medical costs. Exhibit 25 details the following two scenarios under both the current and 2008 updates:

1. *Not Trended Incremental Rx Share*—Future incremental drug shares for all relative service years are projected to remain unchanged from the last observed share (this is graphically equivalent to extending the lines in Exhibits 22, 23, and 24 with horizontal lines). As can be seen in Exhibit 25, there has been a fairly uniform drop arising in this rather mechanistic calculation from the 2008 update to current.
2. *Trended Incremental Rx Share*—As suggested by the data, the younger service years are treated differently from the older ones. Younger relative service years are treated the same as in the *Not Trended Incremental Rx Share* (that is, they are projected to remain unchanged), and older relative service years are projected to grow at historical rates.

   We determine the dividing line between young and old based on the data available at the time the relevant study is conducted. Thus, for the 2008 update, we defined older as 6th and subsequent, while, for the current study, we defined older as 9th and subsequent. The lower emergence, as mentioned earlier, combined with the decision to shift the dividing line between older and younger, has also resulted in a uniform decline in this estimate from the 2008 update to current.




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
Prior Study: "Workers Compensation Prescription Drug Study—2008 Update" available at **ncci.com**

***Exhibit 25***

## CHANGES IN PRICE, UTILIZATION, AND COST

Exhibit 26 separates year-over-year changes in Rx cost per claim into price and utilization impacts.

In this exhibit:

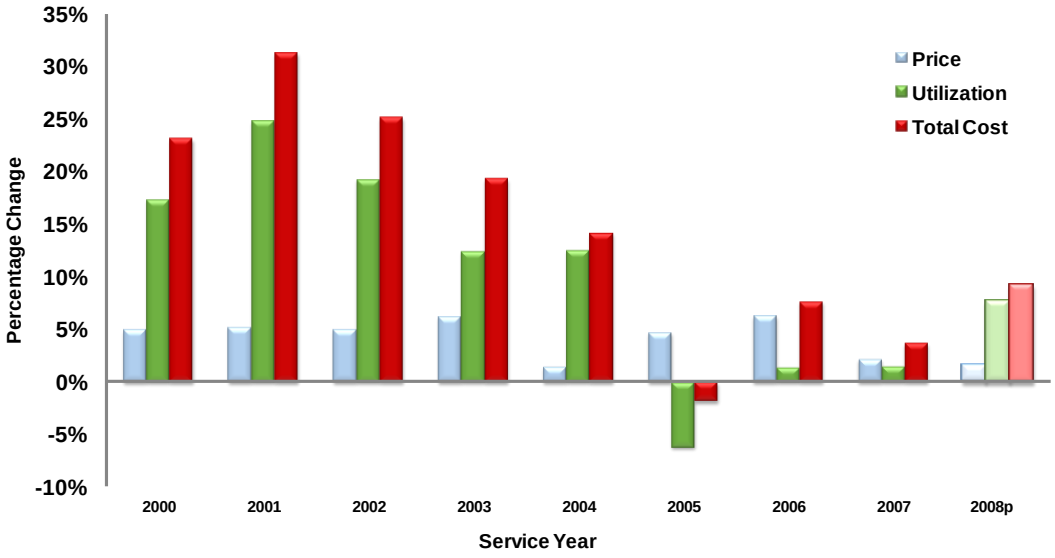
- Total cost is the per-claim total-dollar impact
- Price is the portion of total cost change that can be attributed to price changes of the drugs relative to the previous year
- Utilization change is the difference between total cost change and price change, and it includes changes in the number of prescriptions per claim and the impact of changes in the mix of drugs prescribed (i.e., from previously used drugs to newer and more costly alternatives)

Exhibit 26 shows that the total Rx cost per claim grew rapidly over the period 2000 to 2004. This high growth was driven mostly by changes in utilization and coincides with a period of expanded use of three Cox-2 inhibitors (please see our previous study [8]). This period of high growth ended abruptly in 2005 and is visible in Exhibit 26 as the only year for which utilization had a negative impact. This abrupt ending coincides with the removal of two Cox-2 inhibitors from the market, as well as a revised warning label in the third.[h]

Interestingly enough, Exhibit 26 also shows 2006 as the only service year in which price, as opposed to utilization, was the major factor for the change in total cost per claim. Medicare Part D became effective on January 1, 2006, and, according to articles from *CNN Money* [9] and *The New York Times* [10], the pharmaceutical industry increased the average wholesale price of brand-name drugs by more than 3.6%. Celebrex® rose by more than 6.5%. Since WC Rx fee schedules are generally based on average wholesale price, such increases are directly reflected in WC paid data.

Service Year 2008 shows utilization once again as the main factor in total cost increases. Due to the reporting lag associated with the latest diagonal, these numbers are currently preliminary. However, the magnitude of these indications would suggest that the current pattern will persist through next year's revision.

# Utilization Is Once Again a Contributing Factor to Cost Increases




Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
2008p = Preliminary

***Exhibit 26***

## NOTEWORTHY CHANGES IN RANKINGS

Exhibit 27 lists the top 15 drugs for Service Year 2008 ranked by total amount paid, along with their ranks for Service Years 2007 and 2006 (see APPENDIX 1 for the top 50).

# Top Drugs for Service Year 2008

**Rank Based on Total Dollars Paid in WC**

| Drug Name | FDA Approval | Service Year | | |
|---|---|---|---|---|
| | | 2008 | 2007 | 2006 |
| OXYCONTIN® | 12/95 | 1 | 6 | 7 |
| HYDROCODONE W/ACETAMINOPHEN | 3/85 | 2 | 1 | 1 |
| LIDODERM® | 3/99 | 3 | 2 | 2 |
| LYRICA® | 12/04 | 4 | 4 | 11 |
| CELEBREX® | 12/98 | 5 | 3 | 3 |
| GABAPENTIN | 9/03 | 6 | 5 | 4 |
| SKELAXIN® | 8/62 | 7 | 8 | 8 |
| CYMBALTA® | 8/04 | 8 | 14 | 20 |
| CYCLOBENZAPRINE HCL | 2/88 | 9 | 9 | 12 |
| TRAMADOL HCL | 6/02 | 10 | 12 | 13 |
| FENTANYL | 10/93 | 11 | 11 | 15 |
| MELOXICAM | 7/06 | 12 | 15 | 36 |
| OXYCODONE HCL | 11/81, 3/04 | 13 | 7 | 5 |
| OMEPRAZOLE | 11/01 | 14 | 20 | 58 |
| CARISOPRODOL | 6/79 | 15 | 10 | 6 |

Source: Derived from sample data provided by carriers
Aggregation of states where NCCI provides ratemaking services, excl. WV, plus CA, DE, MA, MI, MN, NJ, NY, PA, and WI
Note: Drugs listed without registered trademark symbol (®) are generics.
Source for FDA approval dates: FDA Electronic Orange Book

***Exhibit 27***

OXYCONTIN® takes the number one slot for Service Year 2008, after moving up from 7th place in Service Year 2006. During the same period, OXYCODONE HCL, the generic version of OXYCONTIN®, dropped in rank from 5th in Service Year 2006 to 13th by Service Year 2008. The extended release feature of OXYCONTIN® came off patent in late 2004, after which three generic drug manufacturers started producing extended-release OXYCODONE HCL. From 2004 to 2006, WC saw OXYCODONE HCL rise and OXYCONTIN® fall in paid rank.

However, the manufacturer of OXYCONTIN® was able to get the patent on its extended-release feature reinstated. The legal restrictions began taking effect at the end of 2006 and took full effect in 2009. These legal issues likely explain a majority of the aforementioned changes in rank for these two drugs.

CARISOPRODOL dropped in rank from 6th in Service Year 2006 to 15th in Service Year 2008. This drop in the rank of CARISOPRODOL, a historically popular physician-dispensed repackaged drug in California, directly coincides with an early 2007 reform in California aimed at restricting the markup on repackaged drugs in WC.

## CLOSING REMARKS

This update has taken a detailed look at physician-dispensed drugs and shows that physician-dispensed drug costs rose dramatically in 2008. This study also reduces our projected ultimate Rx share of total medical by 1 percentage point and shows utilization changes as a substantial factor in the growth of WC Rx costs once again.

NCCI will continue to monitor and report on prescription drugs and other important issues that affect the WC industry.

## APPENDIX 1
## Top 50 Prescribed Drugs by Total Paid in WC Service Year 2008
## With Historical Rankings

| 2008 | | | Paid Rank | | |
|---|---|---|---|---|---|
| Paid Rank | Paid Share | Drug Name | 2007 | 2006 | 2005 |
| 1 | 5.4% | OXYCONTIN® | 6 | 7 | 2 |
| 2 | 5.2% | HYDROCODONE W/ACETAMINOPHEN | 1 | 1 | 1 |
| 3 | 5.1% | LIDODERM® | 2 | 2 | 6 |
| 4 | 4.3% | LYRICA® | 4 | 11 | 64 |
| 5 | 4.1% | CELEBREX® | 3 | 3 | 5 |
| 6 | 3.6% | GABAPENTIN | 5 | 4 | 3 |
| 7 | 3.0% | SKELAXIN® | 8 | 8 | 7 |
| 8 | 2.4% | CYMBALTA® | 14 | 20 | 29 |
| 9 | 2.2% | CYCLOBENZAPRINE HCL | 9 | 12 | 12 |
| 10 | 2.1% | TRAMADOL HCL | 12 | 13 | 13 |
| 11 | 2.0% | FENTANYL | 11 | 15 | 18 |
| 12 | 1.9% | MELOXICAM | 15 | 36 | — |
| 13 | 1.9% | OXYCODONE HCL | 7 | 5 | 9 |
| 14 | 1.6% | OMEPRAZOLE | 20 | 58 | 69 |
| 15 | 1.5% | CARISOPRODOL | 10 | 6 | 4 |
| 16 | 1.5% | NAPROXEN | 13 | 10 | 10 |
| 17 | 1.3% | ZOLPIDEM TARTRATE | 28 | — | — |
| 18 | 1.3% | TOPAMAX® | 21 | 22 | 21 |
| 19 | 1.3% | ULTRAM® ER | 24 | 49 | — |
| 20 | 1.3% | OXYCODONE W/ACETAMINOPHEN | 23 | 25 | 26 |
| 21 | 1.2% | ACTIQ® | 16 | 9 | 11 |
| 22 | 1.1% | TIZANIDINE HCL | 22 | 21 | 19 |
| 23 | 1.1% | KADIAN® | 25 | 24 | 31 |
| 24 | 1.1% | IBUPROFEN | 17 | 16 | 17 |
| 25 | 1.1% | DURAGESIC® | 18 | 17 | 15 |
| 26 | 1.0% | AMBIEN CR® | 27 | 38 | 148 |

| | | | | | |
|---|---|---|---|---|---|
| 27 | 1.0% | PERCOCET® | 26 | 29 | 35 |
| 28 | 1.0% | NAPROXEN SODIUM | 29 | 46 | 47 |
| 29 | 0.9% | FENTANYL CITRATE | 19 | 57 | 139 |
| 30 | 0.9% | FLECTOR® | — | — | — |
| 31 | 0.9% | OPANA ER® | 50 | 166 | — |
| 32 | 0.8% | OXYCODONE-ACETAMINOPHEN | 33 | 34 | 40 |
| 33 | 0.8% | AVINZA® | 32 | 26 | 25 |
| 34 | 0.8% | EFFEXOR XR® | 31 | 30 | 22 |
| 35 | 0.7% | LUNESTA® | 38 | 41 | 63 |
| 36 | 0.7% | NEXIUM® | 35 | 35 | 41 |
| 37 | 0.7% | MORPHINE SULFATE | 43 | 37 | 36 |
| 38 | 0.6% | ENDOCET® | 40 | 32 | 32 |
| 39 | 0.6% | LOVENOX® | 44 | 47 | 49 |
| 40 | 0.6% | CEPHALEXIN | 34 | 23 | 20 |
| 41 | 0.6% | FENTORA® | 47 | 105 | — |
| 42 | 0.6% | NABUMETONE | 37 | 33 | 27 |
| 43 | 0.6% | PROVIGIL® | 45 | 43 | 45 |
| 44 | 0.6% | ETODOLAC | 39 | 27 | 23 |
| 45 | 0.6% | PROPOXYPHENE NAP-ACETAMINOPHEN | 41 | 31 | 30 |
| 46 | 0.5% | LEXAPRO® | 46 | 42 | 42 |
| 47 | 0.5% | AMRIX® | 261 | — | — |
| 48 | 0.5% | DICLOFENAC SODIUM | 48 | 39 | 37 |
| 49 | 0.5% | TRAMADOL HCL-ACETAMINOPHEN | 42 | 28 | 28 |
| 50 | 0.5% | RANITIDINE HCL | 30 | 14 | 14 |

# APPENDIX 2
## 2008 Top 15 Prescription Drugs in WC

1. **OXYCONTIN**® (Ox i kon' tin) is a controlled-release narcotic painkiller prescribed for around-the-clock relief of moderate to severe pain.
2. **HYDROCODONE W/ACETAMINOPHEN** (hye droe KOE done) / (ah see ta MIH no fen)- (generic form of Vicodin®) is a narcotic analgesic used to relieve moderate to severe pain.
3. **LIDODERM**® (LYE doe derm) is used to relieve the pain associated with sunburn; insect bites; poison ivy; poison oak; poison sumac; minor cuts, scratches, and burns; sores in the mouth; dental procedures; hemorrhoids; and shingles (herpes infection).
4. **LYRICA**® (LEER i kah) is an anticonvulsant and neuropathic pain agent used for treating fibromyalgia or nerve pain caused by certain conditions (e.g., shingles, diabetic nerve problems). It is also used in combination with other medicines to treat certain types of seizures.
5. **CELEBREX**® (SELL eh breks) is a nonsteroidal anti-inflammatory drug (NSAID) used to treat pain or inflammation caused by many conditions such as arthritis, ankylosing spondylitis, and menstrual pain. It is also used in the treatment of hereditary polyps in the colon.
6. **GABAPENTIN** (ga bah PEN tin) (generic form of Neurontin®, approved in 2003) is used in the treatment of some types of seizures and the management of postherpetic neuralgia (nerve pain caused by the herpes virus or shingles).
7. **SKELAXIN**® (skell AX in) is a muscle relaxant used to treat skeletal muscle conditions such as pain or injury.
8. **CYMBALTA**® is used to treat major depression—a disorder marked by continuing, serious, and overwhelming feelings of depression that interfere with daily functioning. It is used to treat diabetic peripheral neuropathy, a painful nerve disorder associated with diabetes that affects the hands, legs, and feet.
9. **CYCLOBENZAPRINE HCL** (sye kloe BEN za preen) / (HYE droe KLOR ide) (generic form of Flexeril®) is a muscle relaxant used to treat skeletal muscle conditions such as muscle spasms resulting from injuries such as sprains, strains, or pulls.
10. **TRAMADOL HCL** (TRA ma dol) / (HYE droe KLOR ide) (generic form of Ultram®) is prescribed to relieve moderate to moderately severe pain.
11. **FENTANYL** (FEN ta nil) (generic form of Duragesic®) prescribed for chronic pain when short-acting narcotics and other types of painkillers fail to provide relief.
12. **MELOXICAM** (mell ox ih kam) (generic form of Mobic®) is used to relieve the pain and stiffness of osteoarthritis and rheumatoid arthritis.
13. **OXYCODONE HCL** (ox i KOE done) / (HYE droe KLOR ide) (generic form of Roxicodone® or OxyContin® if extended release) is a narcotic pain reliever used to treat moderate to severe pain. The extended-release form of this medication is for around-the-clock treatment of pain.
14. **OMEPRAZOLE** (oh MEP ra zole) (generic form of Prilosec®) is prescribed for the short-term treatment (four to eight weeks) of the following: stomach ulcer, duodenal ulcer (near the exit of the stomach), erosive esophagitis (inflammation of the esophagus), and heartburn and other symptoms of gastroesophageal reflux disease (also known as GERD, which occurs when stomach acid backs up into the tube connecting the throat to the stomach).
15. **CARISOPRODOL** (kar eye soe PROE dole) (generic form of Soma®) is a muscle relaxant used to treat injuries and other painful musculoskeletal conditions.

Source: Drugs.com

Note: These drugs might also be used for purposes other than those listed.

## NOTES

[a] WC looks at costs by injury year (the year of injury) because insurance coverage continues (potentially for many years) following the date of injury in WC. This "long-tail" feature of WC is distinct from most other lines of insurance coverage, which are usually confined to the 12-month policy year for which premium is charged. As a result, other types of insurance coverage are much more sensitive to short-term increases in costs, while WC is subject to substantial long-term cost pressures.

The "long-tail" nature of WC is critical and underscores the need for further research. Substantial quantities of medical services are routinely delivered for many years following the occurrence of a WC claim. As a result, estimates of the annual costs and reserves on serious claims must fully account for the compounding effect of medical inflation. For example, at an annual medical cost inflation of 10%, the annual cost of a fixed regimen of medical treatment will be nearly double the first year's cost in the eighth year following the claim.

[b] In order for transactions to be present in our data, they must be reported and entered into carriers' systems. For instance, if a claimant received a service on December 29, 2001, it's possible that the carrier did not have this transaction entered into their system until January 12, 2002. As such, historical data is ever-changing, and we must examine it "evaluated as of" a certain date.

[c] A service year consists of all services in a calendar year aggregated across applicable (and available) injury years. For instance, if the data consists of all injuries that occurred in 1994 through 2007 (or injury years 1994 through 2007), then Service Year 2000 would consist of all payments made in the year 2000 for those injuries that occurred in the years 1994 through 2000.

[d] Neither Exhibit 9 nor any other exhibits in this study use data from the California state fund. It is possible that private carrier and state fund data exhibit different patterns.

[e] The incremental Rx share of total medical costs is defined as WC Rx costs within (and only within) a given relative service year and service year combination divided by WC medical costs within (and only within) the same relative service year and service year combination.

[f] The first relative service year consists of all services in the calendar year of the injury. The second relative service year consists of all of the services provided in the calendar year following the year of injury, and so on. For example, if an injury occurs in November 1999, any treatments and prescriptions filled in 1999 are part of the first relative service year, and any treatments in 2000 would be in the second relative service year. Treatments in 2001 would be part of the third relative service year, and so on.

[g] There are two significant reasons why observed values from the 2008 update can differ from this current update.

1. To be included in any study, a claim must pass some validity tests. We have collected two additional years' worth of data for all claims, and it is possible that a claim that passed these tests for the 2008 update no longer passes. The converse can also be true.

2. Exhibit 22 is organized according to when services are performed. As such, services reported more than six months after performed will, upon being reported, cause a restatement of historically observed values. Furthermore, there seems to be a material difference in the reporting lag between Rx and other than Rx dollars paid, with a seemingly higher percentage of Rx dollars being reported with this six-month window. All else being equal, this should lead to a slight downward restatement of the historically observed incremental Rx share of total medical cost from one study to the next.

[h] VIOXX® and BEXTRA® were removed from the market in late 2004 and early 2005, respectively. CELEBREX® contains expanded warning information on its label since early 2005.

## REFERENCES

[1] California Department of Industrial Relations. Division of Workers' Compensation. Official Medical Fee Schedule. Pharmaceuticals Title 8, California Code of Regulations Section 9789.40. http://www.dir.ca.gov/dwc/DWCPropRegs/OMFS_Pharmaceuticals/OMFS_Pharmaceuticals__TestOfRegulationsFinal.pdf

[2] California Department of Industrial Relations. Division of Workers' Compensation. Official Medical Fee Schedule. http://www.dir.ca.gov/dwc/DWCPropRegs/OMFS-insertpagesasadopted.pdf

[3] Ireland, Johan and Alex Swedlow. August 2010. The Cost and Utilization of Compound Drugs, Convenience Packs and Medical Foods in California Workers' Compensation. CWCI. *CWCI Research Notes*. http://www.cwci.org/research.html

[4] Oregon Workers Compensation Division. Oregon Medical Fee and Payment Rules, Oregon Administrative Rules, Chapter 436, Division 009. Administrative Order 08-051. http://www.cbs.state.or.us/external/wcd/policy/rules/docconv_12578/9_08051ub.pdf

[5] Lipton, Barry, Brett King, and Chris Laws. November 2007. Workers Compensation Prescription Drug Study: 2007 Update. NCCI. https://www.ncci.com/documents/research-RX-Study-2007.pdf

[6] Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Expenditure Data, Historical, NHE Web Tables. http://www.cms.hhs.gov/NationalHealthExpendData/downloads/tables.pdf

[7] Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Expenditures 2008 Highlights. http://www.cms.hhs.gov/NationalHealthExpendData/downloads/highlights.pdf

[8] NCCI. 2003. Prescription Drugs—Comparison of Drug Costs and Patterns of Use in Workers Compensation and Group Health Plans. http://www.ncci.com/documents/rx.pdf

[9] Weisser, Cybele. 2006. An Rx for Drug-Price Spikes. *CNN Money*, August 17. http://money.cnn.com/magazines/moneymag/moneymag_archive/2006/09/01/8384390/index.htm

[10] Freudenheim, Milt. 2006. A Windfall From Shifts to Medicare. *The New York Times*, July 18. http://www.nytimes.com/2006/07/18/business/18place.html