



Oregon Workers' Compensation Pharmacy Fee Schedule: Review, Analysis, and Forecasting



*Information Management
Division*

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& Business Services*

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 DEPARTMENT OF
CONSUMER
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Oregon Workers' Compensation Pharmacy Fee Schedule: Review, Analysis, and Forecasting

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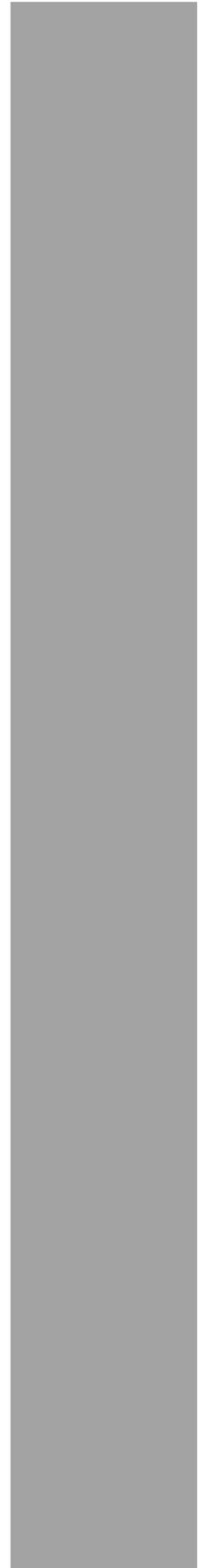
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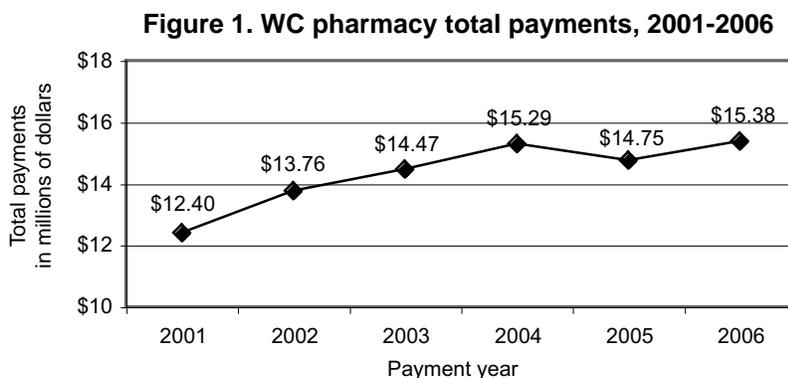
Abstract

Nationwide, public policymakers have attempted to address the rising costs of pharmaceuticals by implementing or strengthening various cost containment methods, such as mandating generic drug usage when available or establishing (revising) pharmaceutical fee schedules. The purpose of this study is to estimate the impact of 2004 changes in the pharmacy fee schedule on total pharmacy payments in Oregon's Workers' Compensation system. Linear regression analysis is employed to estimate the impact of the 2004 fee schedule changes, as well as to develop an econometric model for estimating the effect of any future fee schedule changes.

Based on the regression results, by increasing the dispensing fee from \$6.70 to \$8.70 and reducing the percent of average wholesale price (AWP) paid from 95 percent to 88 percent in April 2004, the Oregon workers' compensation (WC) system experienced an estimated \$295,300 (2 percent) reduction in total pharmacy payments in 2005. The study also found that fee schedule changes affected payments of generic and brand-name drugs disproportionately. A change in the dispensing fee had a greater impact on generic drug payments than brand-name drug payments, while a change in the percent of AWP paid had a greater impact on brand-name drug payments. Additional research is necessary to assess the effect of fee schedule changes on dispensing patterns, and to determine the optimal pharmacy fee schedule needed to control the costs, while maintaining the accessibility of medications for injured workers.

Background

Pharmacy payments in Oregon's WC system increased at an annual growth rate of 6.8 percent from 2001-2004. In 2005, however, total pharmacy payments experienced a negative growth rate, decreasing by about 3.5 percent. In 2006, payments increased by 4.2 percent. (Figure 1).

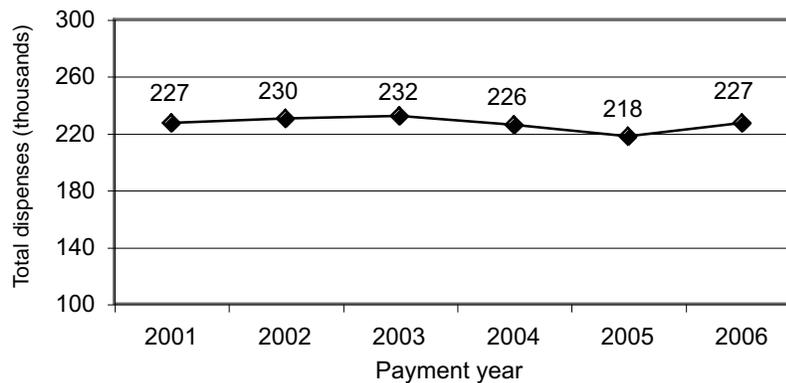


OREGON WORKERS' COMPENSATION PHARMACY FEE SCHEDULE

In 2004, there were several changes in Oregon's WC pharmacy fee schedule and the pharmaceuticals' market that may have contributed to the 2005 decline in pharmacy payments:

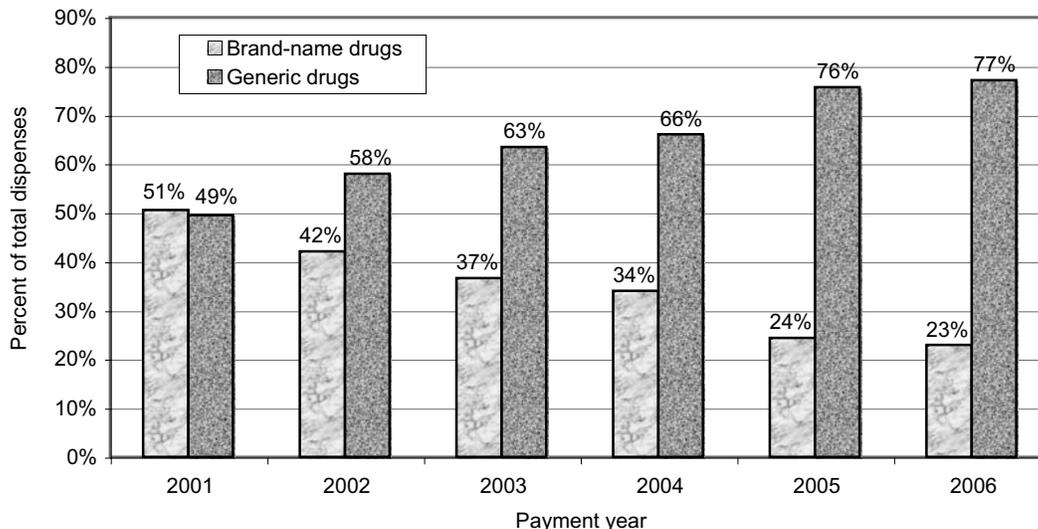
- Oregon changed its pharmacy fee schedule in April 2004. The percentage of AWP was decreased by 7 percent from 95 percent to 88 percent. At the same time, the dispensing fee was increased by \$2, from \$6.70 to \$8.70. In Oregon, the maximum allowable payment is determined by the fee schedule, thus changes in the fee schedule will directly impact total payments.
- The total number of drug dispenses decreased (Figure 2). A decrease in total dispenses will directly impact total payments, since they are linearly related: total payments = total dispenses x average payment.

Figure 2. WC pharmacy total dispenses, 2001-2006



- The proportion of generic drug dispenses increased (Figure 3), due to increased substitution of brand-name drug dispenses with available generics. For instance, generic substitutes for two top brand-name drugs by payments, Oxycontin (March 2004) and Neurontin (September 2003), became available, which may have contributed to the trend. Since, in general, generic drugs are less expensive than their brand-name counterparts, an increased volume of generic dispenses substituting brand-name dispenses will reduce total payments.
- Other market changes, such as changes in contract terms between insurers and Pharmacy Benefit Managers (PBM).

Figure 3. Distribution of total dispenses by generic and brand drug categories, 2001-2006



While all of these factors may have contributed to the decline in total pharmacy payments in 2005, the focus of this paper is to assess how changes in the fee schedule contributed to the decline in total pharmacy payments.

Data sources and econometric model

Insurer medical payment data reported to the department under Bulletin Number 220 (http://www.cbs.state.or.us/external/wcd/communications/ins_list_medbilling.html) was used to extract pharmacy payments for 2003-2006. The information regarding drug prices and classifications was obtained from Medi-Span's Master Drug Data Base (MDDDB).

The following linear regression models¹ were estimated for generic and brand-name drugs:

Generic Drugs:
$$\log(GP) = \alpha + \beta_1 \cdot \log(df) + \beta_2 \cdot \log(awp_p) + \beta_3 \cdot \log(units) + \beta_4 \cdot DSAIF + \epsilon \tag{1}$$

Brand-name Drugs:
$$\log(BP) = \alpha + \beta_1 \cdot \log(df) + \beta_2 \cdot \log(awp_p) + \beta_3 \cdot \log(units) + \beta_4 \cdot DGA + \beta_5 \cdot DSAIF + \epsilon \tag{2}$$

where variables are:

- GP** — Generic drug prescription payment
- BP** — Brand-name drug prescription payment
- df** — Dispensing fee
- awp_p** — AWP • (percent of AWP)
- units** — Number of pills in the prescription
- DGA** — A dummy variable that is equal to one if brand-name drug has an available generic substitute and is equal to zero otherwise
- DSAIF** — A dummy variable that captures the differences in payments between State Accident Insurance Fund (SAIF) and other insurers

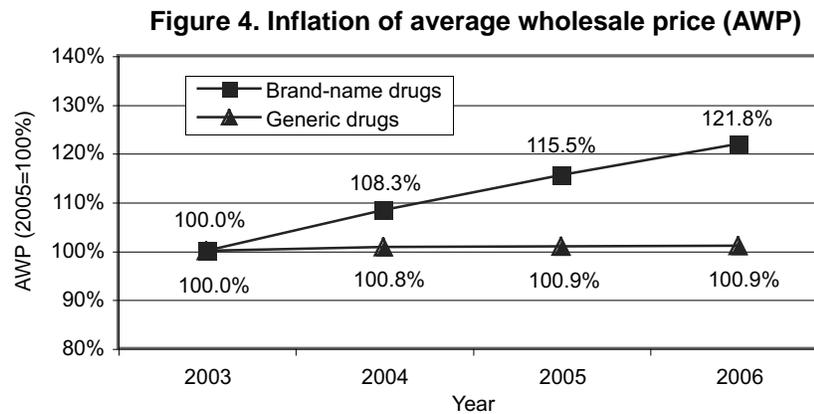
In the model, the impact of changes in the percent of AWP paid is mixed with the changes in AWP, because the model estimates the impact of the product of the two - awp_p. Thus, in order to assess the impact of changes in the percent of AWP paid, log(percent of AWP), the annual growth rate of AWP, log(AWP), must be subtracted from the total impact of the two:

$$\log(\text{percent of AWP}) = \log(awp_p) - \log(AWP) \tag{3}$$

¹Oxycontin: Cost Containment Policies and Their Effect on the Costs (DCBS, 2007) study presented at April 20-21 Workers Compensation Research Group Meeting was used as a basis for this model.

OREGON WORKERS' COMPENSATION PHARMACY FEE SCHEDULE

For 2003-2006, the AWP for generic drugs remained fairly constant, showing a 0.3 percent annual growth rate, while the AWP for brand-name drugs increased at a 7.3 percent annual growth rate (Figure 4).



Results

The sample used in the regression analysis consists of 150 common generic and brand drug names (the list of drugs is provided in Attachment A), which accounted for more than 78 percent of 2006 prescription drug payments. A total of 166,391 observations were used for estimating the generic drug equation and 54,747 observations were used for estimating the brand drug equation.

Results indicate that a 1 percent decrease in awp_p will decrease the average brand-name drug payments by 0.97 percent and average generic drug payments by 0.85 percent (Appendix B). The coefficient is higher for brand drugs showing that they are more sensitive to changes in awp_p compared to generic drugs.

A decrease in the dispense fee by 1 percent will decrease average generic drug payments by 0.42 percent (Appendix B). Changes in the dispensing fee will not have a significant impact on the average brand-name drug payments, since the estimated coefficient is not significantly different from zero.

The percentage change in total pharmacy payments is estimated as follows:

$$\log(TP) = \log(N) + SG \cdot \log(GP) + SB \cdot \log(BP), \quad (4)$$

where $\log(TP)$ is percentage change in total payments, $\log(N)$ is percentage change in total number of dispenses, SG and SB are shares of generic and brand-name drug payments in total payments, respectively (see Appendix D for derivation). For simplicity, $\log(N)$ is assumed to be equal to zero, meaning the number of total dispenses will not change.

Based on the regression results, by increasing the dispensing fee from \$6.70 to \$8.70 and reducing percent of AWP paid from 95 percent to 88 percent in April 2004, the Oregon's WC system experienced an estimated \$295,300 reduction in total pharmacy payments, which is 2 percent of the 2004 total pharmacy payments (Appendix C). However, this explains only 25 percent of the reduction in total pharmacy payments in 2005. Changes in the total dispenses, changes in the distributions of total pharmacy payments and dispenses by generic and brand-name drugs, and other changes in the pharmaceuticals' market, discussed earlier in the background section, may have contributed to the remaining 75 percent of reduction in total pharmacy payments in 2005.

OREGON WORKERS' COMPENSATION PHARMACY FEE SCHEDULE

The following matrix (Table 1) shows the percentage change in total payments for various combinations of the dispensing fee and percent of AWP. If the fee schedule remains the same (see the top left corner of the matrix), the model predicts that total pharmacy payments will increase at a 3.5 percent growth rate. This table clearly demonstrates that changes in the percent of AWP paid and the dispensing fee affect generic and brand-name drug payments disproportionately; a similar change in the fee schedule will impact generic drug payments at a greater proportion than brand-name drug payments. Having separate fee schedules for generic and brand-name drugs would be one way to address this issue.

Table 1. Estimated changes in total payments

		Dispensing fee							
		\$8.70	\$7.00	\$6.00	\$5.00	\$4.00	\$3.00		
Percent of AWP	88%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	Brand	$S_B \cdot \log BP$
		0.1%	-4.2%	-6.8%	-9.4%	-11.9%	-14.5%	Generic	$S_G \cdot \log GP$
		3.5%	-0.9%	-3.5%	-6.0%	-8.6%	-11.2%	Total	$\log TP$
	85%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	Brand	$S_B \cdot \log BP$
		-1.4%	-5.8%	-8.3%	-10.9%	-13.4%	-16.0%	Generic	$S_G \cdot \log GP$
		0.4%	-4.0%	-6.6%	-9.1%	-11.7%	-14.2%	Total	$\log TP$
	83%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	Brand	$S_B \cdot \log BP$
		-2.4%	-6.8%	-9.3%	-11.9%	-14.5%	-17.0%	Generic	$S_G \cdot \log GP$
		-1.7%	-6.0%	-8.6%	-11.2%	-13.7%	-16.3%	Total	$\log TP$
	80%	-0.8%	-0.8%	-0.8%	-0.8%	-0.8%	-0.8%	Brand	$S_B \cdot \log BP$
		-4.0%	-8.3%	-10.9%	-13.4%	-16.0%	-18.6%	Generic	$S_G \cdot \log GP$
		-4.8%	-9.1%	-11.7%	-14.3%	-16.8%	-19.4%	Total	$\log TP$

Notes: Current fee schedule is used as a baseline for calculating percentage changes. Percentage change in total payments is estimated using equation (4) and assuming $\log(N)=0$

Conclusions

- April 2004 changes in the percent of AWP paid and the dispensing fee in Oregon, reduced total pharmacy payments by about 2 percent, accounting for 25 percent of the total estimated reduction in 2005 payments.
- Changes in the dispensing fee have a greater impact on generic drug payments and changes in the percent of AWP have a greater impact on brand-name drug payments.
- A tiered fee schedule, one that prescribes the percent of AWP and the amount of the dispensing fee based on whether brand-name or generic drug is dispensed, provides better cost containment opportunities to WC than a non-tiered fee schedule.

Limitations and future work

In this publication, changes in total dispenses were assumed to be outside of the model, meaning that changes in the fee schedule will not affect the total dispenses. For the future, the model might benefit if changes in total dispenses are estimated as well.

This model forecasts changes in total payments due to the changes in the fee schedule. However, it does not provide any information regarding what combination of the dispensing fee and percent of AWP will present maximum benefit to the system. Additional research is required to determine the minimum fee schedule level that will not confine the accessibility of prescription medications to injured workers.

Appendix A:

List of Drugs Used in the Regression Analysis

<p>A</p> <p>ACETAMINOPHEN/OXYCODONE ACTIQ ADVIL ALEVE ALL DAY PAIN RELIEF ALL DAY RELIEF AMBIEN AMBIEN CR ANAPROX DS ANEXSIA AVINZA</p> <p>B</p> <p>BANCAP-HC BUDEPRION SR BUPROPION HCL BUPROPION HCL SR</p> <p>C</p> <p>CARISOPRODOL CELEBREX CO-GESIC COMBUNOX CYCLOBENZAPRINE HCL CYMBALTA</p> <p>D</p> <p>DARVOCET A500 DARVOCET-N 100 DARVOCET-N 50 DARVON COMPOUND-65 DURAGESIC</p> <p>E</p> <p>EC-NAPROSYN EFFEXOR EFFEXOR XR ELA-MAX ENDOCET ENDODAN ETH-OXYDOSE</p> <p>F</p> <p>FENTANYL FENTANYL CITRATE FENTANYL CITRATE ORAL TRANSMUCOSAL FLEXERIL FP IBUPROFEN</p> <p>G</p> <p>GABAPENTIN</p> <p>H</p> <p>HYDROCODONE BITARTRATE/ACETAMINOPHEN HYDROCODONE BITARTRATE/APAP HYDROCODONE-ACETAMINOPHEN HYDROCODONE-APAP HYDROCODONE/ACETAMINOPHEN HYDROCODONE/ACETAMINOPHEN- HS HYDROCODONE/APAP HYDROCODONE/IBUPROFEN</p>	<p>I</p> <p>IBU IBU-200 IBUPROFEN</p> <p>K</p> <p>KADIAN</p> <p>L</p> <p>LAMICTAL LAMICTAL CHEWABLE DISPERSIBLE LEXAPRO LIDAMANTLE LIDOCAINE LIDOCAINE HCL LIDOCAINE HCL JELLY LIDODERM LMX 4 LORCET 10/650 LORCET PLUS LORTAB LORTAB 10 LORTAB 5 LORTAB 7.5 LUNESTA LYRICA</p> <p>M</p> <p>MARINOL MAXIDONE MELOXICAM MOBIC MORPHINE SULFATE MORPHINE SULFATE ADD-VANTAGE MORPHINE SULFATE CR MORPHINE SULFATE ER MOTRIN MOTRIN IB MS CONTIN MSIR</p> <p>N</p> <p>NABUMETONE NAPRELAN NAPROSYN NAPROXEN NAPROXEN DR NAPROXEN SODIUM NEURONTIN NEXIUM NORCO</p> <p>O</p> <p>OMEPRAZOLE ORAMORPH SR OXYCODONE HCL OXYCODONE HCL CR OXYCODONE HCL ER OXYCODONE-APAP OXYCODONE/ACETAMINOPHEN OXYCODONE/APAP OXYCODONE/ASPIRIN OXYCONTIN OXYFAST OXYIR</p>	<p>P</p> <p>PAROXETINE HCL PAXIL PAXIL CR PERCOCET PERCODAN PREVACID PREVACID SOLUTAB PRILOSEC PRILOSEC OTC PROPOXACET-N PROPOXYPHENE- N/ACETAMINOPHEN PROPOXYPHENE/ACETAMINOPHEN PROTONIX PROVIGIL</p> <p>R</p> <p>RA IBUPROFEN RA NAPROXEN SODIUM RELAFEN RMS ROXANOL ROXICET ROXICODONE ROXICODONE INTENSOL</p> <p>S</p> <p>SERTRALINE HCL SKELAXIN SM IBUPROFEN SM NAPROXEN SODIUM SOBA IBUPROFEN SOMA</p> <p>T</p> <p>TIZANIDINE HCL TOPAMAX TOPAMAX SPRINKLE TRAMADOL HCL TYLOX</p> <p>U</p> <p>ULTRAM ULTRAM ER</p> <p>V</p> <p>VENLAFAXINE HCL VICODIN VICODIN ES VICODIN HP VICOPROFEN</p> <p>W</p> <p>WELLBUTRIN WELLBUTRIN SR WELLBUTRIN XL</p> <p>X</p> <p>XYLOCAINE JELLY</p> <p>Z</p> <p>ZANAFLEX ZOFRAN ZOFRAN ODT ZOLOFT ZYDONE</p>
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Appendix B: Regression Results

Generic Drug Model

Dependent Variable	log(GP)
Number of Observations	166,391
Regression R ²	0.63
F-value	69,428

Variable name	Parameter estimate	t-value	Pr > t
Intercept	1.13977	22.81	<.0001
log(df)	0.42014	17.99	<.0001
log(awp_p)	0.84664	485.78	<.0001
log(units)	-0.3216	-101.24	<.0001
DSAIF	-0.45126	-120.36	<.0001

Brand-name Drug Model

Dependent Variable	log(BP)
Number of Observations	54,747
Regression R ²	0.74
F-value	30,756

Variable name	Parameter estimate	t-value	Pr > t
Intercept	0.96496	15.4	<.0001
log(df)	-0.01273	-0.43	0.6642 *
log(awp_p)	0.9686	354.89	<.0001
log(units)	-0.18768	-48.34	<.0001
DGA	0.05402	12.81	<.0001
DSAIF	-0.02621	-4.99	<.0001

* On 95 percent confidence level, the parameter estimate for log(df) is not significantly different from zero.

In general, if there are no changes to the system, the models predict average expected inflation rate of 7.01 percent for brand-name drug payments and 0.25 percent for generic drug payments, based on the expected inflation rates of 7.3 percent for brand-name drugs and 0.3 percent for generic drugs.

Appendix C:

Impact of 2004 Fee Schedule Changes on System Costs

Total pharmacy payments in millions of dollars (TP) are forecasted based on the regression results from Appendix B for two scenarios: 1) 2004-2008 payments if there were no changes to the system in 2004 and 2) 2007-2008 payments following the 2004 changes in the system. For the first scenario, the forecasting model uses total pharmacy payments in 2003 (\$14,473,950) and projected distributions of total pharmacy payments by brand-name and generic drugs for 2004-2008 if there were no changes to the system (Chart C2). For the second scenario, the model uses total pharmacy payments in 2006 (\$15,375,950) and projected distributions of total pharmacy payments by brand-name and generic drugs for 2007-2008, after the 2004 changes in the system.

Figure C1. Pre- and post-reform pharmacy payment projections

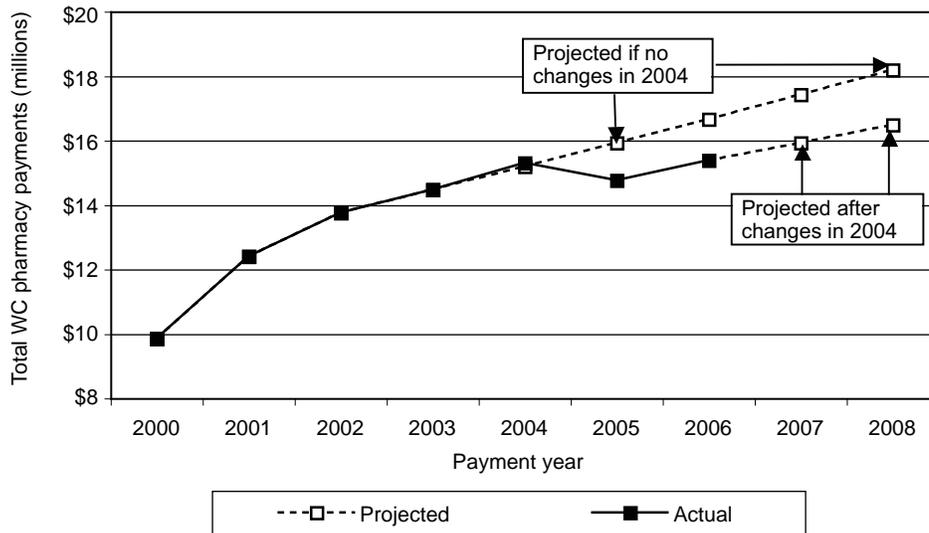
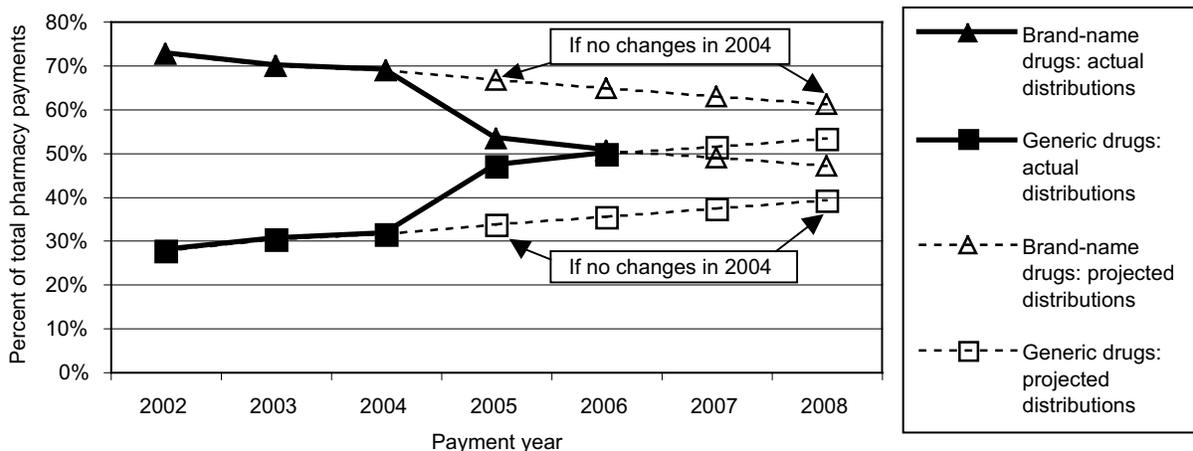


Figure C2. Pre- and post-reform pharmacy payment distributions by drug type



OREGON WORKERS' COMPENSATION PHARMACY FEE SCHEDULE

The impact of the 2004 fee schedule changes on total generic and brand-name drug payments in 2005 are estimated using the elasticities of generic and brand-name drug payments with respect to percent of AWP and the dispensing fee, which are the corresponding parameter estimates from regression results (Appendix B):

$$\log GP = 0.42 * ((8.70 - 6.70) / 6.70) * 100\% + 0.85 * (0.003 + (88 - 95) / 95) * 100\% = 6.56\%$$

$$\log BP = 0.97 * (0.073 + (88 - 95) / 95) * 100\% = -0.07\%$$

The percentage change in the 2005 total payments due to the changes in the fee schedule is estimated as a weighted average of changes in the generic and brand-name drug payments, using forecasted 2005 shares in total payments as weights:

$$\log TP = 0.335 * 6.56\% + 0.665 * (-0.07\%) = 2.15\% \text{ or}$$

$$TP = \$15,915,250 - \$15,290,950 * 1.0215 = \$295,300$$

In 2005, the actual total pharmacy payments were \$1,164,900 lower than the forecasted payments (Table C1): \$295,300 or 25 percent of that amount is attributed to the 2004 changes in the dispensing fee and percent of AWP, the remaining 75 percent may be attributable to the changes in the dispensing patterns and other changes in the pharmaceuticals' market.

Table C1. Estimated system savings from 2004 fee schedule changes

Year	Actual payments	Forecasted, if 2004 changes were not implemented	Difference between actual and forecasted amounts	Estimated contribution from changes in the fee schedule
2004	\$15,290,950			
2005	\$14,750,350	\$15,915,250	-\$1,164,900	-\$295,300

Appendix D: Derivation of log(TP)

Total pharmacy payments (TP) is a sum of generic and brand-name drug total payments, TGP and TBP, respectively:

$$TP = TGP + TBP \tag{b1}$$

Where,

$$TP = N \cdot ATP, \quad TGP = N_G \cdot AGP, \quad \text{and} \quad TBP = N_B \cdot ABP$$

Thus,

$$\log(TP) = \log N + \log(ATP), \tag{b2}$$

where N is a number of total prescriptions, ATP is an average payment per prescription, N_G is a number of generic prescriptions, AGP is an average payment per generic prescription, N_B is a number of brand-name prescriptions, and ABP is an average payment per brand-name prescription.

By substituting values for TP, TGP, and TBP into (b1) and dividing both sides of equation by N, one obtains:

$$ATP = \frac{N_G}{N} \cdot AGP + \frac{N_B}{N} \cdot ABP \tag{b3}$$

Hence,

$$\begin{aligned} \log ATP &= \log\left(\frac{N_G}{N} \cdot AGP + \frac{N_B}{N} \cdot ABP\right) \\ &= \frac{d\left(\frac{N_G}{N} \cdot AGP + \frac{N_B}{N} \cdot ABP\right)}{\frac{N_G}{N} \cdot AGP + \frac{N_B}{N} \cdot ABP} \\ &= \frac{\frac{N_G}{N} \cdot dAGP + \frac{N_B}{N} \cdot dABP}{\frac{N_G}{N} \cdot AGP + \frac{N_B}{N} \cdot ABP} \end{aligned}$$

$$\begin{aligned}
 &= \frac{dAGP}{AGP + \frac{N_B}{N_G} \cdot ABP} + \frac{dABP}{ABP + \frac{N_G}{N_B} \cdot AGP} \\
 &= \frac{\frac{dAGP}{AGP}}{1 + \frac{N_B \cdot ABP}{N_G \cdot AGP}} + \frac{\frac{dABP}{ABP}}{1 + \frac{N_G \cdot AGP}{N_B \cdot ABP}} \\
 &= \frac{\frac{\log AGP}{N_G \cdot AGP + N_B \cdot ABP}}{\frac{N_G \cdot AGP}{N_G \cdot AGP + N_B \cdot ABP}} + \frac{\frac{\log ABP}{N_B \cdot ABP + N_G \cdot AGP}}{\frac{N_B \cdot ABP}{N_B \cdot ABP + N_G \cdot AGP}} \\
 &= \frac{N_G \cdot AGP}{N_B \cdot ABP + N_G \cdot AGP} \cdot \log AGP + \frac{N_B \cdot ABP}{N_G \cdot AGP + N_B \cdot ABP} \cdot \log ABP,
 \end{aligned}$$

$$\text{where } S_G = \frac{N_G \cdot AGP}{N_G \cdot AGP + N_B \cdot ABP} \quad \text{and} \quad S_B = \frac{N_B \cdot ABP}{N_B \cdot ABP + N_G \cdot AGP}$$

are shares of generic and brand-name drug payments in total pharmacy payments, respectively. Thus,

$$\log(ATP) = S_G \cdot \log(AGP) + S_B \cdot \log(ABP) \tag{b4}$$

By substituting expression (b4) into (b2), the following is obtained:

$$\log(TP) = \log(N) + S_G \cdot \log(AGP) + S_B \cdot \log(ABP), \tag{b5}$$

Where, $\log(AGP)$ and $\log(ABP)$ are substituted with the estimated $\log(GP)$ and $\log(BP)$ from the regression models:

$$\log(TP) = \log(N) + S_G \cdot \log(GP) + S_B \cdot \log(BP) \tag{b5}$$



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