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Workers' Compensation Research and Evaluation Group

Health Care Cost and Utilization in the Texas Workers' Compensation System 1998-2012

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MEDICAL COST
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This report is available at www.tdi.texas.gov/wc/regulation/roc. Information in this report can be obtained in alternative formats by contacting the Texas Department of Insurance. Send emails to WCResearch@tdi.texas.gov.

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Executive Summary

This report presents fundamental metrics and indicators of the health care cost and utilization in the Texas workers' compensation system since 1998. The primary purpose of this report is to provide system participants with a set of comprehensive, general and consistent data and metrics for monitoring and analyzing the trends in health care cost and utilization.

The medical data used in this report consists of bills submitted by health care providers to the insurance carrier, covering professional, hospital/institutional, dental, and pharmacy services, updated as of September 2013. Claims are grouped as either 'lost-time' or 'medical-only' claims. Lost-time claims have more than seven days of lost time from work because of a work-related injury or illness and receive medical as well as income benefits. Lost-time claims are roughly equivalent to permanent partial disability (PPD) claims reported by many states. Medical-only claims receive medical benefits but not income benefits, and have seven days or less of lost time.

Overview: Total Health Care Cost and Utilization

- Health care costs accounted for 68 percent of the total benefits in 2011 service year in the Texas workers' compensation system. Income benefits accounted for the remaining 32 percent.
- In 2012, 95 percent of all claims received one or more professional services; 30 percent received hospital/institutional services; and 46 percent received pharmacy services.
- The number of claims in 2012 decreased by one percent from 2011, and by 32 percent from 1998.
- Total health care cost in 2012 was \$1.05 billion, slightly down from \$1.07 billion in 2011. Total professional cost decreased by one percent from 2011, a decrease of seven percent since 1998. Hospital cost in 2012 decreased by four percent from 2011, but increased by 17 percent since 1998. Total cost for pharmacy services decreased by eight percent since 2011 while decreasing by two percent since 2005.
- The average cost per claim in 2012 increased by 0.5 percent from 2011 for professional services, and by 1.4 percent for hospital services. Average cost per claim for pharmacy services decreased by 3.2 percent from 2011. Since 1998, professional and hospital costs per claim increased by 39 percent and 85 percent, respectively. Pharmacy cost per claim increased by 13 percent since 2005.
- For professional services in 2012 service year, lost-time claims comprised 40 percent of the claims but accounted for 77 percent of the total cost. Since 1998, the total cost for lost-time claims decreased by six percent while the total cost for medical-only claims decreased by nine percent. While total costs decreased, the average cost per claim

increased since 1998 by 34 percent for lost-time claims, and by 39 percent for medical-only claims.

- For hospital/institutional services, the total cost for lost-time claims increased by 29 percent since 1998, with the average cost increasing by 100 percent. For medical-only claims, the total cost decreased by 29 percent with the average cost increasing by 15 percent.
- Adjusted for inflation, the combined total of professional and hospital costs decreased by 32 percent from 1998 to 2012. In current prices without inflation adjustment, the combined total increased by one percent. Since 2005, the total cost for health care services including pharmacy increased by 10 percent in unadjusted prices, but decreased by seven percent in inflation-adjusted prices.
- Total health care costs in the workers' compensation system were equivalent to about 0.16 percent of the Texas gross domestic product in 1998, which decreased to just 0.09 percent in 2012.

Professional Cost and Utilization

- Between 92 percent and 98 percent of all claims received at least one professional service in each service year. This percentage was the lowest during the years from 2005 to 2009.
- Changes in the cost trend primarily occurred between 2002 and 2008 coinciding with the changes in the 2003 professional services fee guideline. Longer-term factors that affected costs were the changes in the number of claims and the level of service utilization.
- The number of medical-only claims decreased by 35 percent since 1998 but the majority of this decline occurred prior to 2005. The number of lost-time claims actually increased by eight percent between 1998 and 2002, and then continued to decrease, resulting in the overall decrease by 30 percent since 1998.
- About 77 percent of professional costs were for lost-time claims in 2012 while they accounted for 40 percent of all claims. The total cost continued to increase since 2007 although the number of lost-time claims decreased.
- The number of visits per claim to health care providers peaked in 2003 and decreased since then. Lost-time claims had about three and half times more visits per claim than medical-only claims in most years because of their more serious injuries and longer service period. The number of services per visit as a measure of utilization intensity was relatively similar across claim types and service years at about 3.5 services per visit.
- In terms of provider type, the number of claims receiving services from chiropractors declined from 13 percent of all claims in 2005 to seven percent in 2012. The number of claims receiving services from physical/occupational therapists increased from 19 percent in 2005 to 22 percent in 2012. The average cost per claim for ambulatory surgical center providers increased by 107 percent while the average cost for chiropractors decreased by 16 percent.

- For lost-time claims, Physical Medicine and Spinal Surgery were the most expensive service groups in most years. Total costs for IR Exam and Report services and DMEPOS services grew rapidly by 87 percent and 60 percent, respectively. For medical-only claims, E/M services were the most costly service. Costs for Spinal Surgery and Physical Medicine services decreased by more than 70 percent. The share of claims receiving DMEPOS, Diag/Path/Lab services, and IR Exam & Report services continued to increase.
- The top 20 services accounted for 52 percent of the total cumulative professional cost from 2005 to 2012. Considering the price per individual service, the price for E/M services increased continually since 2003. That for low back disc surgery decreased substantially in 2003 but increased moderately since 2008. The average price per service increased significantly for durable medical equipment services. Most other services showed a moderately increasing price trend.

Hospital/Institutional Cost and Utilization

- In 2012, 30 percent of all claims received at least one hospital or institutional service.
- Hospital/institutional bills included payments for services in hospital inpatient, hospital outpatient, skilled nursing facilities, home health care and other institutions. But 95 percent of these payments were for hospital services in 2012.
- The number of claims receiving hospital/institutional services decreased by 37 percent since 1998. The total cost increased by 17 percent from 1998 to 2012, but it showed a great deal of fluctuation: costs increased by 35 percent until 2002, then decreased by 40 percent by 2005, and again increased by 44 percent by 2012.
- Lost-time claims accounted for about 47 percent of all claims receiving hospital/institutional services in 2012 service year, but they accounted for 87 percent of the total hospital/institutional cost.
- In 2012, 96 percent of lost-time claims received hospital outpatient services while only 13 percent received inpatient services. But hospital inpatient services accounted for 48 percent of the total cost and hospital outpatient services for 46 percent.

Dental Cost and Utilization

- Dental services accounted for 0.4 percent of all health care costs in 2012, a slight increase from 0.3 percent in 2011.
- Most common services were crown, implant, and root canal.

Pharmacy Cost and Utilization

- In 2012, 46 percent of those who received health care services received pharmacy services. Since 2005, lost-time and medical-only claims receiving pharmacy services decreased by 16 percent and by 11 percent, respectively.

- In 2012, 53 percent of pharmacy service claims were lost-time claims, but they accounted for 88 percent of the total cost.
- In 2012, 63 percent of the total pharmacy cost was for legacy claims with four or more years of maturity. New injuries accounted for 20 percent of the total cost in 2012.
- For lost-time claims, the most frequently prescribed and costly drug groups were Analgesics – Opioid and Central Nervous System drug groups. Central Nervous System drugs (comprising anticonvulsants, anti-anxiety agents, anti-depressants and hypnotics) had the highest average cost per claim among lost-time claims.
- For medical-only claims, the Analgesics – Anti-inflammatory drug group (including NSAID) was the most common and most costly drug group.
- Generic prescriptions accounted for about half of the total pharmacy cost since 2005. The average cost per prescription for brand drugs was four times higher than that of generic drugs. For older claims with more than three years of maturity, generic drugs accounted for 75 percent of prescriptions and 47 percent of the total cost in 2012.
- The use of N-drugs decreased substantially in 2012: in terms of total cost, N-drugs accounted for 22 percent of all costs for lost-time claims, compared to 29 percent in 2011. For medical-only claims, it decreased from 21 percent in 2011 to 14 percent in 2012. The cost share of N-drugs in the total cost was the highest for the Analgesics – Opioid drug group at 32 percent to 40 percent of the total cost since 2005.

Summary: Trends in Changing Cost Components

- For lost-time claims, the average cost per claim for professional services increased by 37 percent from 1998 to 2012. Adjusted for inflation, the average cost per claim decreased by eight percent. The number of claims and the level of utilization all decreased, resulting in the overall decrease in the total cost by four percent. If we adjust for inflation, the total cost decreased by 35 percent.
- The main factor in the decrease in total costs was the large decline in the number of claims. The average cost per claim increased substantially because of increases in cost per service and in utilization in some services. But the total cost decreased despite the increasing cost per service because the number of claims decreased substantially.
- Cost trends are similar for lost-time and medical-only claims, but medical-only claims showed a higher rate of decrease in the number of claims and a lower rate of decrease in utilization than lost-time claims.



1. Introduction and Methodological Notes

This report presents fundamental metrics and indicators of health care cost and utilization in the Texas workers' compensation (WC) system since 1998. Health care, consisting of professional, hospital/institutional, dental and pharmacy services, is one of the major benefits provided by the WC system for injured employees. Injured employees receive health care benefits that pay for appropriate and necessary medical care to treat work-related injuries or illnesses without a limit in benefit amount or duration. Because there are no limits to medical benefits, delivered without copayments, deductibles, and other burdens on the part of the patients, payers as well as the legislators and the regulators of the workers' compensation insurance pay close attention to the changes and trends in health care costs and service utilization.

The primary purpose of this report is to provide system participants with a set of comprehensive, general and consistent data and metrics for monitoring and analyzing the trends in health care cost and utilization. In addition to summarizing major cost and utilization statistics, this report also provides drill-down analyses by claim type, provider type, service type, maturity, facility type, and drug type. For other issues on WC health care and income benefits, refer to other reports by the Texas Department of Insurance, WC Research and Evaluation Group (REG) that can be found at the REG's reports page (www.tdi.texas.gov/reports/report14.html).

Data Sources

The medical data underlying REG's health care cost and utilization studies is comprised primarily of bills submitted by the service providers to the insurance carrier for payment. This data is in turn transmitted to the Texas Department of Insurance, Division of Workers' Compensation (TDI-DWC) along with payment amounts and any denial or payment reduction codes. Medical data underwent a major change in 2005 when data collection transitioned to EDI standards from a tape-submission system. The number of bills collected for 2004 service year, the last service year of the pre-EDI, was initially unusually low, but the current data for the pre-EDI period was extensively updated in 2010. In addition, some data for the 2005 service year, being the first year of EDI implementation, may not be as reliable as those of later years. This was especially true for dental service data.

Medical data collected by TDI-DWC encompass only direct payments to health care providers and hospitals/institutions. Other costs such as bill and utilization reviews, dispute resolution expenses and costs paid to third parties are not included. These bills, however, include information about bill review actions taken by the insurance carriers such as payment decisions and payment amounts. Using this information, bills for services deemed not compensable are deleted from both cost and utilization analyses.

Claim Types

All claims are classified as either ‘lost-time’ claims if they receive medical as well as income benefits, or ‘medical-only’ claims if they receive only medical benefits without any income benefits. Income benefits include short-term temporary as well as long-term disability payments as defined by TDI-DWC (see www.tdi.texas.gov/wc/employee/incomeben.html). Most claims that receive income benefits are those that have more than seven days of lost time away from work. This group is roughly equivalent to ‘permanent partial disability’ claims used by other states’ workers’ compensation reports. ‘Medical-only’ type claims may have no lost time or a maximum of seven days of lost time.

Service Year, Injury Year and Maturity

Cost and utilization analyses are presented in both service year and injury year. Service year statistics account for all services and payments in a given calendar year to all claims regardless of their injury date. In comparison, injury year statistics are organized by the year of injury, and cumulatively account for all payments up to a set period of maturity. For example, 2012 injury year data with six months maturity will cover claims with injuries that occurred in 2012, with services rendered within six months from the date of injury for each claim. Service dates will therefore span from January 1, 2012, to June 30, 2013.

Economic and accounting cost analyses are best presented in the service year format since it accounts for all costs for all claims in the system within a given calendar year. An injury year measure, on the other hand, is concerned only with new injuries presenting a partial picture of the costs involved, but it offers consistent sets of data that are suited for developing cost trends and setting insurance rates. When appropriate, we show cost development patterns using 6 months, 12 months and 24 months of maturity. More than 80 percent of total professional costs are incurred within 24 months post injury. To account for long-tail effects of severe injuries on health care costs, some tables show separate maturity groups that include four years or more of maturity. The longer maturity is especially necessary for pharmacy services for which more than 60 percent of total costs are for the claims with four years or longer maturity.

Measuring Service Utilization

When evaluating long-term patterns and trends in health care service utilization, a consistent and proper unit of service must be chosen to reflect the differences in frequency and intensity of services. The basic units for utilization analysis are based on straightforward measures: the number of visits to a health care provider as a measure of service frequency, and the number of services provided in one visit as a measure of service intensity. While the number of visits is an uncomplicated measurement, the number of services will depend on the way service bills are submitted by the providers. A more detailed discussion about utilization metrics is presented in the Appendix.

2. Overview: Total Health Care Cost and Utilization

In this section, we present an overall view of the total and average health care costs by type of provider (bill type) and claim type. Remaining sections focus on one particular provider bill type such as professional, hospital, dental, and pharmacy bills.

We begin by comparing health care costs with income (or indemnity) benefit costs, which, together, make up the whole benefits paid to injured employees and health care providers in the workers' compensation system. At the end of this section, we also present discussions about the effect of price inflation on cost measures and the share of health care costs in the general economy.

Medical and Income Benefits

Medical costs, which combine professional and hospital/institutional costs, increased rapidly in the late 1990s into the early 2000s. The share of medical costs in total medical and income benefits in the Texas workers' compensation system steadily increased from 56 percent in 1998 to 68 percent in 2011 (see Table 2.1). The combined professional and hospital costs grew by 29 percent from 1998 to 2002. These increases provided compelling rationale for the subsequent workers' compensation reforms by the Texas legislature. Since 2002, the total cost of both health care and income benefits has declined primarily as a result of these reforms. The decline was more prominent in income benefits than in health care benefits which increased slightly in recent years.

Table 2.1: Medical and Income Benefits, by Service Year (Thousand Dollars)

Service Year	Medical Benefits	Income Benefits	Medical Benefit Share
1998	\$1,043,709	\$816,338	56.11%
1999	\$1,158,317	\$802,169	59.08%
2000	\$1,037,977	\$890,044	53.84%
2001	\$1,167,943	\$919,979	55.94%
2002	\$1,348,630	\$880,152	60.51%
2003	\$1,241,087	\$758,519	62.07%
2004	\$980,048	\$638,361	60.56%
2005	\$949,960	\$575,292	62.28%
2006	\$906,732	\$517,572	63.66%
2007	\$919,906	\$533,884	63.28%
2008	\$934,810	\$581,827	61.64%
2009	\$955,003	\$542,672	63.77%
2010	\$975,841	\$532,652	64.69%
2011	\$1,074,338	\$508,380	67.88%
2012	\$1,051,567		

Notes: Medical benefits include professional and hospital benefits only. 2011 income benefit figures are preliminary, and 2012 data is not available.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Costs by Bill Type

Since data availability varies among different types of bills, a more consistent analysis may require separating health care payments by bill type. Texas workers' compensation medical bills are collected as four separate data bases, each consisting of bills for professional, hospital/institutional, dental and pharmacy services. Since each bill type database is separate from each other, some claims may have bills only in some databases and not in others. When all four databases are combined, there were about 330 thousand unique claims in 2012 (see 'Medical Combined' in Table 2.2). This represents a 32 percent decrease in the number of claims from 1998.

Numbers of unique claims are available from 1998 by bill type (see Table 2.2). Dental and pharmacy data are not available prior to 2005. While about 95 percent of the claims received at least one professional service in 2012, only about 30 percent of them received hospital/institutional service, and about 46 percent of the claims received pharmacy services. In other words, about half of the claims did not receive pharmacy services, and 70 percent of the claims received their medical services in professional offices and ambulatory surgical centers only. A noticeable trend in the table is the consistent decrease in the overall number of claims being treated in the workers' compensation system.

Table 2.2: Number of Unique Claims, by Bill Type

Service Year	Professional	Hospital/ Institutional	Dental	Pharmacy	Medical Combined
1998	465,299	153,906			483,876
1999	436,672	146,349			454,939
2000	413,745	132,031			430,133
2001	412,625	135,397			429,373
2002	421,462	142,662			434,629
2003	388,474	131,909			398,411
2004	348,615	111,197			357,624
2005	354,764	98,649	622	176,425	382,312
2006	353,238	108,568	882	177,731	380,521
2007	353,397	112,435	1,231	184,754	381,253
2008	341,866	108,953	1,353	181,964	371,266
2009	315,807	98,704	1,271	166,702	340,489
2010	316,857	100,267	1,389	164,039	336,065
2011	317,348	102,641	1,413	159,795	334,208
2012	313,718	96,788	1,433	152,711	329,771

Note: Figures for 'Medical Combined' do not include dental and pharmacy costs prior to 2005.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Since 1998, total professional costs decreased by seven percent while hospital costs increased by 17 percent (see Table 2.3). However, even as total professional costs have been growing steadily since 2007, it is still lower than the cost levels before 2004. It increased by 12 percent from 2010 to 2011 in part because of increased fees per service, but it decreased slightly in 2012. Hospital/institutional cost increased by 50 percent between 2005 and 2011, but it decreased slightly from 2011 to 2012. However, 2012 data may be subject to future updates.

Table 2.3: Total Cost, by Bill Type (Thousand Dollars)

Service Year	Professional	Hospital/ Institutional	Dental	Pharmacy	Medical Combined
1998	\$715,845	\$327,865			\$1,043,709
1999	\$805,208	\$353,110			\$1,158,317
2000	\$719,027	\$318,950			\$1,037,977
2001	\$786,006	\$381,936			\$1,167,943
2002	\$906,883	\$441,747			\$1,348,630
2003	\$823,142	\$417,946			\$1,241,087
2004	\$665,563	\$314,485			\$980,048
2005	\$684,213	\$265,748	\$775	\$136,562	\$1,087,297
2006	\$597,289	\$309,444	\$1,504	\$140,939	\$1,049,176
2007	\$571,872	\$348,034	\$2,526	\$146,230	\$1,068,663
2008	\$572,009	\$362,801	\$3,271	\$151,029	\$1,089,110
2009	\$601,696	\$353,307	\$3,364	\$150,081	\$1,108,447
2010	\$604,580	\$371,261	\$3,957	\$151,174	\$1,130,972
2011	\$674,737	\$399,601	\$4,208	\$145,018	\$1,223,564
2012	\$669,446	\$382,122	\$4,351	\$134,147	\$1,190,065

Note: Figures for 'Medical Combined' do not include dental and pharmacy costs prior to 2005.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

The average cost per claim increased by 39 percent for professional services and 85 percent for hospital services since 1998 (see Table 2.4). With decreases or modest increases in total cost over the past 14 years, the main causes for the increase in the average cost per claim may lie in the declining number of low-cost claims, an increase in scheduled fees, and price increases due to inflation. The increase in the average pharmacy cost since 2005 was 13 percent.

Total and Average Costs by Claim Type

Claims with more than seven days of lost work days because of compensable work-related injury are classified as 'lost-time' claims. These claims receive income benefits for lost time and disability. Lost-time claims are roughly equivalent to permanent partial disability (PPD) claims reported by other states. The remaining claims are classified as 'medical-only' claims. Average costs shown in Table 2.4 are weighted averages of lost-time and medical-only claims. About 40 percent of the claims receiving professional services in 2012 were lost-time claims, but they

accounted for 77 percent of the total cost. Lost-time claims accounted for 87 percent of hospital costs and 88 percent of pharmacy costs.

Table 2.4: Average Cost per Claim, by Bill Type

Service Year	Professional	Hospital/ Institutional	Dental	Pharmacy	Medical Combined
1998	\$1,538	\$2,130			\$2,157
1999	\$1,844	\$2,413			\$2,546
2000	\$1,738	\$2,416			\$2,413
2001	\$1,905	\$2,821			\$2,720
2002	\$2,152	\$3,096			\$3,103
2003	\$2,119	\$3,168			\$3,115
2004	\$1,909	\$2,828			\$2,740
2005	\$1,929	\$2,694	\$1,246	\$774	\$2,844
2006	\$1,691	\$2,850	\$1,706	\$793	\$2,757
2007	\$1,618	\$3,095	\$2,052	\$791	\$2,803
2008	\$1,673	\$3,330	\$2,418	\$830	\$2,934
2009	\$1,905	\$3,579	\$2,646	\$900	\$3,255
2010	\$1,908	\$3,703	\$2,849	\$922	\$3,365
2011	\$2,126	\$3,893	\$2,978	\$908	\$3,661
2012	\$2,134	\$3,948	\$3,036	\$878	\$3,609

Note: Figures for 'Medical Combined' do not include dental and pharmacy costs prior to 2005.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Medical-only claims, although often more numerous than lost-time claims, account for a small portion of the costs. Because of this vast difference in costs by claim type, averages by claim type are presented in Tables 2.5 to 2.7. Compared to an overall average cost of \$2,134 in Table 2.4, the average cost was \$4,113 for lost-time claims, and \$815 for medical-only claims (see Table 2.5). Since 1998, the average cost for professional services increased by 34 percent for lost-time claims and by 39 percent for medical-only claims while total costs decreased for both types.

For hospital services, average cost increased by 100 percent for lost-time claims and by 15 percent for medical-only claims (see Table 2.6). Total costs increased by 29 percent for lost-time claims during the period while total costs for medical-only claims decreased by 29 percent. For pharmacy services, the average cost increased by 23 percent for lost-time claims while it decreased by 20 percent for medical-only claims (see Table 2.7). The general cost trends were dominated by changes in cost for lost-time claims.

Table 2.5: Total and Average Costs, by Claim Type, Professional Services

Service Year	Lost-time Claims			Medical-only Claims		
	Number of Claims	Total Costs (Thousand Dollars)	Cost per Claim	Number of Claims	Total Costs (Thousand Dollars)	Cost per Claim
1998	178,070	\$546,936	\$3,071	287,426	\$168,909	\$588
1999	177,652	\$614,518	\$3,459	259,164	\$190,690	\$736
2000	173,075	\$560,299	\$3,237	240,792	\$158,728	\$659
2001	180,812	\$622,809	\$3,445	231,927	\$163,197	\$704
2002	191,894	\$739,835	\$3,855	229,677	\$167,048	\$727
2003	180,628	\$674,548	\$3,734	207,931	\$148,594	\$715
2004	161,851	\$538,477	\$3,327	186,824	\$127,086	\$680
2005	156,702	\$552,348	\$3,525	198,127	\$131,865	\$666
2006	147,279	\$467,727	\$3,176	206,040	\$129,562	\$629
2007	142,187	\$439,733	\$3,093	211,283	\$132,139	\$625
2008	138,742	\$444,288	\$3,202	203,188	\$127,721	\$629
2009	133,965	\$476,780	\$3,559	181,902	\$124,916	\$687
2010	133,039	\$477,631	\$3,590	183,861	\$126,949	\$690
2011	130,190	\$527,524	\$4,052	187,201	\$147,213	\$786
2012	125,455	\$516,008	\$4,113	188,305	\$153,438	\$815

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 2.6: Total and Average Costs, by Claim Type, Hospital/Institutional Services

Service Year	Lost-time Claims			Medical-only Claims		
	Number of Claims	Total Costs (Thousand Dollars)	Cost per Claim	Number of Claims	Total Costs (Thousand Dollars)	Cost per Claim
1998	70,867	\$257,572	\$3,635	83,112	\$70,292	\$846
1999	68,463	\$281,287	\$4,109	77,947	\$71,823	\$921
2000	62,308	\$254,943	\$4,092	69,772	\$64,007	\$917
2001	65,744	\$308,708	\$4,696	69,696	\$73,228	\$1,051
2002	73,938	\$367,838	\$4,975	68,757	\$73,909	\$1,075
2003	69,356	\$350,645	\$5,056	62,572	\$67,300	\$1,076
2004	57,538	\$262,225	\$4,557	53,674	\$52,260	\$974
2005	47,304	\$223,492	\$4,725	51,366	\$42,256	\$823
2006	49,976	\$256,433	\$5,131	58,614	\$53,011	\$904
2007	50,714	\$289,491	\$5,708	61,746	\$58,543	\$948
2008	50,807	\$312,134	\$6,144	58,165	\$50,667	\$871
2009	48,251	\$310,257	\$6,430	50,463	\$43,050	\$853
2010	48,595	\$324,863	\$6,685	51,678	\$46,398	\$898
2011	48,629	\$348,322	\$7,163	54,024	\$51,279	\$949
2012	45,602	\$332,247	\$7,286	51,197	\$49,875	\$974

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 2.7: Total and Average Costs, by Claim Type, Pharmacy Services

Service Year	Lost-time Claims			Medical-only Claims		
	Number of Claims	Total Costs (Thousand Dollars)	Cost per Claim	Number of Claims	Total Costs (Thousand Dollars)	Cost per Claim
2005	96,340	\$114,804	\$1,192	80,119	\$21,757	\$272
2006	93,268	\$118,129	\$1,267	84,512	\$22,810	\$270
2007	93,475	\$122,891	\$1,315	91,324	\$23,339	\$256
2008	93,182	\$130,424	\$1,400	88,821	\$20,605	\$232
2009	88,999	\$128,175	\$1,440	77,737	\$21,906	\$282
2010	88,931	\$133,036	\$1,496	75,136	\$18,138	\$241
2011	86,513	\$128,743	\$1,488	73,312	\$16,276	\$222
2012	81,067	\$118,547	\$1,462	71,670	\$15,600	\$218

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Inflation Adjusted Cost

All prices in this report are in current prices without adjustments for inflation. However, in a cost study spanning 14 years, the effects of inflation on current prices are often significant. Unlike utilization measures, costs are nominal values that may increase simply because of price inflation. Prices in this report are not adjusted for inflation because there are issues and problems associated with indices used to adjust. Nevertheless, it is important to note that a significant part of seeming cost increases is due to inflation, not to changes in utilization or fee schedule. In this section, we consider one of the most standard ways to adjust prices for inflation, which will provide us with some indication about how large the effects of price inflation may be on cost changes.

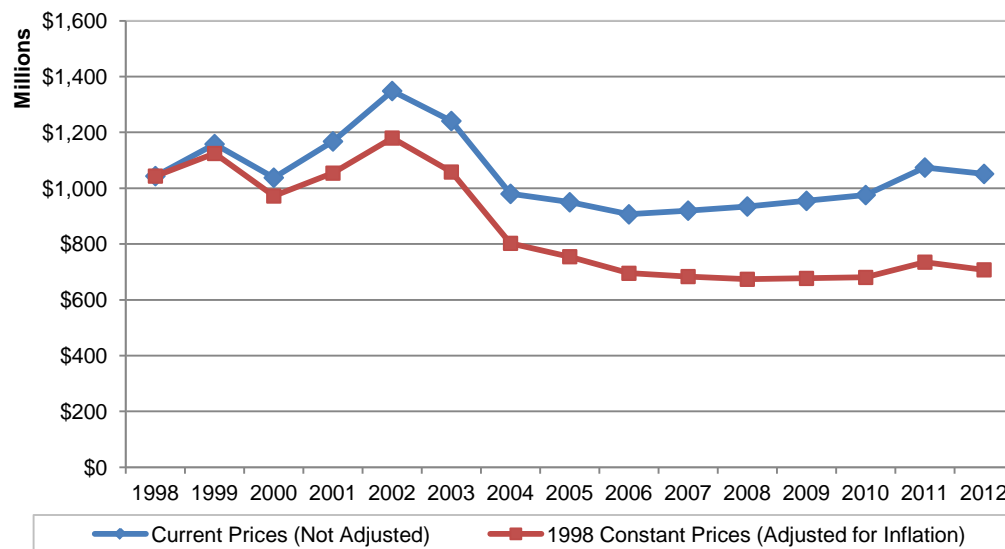
There are two indices commonly used to adjust inflationary price effects on health care costs. First, the Centers for Medicare and Medicaid Services (CMS) publishes a nation-wide measurement called the Medicare Economic Index (MEI) which measures the changes in the prices paid for health care inputs, and it is used to adjust and update payment rates for Medicare and Medicaid. Regional variations are weighted by geographical indices. Secondly, the Bureau of Labor Statistics publishes Consumer Price Indexes (CPI) that measure changes in prices paid by urban consumers for a selected basket of goods and services. True to their purposes, the MEI focuses on provider payments while the CPI is primarily concerned with retail prices that consumers pay. CPI medical care index is limited to patient out-of-pocket expenditures (including insurance premiums) without considering health care provider payments paid by insurers. For our purposes, we use MEI to adjust prices for inflationary effects.

From 1998 to 2012, MEI increased by about three percent annually (49 percent total). As a comparison, CPI medical care indices on average were slightly higher than the MEI. (Individual CPI indices are published separately for the large metropolitan areas of Houston and Dallas, and

regional averages for medium cities and small cities. Averaging these four CPI indices, the results show an increase of 60 percent from 1998 to 2011 with a 3.7 percent annual rate.)

Figure 2.1 shows about one percent increase in total professional and hospital costs in current prices since 1998, but a 32 percent decrease in inflation-adjusted prices using the MEI. Considering only from 2005 (to include pharmacy costs), total health care costs including pharmacy increased by 9.5 percent in current prices and decreased by 7.3 percent in inflation-adjusted prices.

Figure 2.1: Professional and Hospital Costs in Current and Inflation-Adjusted Prices, by Service Year



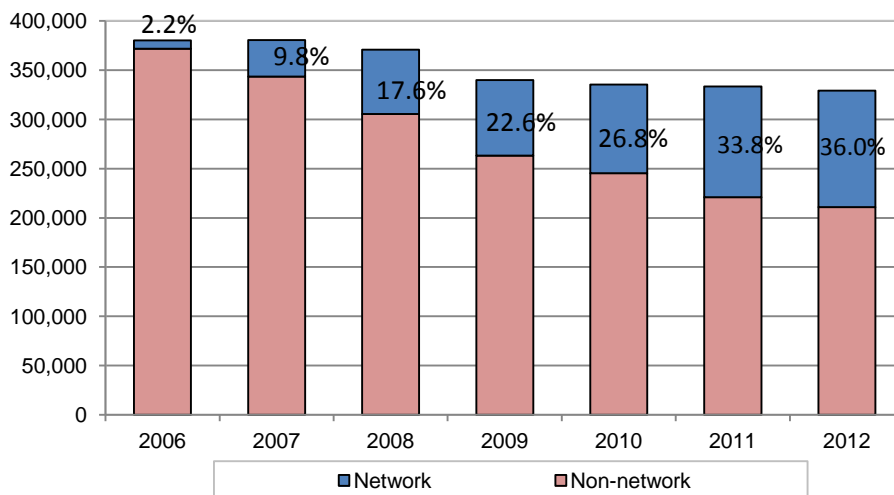
Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Workers' Compensation Health Care Networks

In 2005, the 79th Texas Legislature passed House Bill 7, which authorized the use of workers' compensation health care networks certified by the Texas Department of Insurance. TDI began accepting applications for the certification of workers' compensation health care networks in 2006, and by 2012 networks accounted for about a third of claims and medical costs in the Texas workers' compensation system.

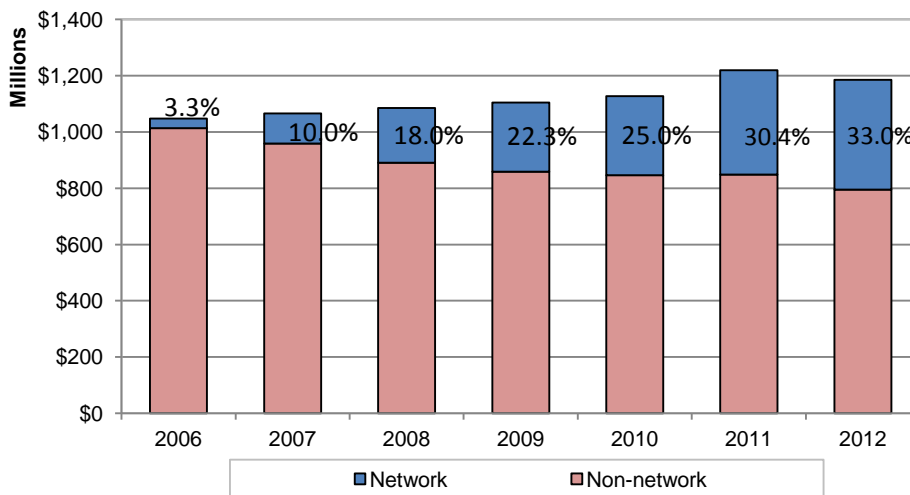
Figure 2.2 shows the number of network and non-network claims in the combined professional, hospital, and pharmacy data. In 2012 service year, 118,318 injured employees were treated in networks, accounting for 36 percent of all injured employees. Networks' share of the total medical cost had increased since 2006 at about the same rate as their share of the total claims (see Figure 2.3). In 2012, networks accounted for 33 percent of the total medical cost.

Figure 2.2: Number of Claims by Network Status, by Service Year



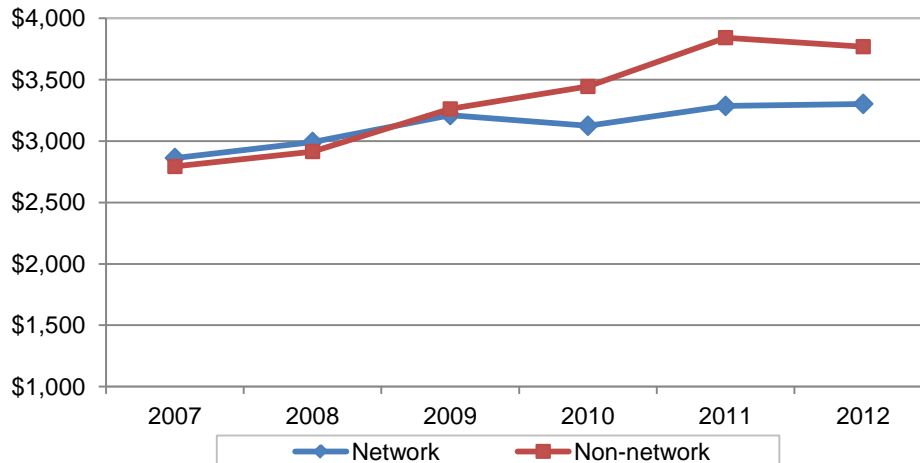
Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Figure 2.3: Total Medical Cost by Network Status, by Service Year



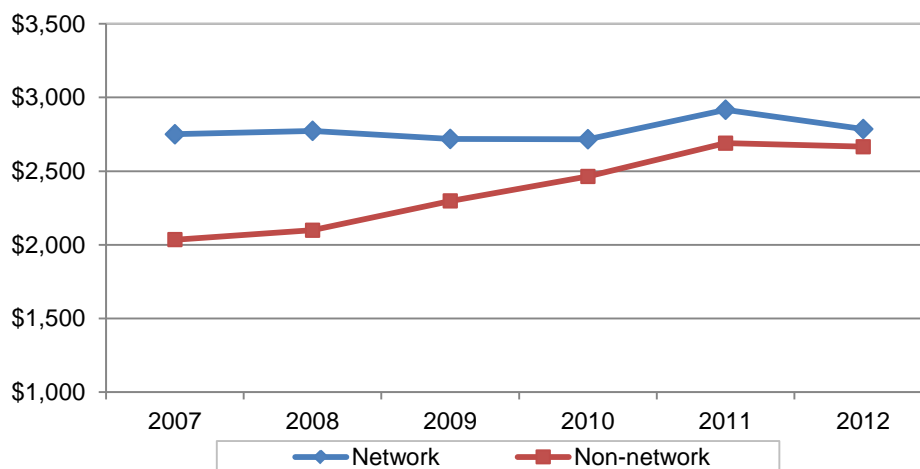
Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Networks' cost share is slightly lower than their claim share because networks on average cost less per claim, especially in more recent years. In terms of average cost, networks' average medical cost per claim was similar to that of non-network until 2009 (see Figure 2.4). But since 2009, it remained substantially below that of non-network. One factor for the stable network cost is the fact that health care providers and workers' compensation certified networks may negotiate fees under the network model rather than utilize TDI-DWC's adopted fee guidelines.

Figure 2.4: Average Medical Cost per Claim, by Service Year

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Another possible factor is networks' heightened focus on initial care, which tends to increase medical costs initially but decrease long-term costs. Figure 2.5 shows the average medical cost per claim by injury year for the first six months after injury. Average cost in networks in 2007 was higher than in non-network, indicating higher contracted prices in part to induce health care providers to participate in networks and in part to encourage better initial care. While network average cost stayed about the same since 2007, non-network average cost increased steadily. Despite the higher initial medical cost, total cost in networks (in Figure 2.4) was lower than that of non-network because of a relatively lower share of claims with long-term care costs in networks. Differences in outlier adjustments, claim selection, and injury timeframes for the network report card may account for the variations seen in the network and non-network average costs.

Figure 2.5: Average Medical Cost per Claim, by Injury Year, Six Months Post Injury

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Health Care Cost and Texas GDP

Total WC health care costs account for less than one tenth of one percent of the Texas state Gross Domestic Product (GDP) (see Table 2.8). This GDP share decreased from 0.16 percent in 1998 to 0.1 percent in 2006, and remained at about the same level. In comparison, an NCCI research brief in 2010 showed that, nationally, WC medical expenditure was about 0.25 percent of the GDP in 2006. This suggests that, as a share of state GDP, WC costs in Texas are substantially lower than the national average.

WC's lower share of GDP for Texas is partly because WC is not mandatory in Texas. An estimated 66 percent to 73 percent of Texas employees in the private sector (measured by payroll amount) are covered by workers' compensation insurance (see REG's reports "Employer Participation in the Texas Workers' Compensation System: 2012 Estimates" and "Costs to Employers and Efficiencies in the Texas Workers' Compensation System" available at REG's reports page: www.tdi.texas.gov/reports/report14.html). If we add government and public sector employers who are legally required to subscribe to the workers' compensation system, about 80 percent of Texas workers are covered by the workers' compensation system even though it is not mandatory in Texas.

Table 2.8: Health Care Cost as a Percentage of Texas GDP

Service Year	Texas GDP (Millions)	Total Health Care Cost (Millions)	Health Care Cost as a Percentage of GDP (%)
1998	\$634,812	\$1,044	0.16%
1999	\$671,632	\$1,158	0.17%
2000	\$732,987	\$1,038	0.14%
2001	\$765,740	\$1,168	0.15%
2002	\$785,434	\$1,349	0.17%
2003	\$827,139	\$1,241	0.15%
2004	\$906,893	\$980	0.11%
2005	\$970,997	\$1,087	0.11%
2006	\$1,055,959	\$1,049	0.10%
2007	\$1,147,970	\$1,069	0.09%
2008	\$1,202,104	\$1,089	0.09%
2009	\$1,146,647	\$1,108	0.10%
2010	\$1,207,494	\$1,131	0.09%
2011	\$1,332,000	\$1,224	0.09%
2012	\$1,397,400	\$1,190	0.09%

Note: 2005–2012 health care costs include pharmacy and dental costs.

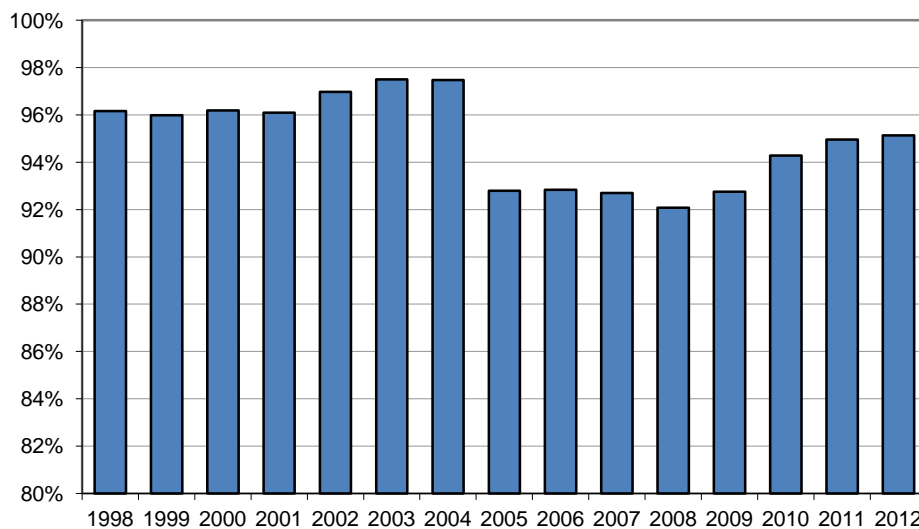
Sources: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013. Texas GDP figures are from the Bureau of Economic Analysis, Department of Commerce.

3. Cost and Utilization for Professional Services

Professional service bills include bills for physician and therapy services, durable medical equipment, and ambulatory surgical center services. Billing and payment data in the Texas workers' compensation system come from a statewide database of medical charges, actual payments, and treatment codes, maintained by the Texas Department of Insurance, Division of Workers' Compensation (TDI-DWC) under the provisions of the Texas Labor Code §413.007. Insurance carriers report these data to TDI-DWC using a medical billing/payment electronic data interchange process (EDI 837). The EDI version of the professional service bills is based on the CMS-1500 paper forms used by the Centers for Medicare and Medicaid Services. EDI 837 data covers the service years from 2005. The data integrity and reliability are relatively higher for the EDI datasets than the pre-2005 data collected by the tape-based process.

Since most injured employees visit a doctor's office (MD or DO) for their first treatment, over 90 percent of the claims received at least one professional service (see Figure 3.1). The remaining claims received only hospital/institutional, dental or pharmacy services. The lower rates from 2005 may indicate a problem of access since the number of primary care physicians who accepted workers' compensation patients decreased slightly from 2003 to 2005. REG's reports on the access to medical care have details about the changes in the number of physicians accepting workers' compensation patients (available at www.tdi.texas.gov/reports/report14.html). Also, the data for 2004–2005 may be incomplete as data submission was suspended for the transition to the EDI 837 system.

Figure 3.1: Percent of Claims Receiving at Least One Professional Service, by Service Year



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Changes in Medical Fee Guidelines

One factor that affects total and average costs is the change in fees per service. Changes in service fees are partially explained by changes in regulatory policies. Fees are regulated in the workers' compensation system to the extent that Medical Fee Guidelines (MFG) establishing maximum reimbursements for medical services are adopted and adjusted. Since 1998, there were two major changes in fee guidelines that should be noted in understanding cost trends in this report.

First, the 2003 professional services fee guideline changed reimbursement rates to a uniform 125 percent of the Medicare billing rates from the existing 1996 MFG. The 1996 MFG established as maximum the lesser of the providers' usual fees and charges or the maximum allowable reimbursement (MAR) rate based on relative values of services published by a third party. The adoption of the 2003 professional services fee guideline changed the reimbursement amounts for individual categories of services, raising the rate for certain categories of professional services such as evaluation and management services and spinal fusion, while lowering the rate for such services as disc and other surgeries. As a result, the cost impact of the 2003 fee guideline varied considerably for individual categories of services.

Second, from March 1, 2008, a new professional services fee guideline began to use a conversion factor of \$52.83 with the exception of surgery services which used a separate \$66.32 as a conversion factor, resulting in a rate increase for surgery services. These factors are adjusted annually using the Medicare Economic Index. Final fees are calculated by multiplying these conversion factors by relative value unit (RVU) and geographic practice cost index (GPCI), both maintained and adjusted by the Centers for Medicare and Medicaid Services. Overall, adjustments in RVUs and GPCIs resulted in about 16 percent increase in the fee schedule between 2008 and 2011.

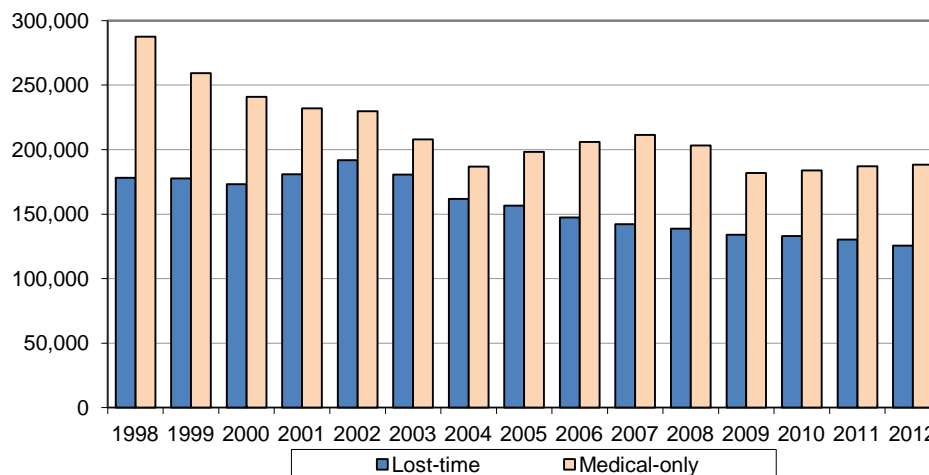
Cost and Utilization by Service Year

Professional Cost and Utilization by Claim Type

There is a significant decrease in the number of medical-only type claims in the professional service data between 1998 and 2005 (see Figure 3.2). The number of lost-time claims, which are the main cost drivers in the workers' compensation system, actually increased until 2002, but has been decreasing steadily since then. For medical-only claims, unlike lost-time claims, the number of claims fluctuated after 2005, but the long term trend appears to be on the decline.

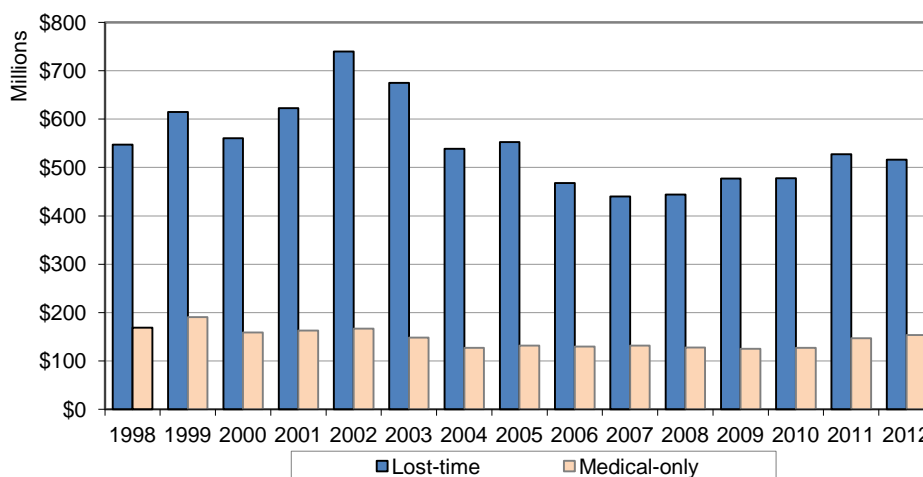
Figure 3.3 shows that the majority of health care costs were consistently for lost-time claims (between 76 percent and 82 percent of the total cost). The total cost of lost-time claims increased since 2005 while the number of claims decreased.

Figure 3.2: Number of Claims by Claim Type, Professional Services, by Service Year



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Figure 3.3: Total Professional Cost, by Claim Type, by Service Year



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of utilization, the number of visits—a measure of service frequency—peaked in 2003 and decreased since then (see Table 3.1). Lost-time claims had about 3.5 times more visits per claim than medical-only claims. This was mainly due to the fact that lost-time claims had more serious injuries and were users of health care for a longer duration. The number of services received in each visit to a health care provider is a measure of intensity. This measure stayed relatively stable and similar over the years for both lost-time and medical-only claims, with minimal differences between the claim types. This indicates that the variations in service utilization were due more to service frequency (number of visits) than to service intensity (number of services per visit). And since the number of visits was mainly determined by the length of treatment, shorter durations of medical care resulted in decreasing number of visits per claim.

Table 3.1: Number of Visits and Services per Visit per Claim, by Claim Type, Professional Services

Service Year	Visits per Claim		Services per Visit	
	Lost-time Claims	Medical-only Claims	Lost-time Claims	Medical-only Claims
1998	16.35	4.38	3.35	3.12
1999	16.51	4.66	3.35	3.08
2000	17.44	4.94	3.40	3.13
2001	17.77	4.99	3.55	3.28
2002	19.29	5.08	3.87	3.42
2003	19.60	5.15	3.92	3.42
2004	18.53	5.03	3.69	3.24
2005	17.69	4.67	3.82	3.30
2006	15.46	4.49	3.35	3.11
2007	14.93	4.37	3.30	3.04
2008	14.68	4.17	3.27	3.04
2009	15.28	4.28	3.20	2.97
2010	15.06	4.22	3.24	2.95
2011	14.95	4.17	3.27	3.00
2012	14.96	4.30	3.31	2.99

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Professional Cost and Utilization by Provider Type

Professional service providers are grouped into MD/DO, DC (Doctor of Chiropractic), PT/OT (physical/occupational therapist), ASC (ambulatory surgical center), DME (durable medical equipment) and the Other that includes all other providers. The MD/DO type includes not only Doctor of Medicine and Doctor of Osteopathy but also Clinical Psychologist, Doctor of Podiatric Medicine, Doctor of Optometry, and Psychologist. The DME provider type is used if the bill was for supplies. ASC services are sometimes included in hospital/institutional services in other states, but Texas medical EDI system receives ASC bills in the professional service bill set. Provider type details are more reliable since the implementation of the EDI 837 data collection.

About 95 percent of the claims received professional services from MD/DOs in 2012 (see Table 3.2). The most significant change occurred for chiropractic services (DC): the share of claims receiving chiropractic services decreased from 13 percent in 2005 to seven percent in 2012. This decline in the use of chiropractic services resulted from various cost control measures such as stricter billing and payment guidelines for physical medicine in the 2003 professional services fee guideline, 2004 preauthorization requirements for work hardening/conditioning services, and 2006 preauthorization requirements for physical and occupational therapy services. A decreasing percentage of the claims also received services from DME and ASC providers. On the other hand, a higher share of claims received PT or OT services since 2005.

In terms of total cost, chiropractors' costs decreased rapidly while the total cost for services provided by physical and occupational therapists increased in recent years. Total payments to

MD/DO increased substantially by 15 percent since 2005 because of both the increasing per-service fees and the increasing share of claims utilizing MD/DO. Total cost for ASC type increased substantially during the period even though a smaller share of claims was receiving the services. This resulted in a rapid increase in the average cost per claim for services provided by ASC (see Figure 3.4). The average cost per claim increased by 107 percent for ASC providers since 2005. The large increase in 2009 reflected the changes in the 2008 professional services fee guideline, which paid a higher rate for surgery services. As a result, while the number of claims that received ASC services decreased, its total cost and average cost increased substantially.

Table 3.2: Percent of Claims Receiving at Least One Professional Service, by Provider Type, by Service Year

Provider Type	2005	2006	2007	2008	2009	2010	2011	2012
ASC	3.8%	3.8%	3.4%	3.0%	3.2%	3.1%	3.2%	3.3%
DC	13.3%	11.0%	9.0%	7.9%	8.2%	8.2%	7.5%	7.0%
DME	11.4%	11.4%	10.9%	9.9%	10.7%	10.6%	9.7%	9.2%
MD/DO	86.8%	93.4%	95.8%	96.3%	96.2%	95.8%	95.6%	95.0%
PT/OT	18.7%	19.6%	20.4%	20.0%	20.4%	20.1%	20.6%	21.5%
Other	22.2%	16.5%	13.7%	14.8%	16.4%	19.2%	22.4%	27.2%

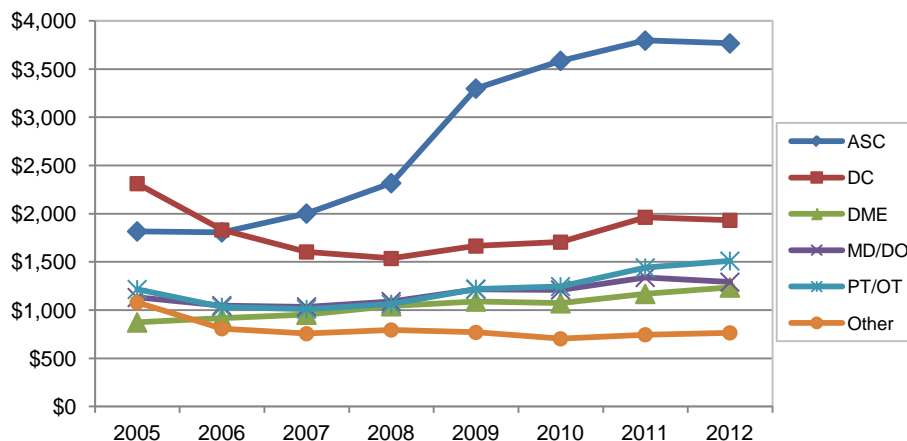
Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 3.3: Total Professional Cost, by Provider Type (Thousand Dollars), by Service Year

Provider Type	2005	2006	2007	2008	2009	2010	2011	2012
ASC	\$24,757	\$24,121	\$24,181	\$23,557	\$33,193	\$34,713	\$38,068	\$39,514
DC	\$109,305	\$71,067	\$51,024	\$41,444	\$43,225	\$44,211	\$46,701	\$42,226
DME	\$35,398	\$36,920	\$36,635	\$35,214	\$36,793	\$35,982	\$36,002	\$35,620
MD/DO	\$348,603	\$345,835	\$350,290	\$358,526	\$369,825	\$367,472	\$406,548	\$384,684
PT/OT	\$80,712	\$71,737	\$72,730	\$72,816	\$78,528	\$79,273	\$94,205	\$101,813
Other	\$85,139	\$47,171	\$36,668	\$40,142	\$39,877	\$42,741	\$52,963	\$65,287

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Figure 3.4: Average Cost per Claim by Provider Type, Professional Services, by Service Year



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Professional Cost and Utilization by Service Type

Medical bills are normally submitted and processed using a service as the basic unit because the Medicare payment model used in Texas and most other states is basically a fee-for-service model. Services are unbundled (unless otherwise instructed to bundle multiple services) and billed for each service and the type and nature of the service is determined by entering a Current Procedural Terminology (CPT[®]) code, maintained by the American Medical Association, or a Healthcare Common Procedure Coding System (HCPCS) code in each bill. Service types are based on these service codes.

There may be different ways to classify service types depending on how we group various CPT/HCPCS codes. This report uses eight groups in the service type classification. Some clarifications should be noted for each group:

- DMEPOS: durable medical equipment, prosthetics, orthotics and supplies. This group consists of all HCPCS Level II codes, and includes ambulance services.
- Diag/Path/Lab: diagnostic, pathology and laboratory services.
- E/M: evaluation and management services.
- IR Exam & Report: impairment (or disability) rating examination services, special reports, physical performance tests and range of motion tests. These services are not for treatment but for system-specific functions of the workers' compensation system. These services are usually included in E/M, physical medicine and other groups in other studies.
- Other Services: this is a catch-all group for all services not in the other seven groups. However, about half of this group's total costs are for anesthesia services.
- Physical Medicine: all manipulative and physical therapies and exercises provided by chiropractors, physical/occupational therapists and MD/DO.
- Surgery – Other: surgery services except for spinal surgeries.
- Surgery – Spinal: spinal surgeries including spine fusion, laminectomy, and laminotomy.

Physical medicine service bills are by far the most numerous bills accounting for about half of all professional bills. They also pose some difficulties in deciphering proper service units of utilization since each bill may include any number of 15-minute sessions. The number of 'unit billed' reported in the EDI data tables is not consistent and often incorrect. To create better measurements of utilization, a new service utilization unit is calculated for each bill (see Appendix for more details).

For lost-time claims, the 2002 service year was the peak year for most services in terms of total cost (see Table 3.4). Increases and decreases were most prominent for Physical Medicine services. Physical Medicine was the most costly service group in 2002 and still remained the most costly service in 2012. Cost growth since 1998 was highest for DMEPOS, IR Exam and

Report, and Surgery – Other services. Costs for Surgery – Spinal and Other Services groups decreased substantially.

For medical-only claims, Physical Medicine service shows a pattern of increases and decreases similar to that of lost-time claims. Because of their less serious injuries, E/M services were the most costly service type for medical-only claims. Total cost for DMEPOS and E/M services increased most rapidly since 2005 partly because of the increases in the new professional service fee guideline. Costs for Surgery – Spinal and Other Services groups decreased most significantly.

Table 3.4: Total Professional Cost, by Service Type (Thousand Dollars)

Service Year	DMEPOS	Diag/Path/Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
Lost-time Claims								
1998	\$35,526	\$60,992	\$93,803	\$33,514	\$49,272	\$160,657	\$57,777	\$55,353
1999	\$38,646	\$59,514	\$92,428	\$32,528	\$114,689	\$171,518	\$55,561	\$49,566
2000	\$40,691	\$62,734	\$95,867	\$31,945	\$33,856	\$189,188	\$54,390	\$51,478
2001	\$43,069	\$69,504	\$102,532	\$37,054	\$35,579	\$220,103	\$59,025	\$55,942
2002	\$51,843	\$82,478	\$108,958	\$52,628	\$44,249	\$254,803	\$70,218	\$74,654
2003	\$50,300	\$71,881	\$97,464	\$54,279	\$42,203	\$246,154	\$60,607	\$51,601
2004	\$43,356	\$53,742	\$79,874	\$57,330	\$32,031	\$201,485	\$45,888	\$24,729
2005	\$52,290	\$52,951	\$76,548	\$64,000	\$31,474	\$183,856	\$65,898	\$25,330
2006	\$51,804	\$47,469	\$65,872	\$58,110	\$27,541	\$132,857	\$62,457	\$21,607
2007	\$58,555	\$41,604	\$66,996	\$58,940	\$25,491	\$111,490	\$59,909	\$16,747
2008	\$58,503	\$44,572	\$69,453	\$57,361	\$26,086	\$105,651	\$66,638	\$16,020
2009	\$57,761	\$49,839	\$74,826	\$58,714	\$27,036	\$110,596	\$78,979	\$18,989
2010	\$60,586	\$48,297	\$76,686	\$56,730	\$26,236	\$111,335	\$80,613	\$17,149
2011	\$66,164	\$54,144	\$88,658	\$55,426	\$27,679	\$123,653	\$93,816	\$17,983
2012	\$66,304	\$57,004	\$85,733	\$53,597	\$25,370	\$121,581	\$90,705	\$15,716
Medical-only Claims								
1998	\$8,819	\$22,374	\$45,239	\$10,652	\$14,194	\$44,581	\$16,102	\$6,912
1999	\$8,813	\$21,443	\$41,583	\$10,215	\$42,511	\$45,574	\$14,743	\$5,800
2000	\$8,953	\$21,236	\$40,939	\$10,168	\$8,715	\$48,777	\$13,887	\$6,034
2001	\$8,603	\$22,073	\$40,497	\$11,691	\$8,149	\$51,950	\$13,774	\$6,460
2002	\$9,535	\$22,796	\$39,931	\$14,005	\$8,571	\$51,889	\$13,148	\$7,171
2003	\$9,433	\$19,402	\$37,454	\$13,186	\$6,752	\$46,346	\$11,761	\$4,257
2004	\$8,945	\$14,815	\$35,640	\$13,000	\$4,211	\$39,007	\$9,570	\$1,894
2005	\$9,287	\$15,652	\$37,479	\$14,144	\$4,046	\$37,160	\$12,079	\$2,016
2006	\$9,920	\$16,651	\$39,125	\$14,240	\$4,347	\$29,761	\$13,606	\$1,894
2007	\$11,479	\$16,088	\$43,174	\$15,067	\$4,262	\$28,045	\$12,567	\$1,451
2008	\$10,982	\$16,117	\$43,512	\$13,838	\$3,956	\$26,043	\$11,939	\$1,318
2009	\$9,753	\$16,057	\$43,454	\$13,478	\$3,695	\$26,281	\$11,130	\$1,057
2010	\$9,459	\$15,547	\$46,383	\$12,875	\$3,676	\$26,671	\$11,356	\$981
2011	\$10,592	\$18,157	\$54,679	\$13,548	\$4,135	\$32,012	\$12,981	\$1,109
2012	\$11,212	\$18,325	\$57,101	\$13,156	\$4,238	\$35,407	\$13,129	\$865

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Average costs per claim shown in Table 3.5 are influenced by the number of claims receiving each type of service and the intensity of service utilization such as the number of visits per claim and the number of services per visit. For lost-time claims, average costs for IR Exam & Report and DMEPOS services increased the most from 1998 to 2012. Spinal surgery services decreased the most during the same period. For medical-only claims, E/M and IR Exam & Report services increased the most while spinal surgery services decreased the most. Price changes per individual service are discussed later in this section.

Table 3.5: Average Professional Cost per Claim, by Service Type

Service Year	DMEPOS	Diag/Path/Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
Lost-time Claims								
1998	\$523	\$576	\$583	\$278	\$590	\$2,153	\$1,103	\$3,315
1999	\$547	\$581	\$580	\$279	\$1,461	\$2,306	\$1,105	\$2,923
2000	\$591	\$627	\$611	\$286	\$449	\$2,581	\$1,107	\$3,058
2001	\$635	\$665	\$619	\$315	\$460	\$2,866	\$1,140	\$3,055
2002	\$676	\$718	\$615	\$401	\$511	\$3,001	\$1,178	\$3,534
2003	\$621	\$659	\$586	\$432	\$530	\$3,039	\$1,037	\$2,576
2004	\$555	\$555	\$548	\$495	\$515	\$2,825	\$888	\$1,563
2005	\$713	\$564	\$547	\$565	\$535	\$2,749	\$1,255	\$1,731
2006	\$714	\$524	\$497	\$549	\$494	\$2,289	\$1,235	\$1,720
2007	\$797	\$464	\$519	\$580	\$480	\$2,023	\$1,216	\$1,593
2008	\$824	\$501	\$549	\$576	\$510	\$2,007	\$1,389	\$1,796
2009	\$829	\$567	\$609	\$605	\$544	\$2,140	\$1,690	\$2,239
2010	\$853	\$542	\$625	\$586	\$541	\$2,163	\$1,740	\$2,290
2011	\$920	\$613	\$735	\$585	\$576	\$2,467	\$2,003	\$2,543
2012	\$942	\$673	\$739	\$586	\$562	\$2,565	\$2,027	\$2,577
Medical-only Claims								
1998	\$146	\$168	\$186	\$70	\$137	\$805	\$328	\$2,351
1999	\$146	\$177	\$190	\$76	\$468	\$850	\$344	\$2,062
2000	\$156	\$185	\$196	\$82	\$107	\$949	\$349	\$2,222
2001	\$165	\$198	\$198	\$91	\$105	\$1,001	\$357	\$2,329
2002	\$179	\$202	\$194	\$105	\$106	\$990	\$338	\$2,504
2003	\$149	\$181	\$200	\$104	\$100	\$952	\$314	\$1,821
2004	\$126	\$153	\$211	\$109	\$102	\$874	\$294	\$1,071
2005	\$133	\$150	\$208	\$112	\$97	\$837	\$327	\$1,323
2006	\$123	\$148	\$207	\$107	\$94	\$686	\$343	\$1,282
2007	\$133	\$136	\$222	\$110	\$91	\$646	\$316	\$1,217
2008	\$137	\$141	\$232	\$104	\$87	\$661	\$314	\$1,376
2009	\$136	\$156	\$257	\$110	\$92	\$748	\$334	\$1,341
2010	\$132	\$150	\$270	\$103	\$92	\$772	\$335	\$1,365
2011	\$146	\$173	\$312	\$106	\$104	\$929	\$370	\$1,711
2012	\$150	\$177	\$324	\$101	\$106	\$988	\$376	\$1,446

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of service utilization, the shares of claims receiving particular services increased for all services except Surgery – Spinal, Physical Medicine, and Other Services service groups (see Table 3.6). There was a slight decrease in the number of claims receiving Physical Medicine services while the share for Surgery – Spinal services decreased substantially. An increasing share of claims received DMEPOS, Diag/Path/Lab, and IR Exam & Report services. It should be noted that a significant number (52 percent to 69 percent) of medical-only claims received IR Exam & Report services in a given year even though most medical-only claims did not result in an impairment rating. These services for medical-only claims were typically reports rather than IR exams, but it indicates that non-treatment, system-specific services increased even in non-severe medical-only claims. It is also worthwhile to note that the share of claims receiving Physical Medicine services did not change significantly for either lost-time or medical-only claims.

Table 3.6: Percent of Claims Receiving Certain Professional Services

Service Year	DMEPOS	Diag/Path/Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
Lost-time Claims								
1998	38.1%	59.4%	90.4%	67.7%	46.9%	41.9%	29.4%	9.4%
1999	39.8%	57.6%	89.6%	65.5%	44.2%	41.9%	28.3%	9.5%
2000	39.8%	57.8%	90.6%	64.6%	43.6%	42.4%	28.4%	9.7%
2001	37.5%	57.8%	91.6%	65.1%	42.7%	42.5%	28.6%	10.1%
2002	39.9%	59.8%	92.3%	68.5%	45.1%	44.2%	31.1%	11.0%
2003	44.8%	60.4%	92.1%	69.5%	44.1%	44.8%	32.4%	11.1%
2004	48.3%	59.8%	90.0%	71.5%	38.4%	44.1%	31.9%	9.8%
2005	46.8%	59.9%	89.3%	72.3%	37.6%	42.7%	33.5%	9.3%
2006	49.3%	61.5%	89.9%	71.9%	37.9%	39.4%	34.3%	8.5%
2007	51.7%	63.1%	90.8%	71.5%	37.3%	38.8%	34.7%	7.4%
2008	51.2%	64.1%	91.1%	71.8%	36.9%	37.9%	34.6%	6.4%
2009	52.0%	65.6%	91.7%	72.4%	37.1%	38.6%	34.9%	6.3%
2010	53.4%	67.0%	92.3%	72.7%	36.4%	38.7%	34.8%	5.6%
2011	55.3%	67.8%	92.7%	72.8%	36.9%	38.5%	36.0%	5.4%
2012	56.1%	67.5%	92.5%	72.9%	36.0%	37.8%	35.7%	4.9%
Medical-only Claims								
1998	21.0%	46.2%	84.6%	52.7%	36.1%	19.3%	17.1%	1.0%
1999	23.3%	46.7%	84.5%	52.2%	35.1%	20.7%	16.6%	1.1%
2000	23.9%	47.6%	86.9%	51.7%	33.7%	21.3%	16.5%	1.1%
2001	22.5%	48.0%	88.3%	55.4%	33.5%	22.4%	16.6%	1.2%
2002	23.2%	49.2%	89.7%	58.0%	35.1%	22.8%	16.9%	1.2%
2003	30.5%	51.7%	90.3%	60.7%	32.4%	23.4%	18.0%	1.1%
2004	38.0%	51.8%	90.3%	63.7%	22.0%	23.9%	17.4%	0.9%
2005	35.2%	52.7%	91.0%	63.5%	21.1%	22.4%	18.6%	0.8%
2006	39.1%	54.6%	91.5%	64.4%	22.3%	21.0%	19.3%	0.7%
2007	40.8%	56.0%	92.1%	64.6%	22.2%	20.6%	18.8%	0.6%
2008	39.5%	56.1%	92.4%	65.4%	22.3%	19.4%	18.7%	0.5%
2009	39.4%	56.5%	92.8%	67.3%	22.1%	19.3%	18.3%	0.4%
2010	39.0%	56.4%	93.3%	67.7%	21.7%	18.8%	18.4%	0.4%
2011	38.9%	56.1%	93.5%	68.2%	21.3%	18.4%	18.8%	0.3%
2012	39.7%	55.0%	93.6%	69.3%	21.2%	19.0%	18.6%	0.3%

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of service intensity, the number of services per claim decreased significantly for E/M service and Other Services categories (see Table 3.7). Physical Medicine services peaked in 2003 and decreased substantially since then. Physical Medicine services were provided to about the same percentage of claims but with less frequency and intensity.

For most types of services, the number of services is equal to the number of bills. However, the unit of service for Physical Medicine service was recalculated to count the sessions billed (usually of 15 minutes duration) as specified in the professional services fee guideline. Therefore, the number of services for Physical Medicine services in Table 3.7 should be interpreted as index numbers roughly equivalent to sessions.

Table 3.7: Number of Services per Claim, by Service Type, Professional Services

Service Year	DMEPOS	Diag/Path/Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
Lost-time Claims								
1998	7.0	6.8	10.9	4.0	6.6	73.3	4.0	5.4
1999	7.4	6.5	10.8	3.9	6.2	76.4	3.9	5.1
2000	7.7	6.9	11.4	4.2	6.1	82.4	3.8	5.1
2001	7.5	7.1	11.6	5.2	6.3	89.0	4.0	5.1
2002	7.5	7.9	12.8	5.9	6.3	104.2	4.5	5.9
2003	8.9	8.1	11.7	6.2	6.3	107.2	4.5	5.2
2004	10.9	7.4	9.3	5.9	5.0	96.1	4.1	4.7
2005	11.6	7.5	9.2	6.8	4.7	95.4	4.8	5.1
2006	9.8	7.2	7.9	6.1	4.2	69.7	4.7	5.4
2007	9.7	7.5	7.5	6.2	4.0	63.9	4.6	5.4
2008	9.3	7.8	7.4	6.2	3.9	62.3	4.5	5.3
2009	9.2	8.8	7.5	6.4	3.8	61.0	4.4	5.6
2010	8.6	9.4	7.4	6.3	3.7	60.0	4.4	5.7
2011	8.5	9.9	7.3	6.3	3.7	59.2	4.6	5.3
2012	8.0	12.3	7.2	6.1	3.6	59.3	4.6	4.9
Medical-only Claims								
1998	3.3	2.6	3.6	2.0	3.3	31.8	1.9	4.2
1999	3.3	2.6	3.7	2.0	3.2	32.9	1.8	4.0
2000	3.3	2.6	3.8	2.2	3.2	35.6	1.9	3.9
2001	3.3	2.7	3.8	2.7	3.1	36.5	1.8	4.1
2002	3.4	2.7	3.8	2.8	3.2	38.1	1.9	4.3
2003	3.7	2.7	3.6	2.8	3.0	37.7	1.9	4.0
2004	4.3	2.6	3.1	2.8	2.4	33.3	1.8	3.6
2005	4.3	2.6	2.9	3.1	2.1	31.9	1.8	4.0
2006	4.0	2.6	2.9	2.9	2.1	26.8	1.9	4.0
2007	3.9	2.6	2.8	2.7	2.1	24.9	1.8	4.0
2008	3.7	2.6	2.8	2.7	2.0	24.2	1.7	4.1
2009	3.6	2.6	2.7	2.7	2.0	24.2	1.7	3.8
2010	3.3	2.6	2.7	2.7	1.9	24.1	1.7	4.1
2011	3.2	2.7	2.8	2.7	1.9	24.7	1.7	4.0
2012	3.1	2.9	2.8	2.7	1.9	25.3	1.7	3.2

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Cost and Utilization by Injury Year

Costs by service year, as we have presented above, account for economic costs of all services delivered in a calendar year regardless of one's injury date. Thus, service year statistics include both new injuries and old injuries. But most studies from the insurance industry or actuarial reports frequently present statistics by injury year, which often exclude old injuries. For injury year statistics, different lengths of time from the injury date are used to show different levels of maturity.

In this report, we used three different maturities of 6 months, 12 months and 24 months after the injury date for each injury year. Medical-only claims often receive only a few treatments, and the services and costs are mostly accounted for by the six-month maturity data. On the other hand, lost-time claims have more serious injuries that may require surgeries, rehabilitation services, and pharmacy services for pain management, necessitating a longer maturity for analysis.

The data for the 2012 injury year with six-month maturity covers all new injuries that occurred in the 2012 calendar year and accounts for all services received within six months from the injury. This means that service bills up to June 30, 2013, are analyzed. For 2010 injury year with 24-month maturity, data covers claims with injury date from January 1, 2010, to December 31, 2010, and services up to December 31, 2012. As the maturity increases, there will be more services provided and total costs increase accordingly.

One thing to note is that the average cost per claim in the longer maturity time frames poses some problems since only some of the claims would be receiving services in the later years. Therefore, the average cost is diluted as the number of claims for each injury year remains the same and the additional costs borne only by some claims are divided by the large number of claims that no longer require medical services. In the later part of this section, we present a slightly different configuration for maturity that separates all claims by mutually exclusive groups by service dates.

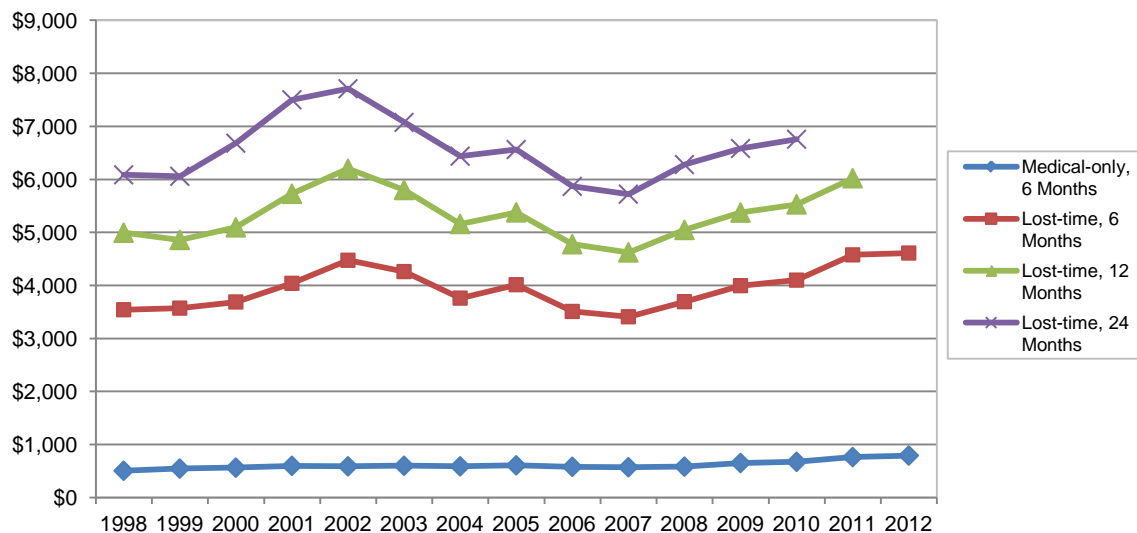
For lost-time claims, total costs in each injury year increase significantly as maturity increases while medical-only claims costs increase only slightly as we extend the maturity horizon (see Table 3.8). Over the years, total costs declined the most, by 17 percent, for lost-time claims at 24-month maturity. Decreases in total cost are greater in longer maturity, indicating that costs are declining faster in treating older injuries than new injuries. For both claim types, the total number of claims decreased faster than total costs, at around 25 percent to 35 percent. As a result, average cost per claim increased substantially.

Table 3.8: Total Cost, by Injury Year, by Maturity and Claim Type, Professional Services

Injury Year	6 Months			12 Months			24 Months		
	Total Cost (Thousand Dollars)	Number of Claims	Average Cost per Claim	Total Cost (Thousand Dollars)	Number of Claims	Average Cost per Claim	Total Cost (Thousand Dollars)	Number of Claims	Average Cost per Claim
Lost-time Claims									
1998	\$265,168	74,866	\$3,542	\$382,453	76,571	\$4,995	\$472,030	77,555	\$6,086
1999	\$251,848	70,498	\$3,572	\$352,822	72,606	\$4,859	\$448,027	73,947	\$6,059
2000	\$259,520	70,359	\$3,689	\$371,369	72,871	\$5,096	\$499,014	74,668	\$6,683
2001	\$283,894	70,270	\$4,040	\$416,256	72,656	\$5,729	\$555,145	74,000	\$7,502
2002	\$310,056	69,287	\$4,475	\$437,568	70,571	\$6,200	\$549,332	71,248	\$7,710
2003	\$265,771	62,369	\$4,261	\$366,755	63,227	\$5,801	\$457,402	64,651	\$7,075
2004	\$223,579	59,444	\$3,761	\$317,294	61,490	\$5,160	\$399,626	62,075	\$6,438
2005	\$229,959	57,288	\$4,014	\$313,036	58,197	\$5,379	\$385,062	58,671	\$6,563
2006	\$199,988	56,983	\$3,510	\$275,429	57,641	\$4,778	\$339,937	57,928	\$5,868
2007	\$197,573	57,946	\$3,410	\$270,537	58,514	\$4,623	\$336,606	58,821	\$5,723
2008	\$217,912	58,993	\$3,694	\$300,868	59,607	\$5,048	\$375,974	59,869	\$6,280
2009	\$218,699	54,731	\$3,996	\$296,668	55,195	\$5,375	\$364,464	55,369	\$6,582
2010	\$234,985	57,310	\$4,100	\$319,089	57,711	\$5,529	\$390,865	57,842	\$6,757
2011	\$260,804	56,982	\$4,577	\$345,315	57,336	\$6,023			
2012	\$248,466	53,884	\$4,611						
Medical-only Type									
1998	\$120,680	238,859	\$505	\$140,805	242,638	\$580	\$154,041	244,916	\$629
1999	\$115,659	211,592	\$547	\$133,767	214,636	\$623	\$149,207	216,798	\$688
2000	\$112,043	198,757	\$564	\$130,347	201,800	\$646	\$147,315	204,293	\$721
2001	\$114,054	190,661	\$598	\$132,583	193,613	\$685	\$148,183	195,512	\$758
2002	\$109,897	186,725	\$589	\$125,049	188,627	\$663	\$136,649	189,702	\$720
2003	\$103,303	172,266	\$600	\$115,805	173,637	\$667	\$124,784	174,750	\$714
2004	\$93,534	158,961	\$588	\$104,232	160,816	\$648	\$111,611	161,857	\$690
2005	\$103,474	170,289	\$608	\$113,554	171,500	\$662	\$120,782	172,231	\$701
2006	\$103,746	178,884	\$580	\$113,821	179,980	\$632	\$120,230	180,585	\$666
2007	\$105,763	185,050	\$572	\$115,077	186,082	\$618	\$121,548	186,693	\$651
2008	\$103,991	178,433	\$583	\$111,938	179,400	\$624	\$117,274	179,973	\$652
2009	\$103,485	158,834	\$652	\$110,523	159,626	\$692	\$115,296	160,129	\$720
2010	\$109,704	162,875	\$674	\$117,844	163,661	\$720	\$123,158	164,123	\$750
2011	\$126,711	166,021	\$763	\$135,938	166,832	\$815			
2012	\$131,967	166,526	\$792						

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Average costs per claim differed substantially between medical-only claims and lost-time claims (see Figure 3.5). For medical-only claims, figures are shown only for the six-month maturity since most of them received all their services within that time frame. For lost-time claims, varying maturities did not result in any significant differences in the cost trends. The figure also indicates that the general trend in total cost closely follows the cost trend in lost-time claims.

Figure 3.5: Average Cost per Claim, by Injury Year by Claim Type, Professional Services

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

A slightly different configuration for the maturity is presented in Tables 3.9 and 3.10. Total costs are shown for each service year but all services are grouped into one of four maturity groups. The 'In the First Year' group is for new injuries and sums the payments for all services that are provided within one year from the date of injury. The 'In the Second Year' maturity group is for the previous year's injury claims and totals all services that are provided between 366 days and 730 days from the injury date, and so on. This second year group does not include any services given within one year of injury unlike an 'injury year data with 24-month maturity' that includes all services from 0 day to 730 days from the injury date.

The majority of the claims (78 percent in 2012) are in the first year maturity group since this includes most of the medical-only claims. The other three groups are mostly made up of lost-time claims. In terms of total cost, the majority of costs are expended for treating new claims in the first year maturity group. Again we note that this measure is different from the injury year data in Table 3.8, since figures for the 12 months maturity in Table 3.8 are inclusive of the 6 months maturity data while the four groups in Table 3.9 each sums up a group of services that are mutually exclusive. Table 3.10 shows the average cost for each maturity group in Table 3.9.

Since there are more claims in the first year maturity group, their cost is the largest, reaching 71 percent of the total in 2012. Services for claims with four or more years of maturity accounted for 13 percent of the total cost in 2012. Cost shares of the second and third year maturity groups are decreasing while those of one year or less and four years or longer maturity groups are increasing since the early 2000s. Average cost is the highest in the second year (see Table 3.10). This is most likely because surgeries and other major treatments are provided in the second year. Note that these average costs are accumulative. For example, if a 2011 claim receives medical

care for two years, the average cost in the first two years is roughly \$4,618, which is the sum of \$1,842 for the first year in 2011 and \$2,776 for the second year in 2012.

Table 3.9: Total Cost, by Service Year by Maturity, Professional Services (Thousand Dollars)

Service Year	In the First Year	In the Second Year	In the Third Year	4th Year and Older	Total
1998	\$484,758	\$101,356	\$44,517	\$85,078	\$715,710
1999	\$504,585	\$112,382	\$41,518	\$146,612	\$805,097
2000	\$495,573	\$105,790	\$40,685	\$76,806	\$718,854
2001	\$528,685	\$127,838	\$49,062	\$80,419	\$786,003
2002	\$572,115	\$158,485	\$68,048	\$108,229	\$906,876
2003	\$516,306	\$137,785	\$62,646	\$106,344	\$823,080
2004	\$422,585	\$105,847	\$46,561	\$90,524	\$665,517
2005	\$451,415	\$95,967	\$42,377	\$94,445	\$684,204
2006	\$392,243	\$83,142	\$33,730	\$88,141	\$597,257
2007	\$389,640	\$73,768	\$29,792	\$78,660	\$571,860
2008	\$400,466	\$70,677	\$26,918	\$73,908	\$571,969
2009	\$416,310	\$78,315	\$28,083	\$78,927	\$601,635
2010	\$421,231	\$75,044	\$30,082	\$78,200	\$604,557
2011	\$483,469	\$76,485	\$30,037	\$84,730	\$674,721
2012	\$475,767	\$76,126	\$27,807	\$89,717	\$669,417

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 3.10: Average Cost per Claim, by Service Year by Maturity, Professional Services

Service Year	In the First Year	In the Second Year	In the Third Year	4th Year and Older
1998	\$1,295	\$1,845	\$1,521	\$1,775
1999	\$1,464	\$2,076	\$1,513	\$2,953
2000	\$1,524	\$2,032	\$1,521	\$1,585
2001	\$1,661	\$2,252	\$1,699	\$1,555
2002	\$1,805	\$2,641	\$2,084	\$1,835
2003	\$1,783	\$2,621	\$2,053	\$1,820
2004	\$1,615	\$2,466	\$1,893	\$1,685
2005	\$1,650	\$2,506	\$2,036	\$1,799
2006	\$1,402	\$2,393	\$1,893	\$1,839
2007	\$1,359	\$2,305	\$1,904	\$1,792
2008	\$1,428	\$2,294	\$1,893	\$1,843
2009	\$1,627	\$2,551	\$1,992	\$2,018
2010	\$1,629	\$2,592	\$2,146	\$2,069
2011	\$1,842	\$2,813	\$2,368	\$2,325
2012	\$1,828	\$2,776	\$2,345	\$2,566

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Professional Cost and Utilization by Service Type

In terms of utilization trends shown in Table 3.11, an increasing percentage of claims received DMEPOS and IR Exam & Report services in recent years, while the percentage of claims receiving Physical Medicine services has not changed significantly. These PM results are similar to those of the service year data shown in Table 3.6. Overall percentages in these injury year tables are somewhat higher than in the service year tables since this table excludes old claims that were included in Table 3.6. Also, as we increase maturity from 12 months, these statistics tend to increase somewhat proportionately.

Table 3.11: Percent of Claims Receiving Certain Professional Services, Lost-time Claims, by Injury Year at 12 Months Post Injury

Injury Year	DMEPOS	Diag/Path/Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
1998	48.3%	80.8%	95.1%	79.1%	63.1%	59.1%	41.5%	9.9%
1999	50.1%	79.5%	94.6%	77.0%	61.1%	60.3%	40.7%	9.7%
2000	48.7%	79.2%	95.3%	77.6%	59.4%	60.9%	40.5%	10.1%
2001	48.7%	80.7%	95.9%	81.7%	61.0%	62.9%	43.5%	11.2%
2002	54.2%	84.8%	97.3%	85.2%	65.0%	65.0%	46.5%	11.4%
2003	63.9%	86.3%	97.5%	87.1%	63.2%	65.9%	49.0%	10.7%
2004	66.9%	83.2%	96.1%	87.1%	53.9%	64.3%	47.5%	9.5%
2005	65.0%	85.8%	96.9%	88.0%	54.4%	63.2%	51.2%	8.8%
2006	69.8%	86.5%	97.3%	87.6%	54.6%	60.4%	52.3%	7.7%
2007	71.7%	87.2%	97.7%	86.9%	53.8%	59.3%	52.1%	6.3%
2008	70.9%	87.5%	97.9%	87.9%	53.6%	58.6%	52.4%	5.6%
2009	71.9%	88.1%	98.4%	89.3%	53.1%	59.8%	51.7%	5.1%
2010	71.3%	88.0%	98.6%	89.0%	52.2%	59.1%	51.3%	4.8%
2011	71.6%	87.8%	98.7%	89.1%	51.9%	57.9%	52.5%	4.3%

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of cost by service type, average cost per lost-time claim increased the most for IR Exam & Report services, by 113 percent since 1998 (see Table 3.12). This increase was concurrent with a 61 percent increase in the utilization of these services: from 5.1 services per claim for 1998 injury year to 8.2 services for 2011 injury year (see Table 3.13). Surgery – Other and DMEPOS services also showed large increases in the average cost per claim and in utilization. The average cost per claim for Physical Medicine services decreased significantly since its peak in 2002 with a corresponding decrease in the number of services per claim. For Physical Medicine services, the main factor in cost reduction appears to be the decrease in service intensity shown in Table 3.13. The number of services per claim decreased by 48 percent from its highest level in 2002. On the other hand, for Surgery – Spinal services, the decrease in the percent of claims receiving the service (frequency of utilization in Table 3.11) was more prominent than the decrease in the number of services (intensity of utilization in Table 3.13).

Table 3.12: Average Cost per Claim by Service Type, Professional Services, Lost-time Claims, by Injury Year at 12 Months Post Injury

Injury Year	DMEPOS	Diag/Path/ Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
1998	\$451	\$721	\$864	\$331	\$449	\$2,859	\$1,305	\$2,881
1999	\$493	\$752	\$891	\$337	\$427	\$3,035	\$1,324	\$2,717
2000	\$521	\$804	\$901	\$344	\$430	\$3,305	\$1,318	\$2,692
2001	\$576	\$909	\$939	\$442	\$466	\$3,579	\$1,395	\$2,763
2002	\$582	\$957	\$937	\$510	\$491	\$3,738	\$1,429	\$2,765
2003	\$563	\$833	\$873	\$606	\$481	\$3,471	\$1,161	\$1,699
2004	\$546	\$701	\$789	\$632	\$480	\$2,983	\$1,220	\$1,542
2005	\$659	\$720	\$799	\$701	\$514	\$2,761	\$1,497	\$1,725
2006	\$636	\$649	\$735	\$703	\$488	\$2,124	\$1,472	\$1,594
2007	\$694	\$573	\$747	\$736	\$484	\$1,885	\$1,487	\$1,623
2008	\$694	\$635	\$823	\$728	\$533	\$2,030	\$1,865	\$1,797
2009	\$684	\$652	\$877	\$740	\$541	\$2,159	\$2,139	\$1,962
2010	\$702	\$645	\$937	\$713	\$552	\$2,293	\$2,264	\$2,027
2011	\$776	\$715	\$1,041	\$705	\$581	\$2,561	\$2,489	\$2,154

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 3.13: Number of Services per Claim, Professional Services, Lost-time Claims, by Injury Year at 12 Months Post Injury

Injury Year	DMEPOS	Diag/Path / Lab	E/M	IR Exam & Report	Other Services	Physical Medicine	Surgery - Other	Surgery - Spinal
1998	6.5	7.9	16.4	5.1	6.9	100.6	3.9	5.0
1999	7.2	8.0	16.8	5.2	6.6	105.3	4.0	5.0
2000	6.9	8.3	17.3	5.9	6.5	110.6	3.9	4.9
2001	7.4	9.1	18.8	7.6	7.0	125.3	4.3	5.1
2002	7.9	9.8	20.2	8.4	6.9	145.8	4.6	5.3
2003	11.4	10.1	16.8	8.8	6.1	139.0	4.5	4.8
2004	13.1	8.6	13.1	8.2	4.5	117.5	4.5	4.3
2005	13.6	9.0	12.6	9.1	4.5	106.2	5.1	5.0
2006	11.4	8.6	10.8	8.4	4.2	79.6	5.0	4.8
2007	10.7	8.6	10.1	8.2	3.9	71.3	5.0	4.7
2008	10.3	9.0	10.3	8.5	3.9	71.5	5.0	4.4
2009	9.9	8.8	10.2	8.5	3.7	69.1	4.9	4.5
2010	8.9	8.7	10.1	8.3	3.6	67.7	5.0	4.2
2011	8.8	9.5	9.9	8.2	3.6	66.5	5.2	3.9

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Cost per Service by Injury Year for Selected Professional Services

For payment purposes, providers and billers use more than 10,000 different medical services (by CPT or HCPCS code) that, along with multipart modifiers, represent specific services, procedures, and supplies. However, a few common services account for the majority of costs. The top 10 services accounted for 41 percent of the total payments (\$5.0 billion) from 2005 to 2012 while 52 percent and 74 percent of the total costs were associated with the top 20 and the top 100 services, respectively. The top 20 services in terms of total payments are shown in Table 3.14. They are mainly codes in E/M, Physical Medicine, IR Exam & Report, and Diag/Path/Lab services.

Figures 3.6 through 3.14 present average costs per service for selected services. When some of the top 20 services are in the same service group, we have selected only a representative service to avoid duplication. We also show surgery, DME and other services that may not be in the top 20 but are of interest. The results are by injury year so that cost patterns can be compared with each other. An appropriate length of maturity is selected for each service.

Table 3.14: Top 20 Services by Total Payments in 2005–2012

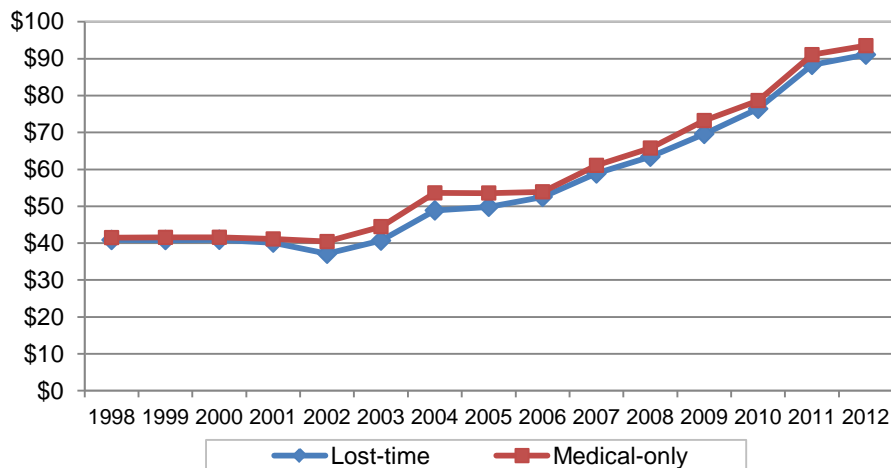
Rank	CPT/ HCPCS	Total Pay (Thousand Dollars)	Description
1	97110	\$464,907	Therapeutic procedure, one or more areas, each 15 minutes
2	99213	\$330,816	Office or other outpatient visit for evaluation and management of established patient
3	99456	\$323,493	Work related or medical disability exam by other than treating physician
4	97799	\$267,087	Unlisted physical medicine/rehabilitation service or procedure
5	99214	\$177,285	Office or other outpatient visit for evaluation and management of established patient
6	99204	\$109,775	Office or other outpatient visit for evaluation and management of new patient
7	99203	\$97,675	Office or other outpatient visit for evaluation and management of new patient
8	97140	\$90,312	Manual therapy techniques, one or more regions, each 15 minutes
9	97750	\$87,183	Physical performance test or measurement, with written report, each 15 minutes
10	97530	\$78,470	Therapeutic activities, direct patient contact by the provider
11	97546	\$75,644	Work hardening/conditioning; each additional hour
12	97112	\$67,068	Therapeutic procedure, one or more areas, each 15 minutes; neuromuscular reeducation
13	99080	\$63,983	Special reports such as insurance forms, more than the information conveyed in the usual medical communications or standard reporting form
14	73721	\$56,737	Magnetic resonance imaging, any joint of lower extremity; without contrast material
15	99455	\$56,356	Work related or medical disability exam by treating physician
16	73221	\$49,989	Magnetic resonance imaging, any joint of upper extremity; without contrast material
17	72148	\$48,100	Magnetic resonance imaging, spinal canal and contents, lumbar; without contrast material
18	99212	\$44,793	Office or other outpatient visit for evaluation and management of established patient
19	97001	\$40,633	Physical therapy evaluation
20	29881	\$37,027	Arthroscopy, knee, surgical; with meniscectomy

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Office Visit – 99213

This service is the most common and costly service in the E/M service group. Cost per service increased since 2002 mainly due to changes in the professional services fee guideline. Similar to most other services, the average cost increased at a lower rate in 2012 than previous years.

Figure 3.6: Average Cost per Service - Office/Outpatient Visit, Established Patient (99213), by Injury Year at Six Months Post Injury

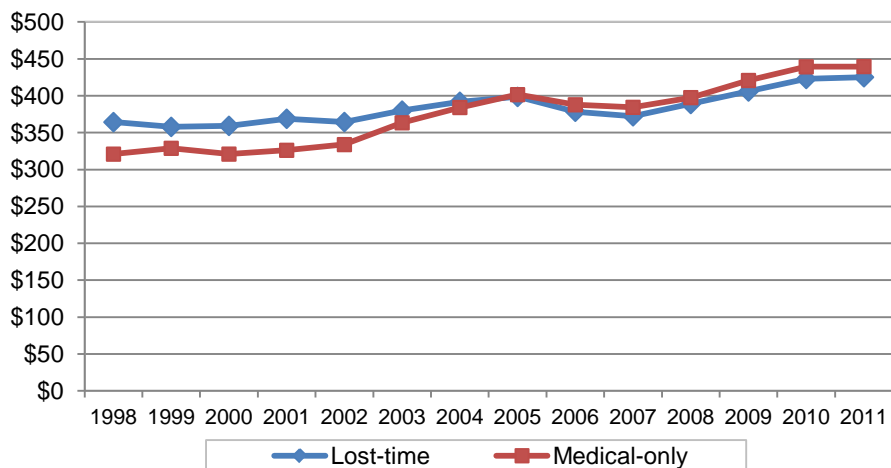


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Disability Examination – 99456

This service is billed by an examining physician who is not the treating physician. Total cost is almost 6 times larger than the service by treating physicians (CPT/HCPCS 99455). But the average cost and the cost trend are similar for both codes.

Figure 3.7: Average Cost per Service – Disability Examination (99456), by Injury Year at 12 Months Post Injury

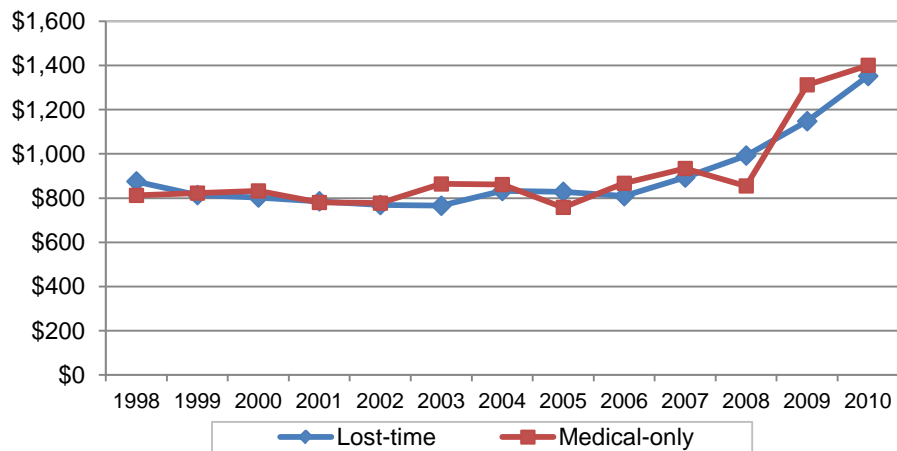


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Lumbar Spine Fusion – 22612

Surgery services in general require longer maturity due to their nature of service, and Figure 3.8 shows average costs at the 24-month maturity. There was a steep increase in price per service provided to medical-only patients for 2009 injuries. The increase in the prices coincides with changes in the new professional services fee guideline that became effective in 2008.

Figure 3.8: Average Cost per Service – Lumbar Spine Fusion (22612), by Injury Year at 24 Months Post Injury

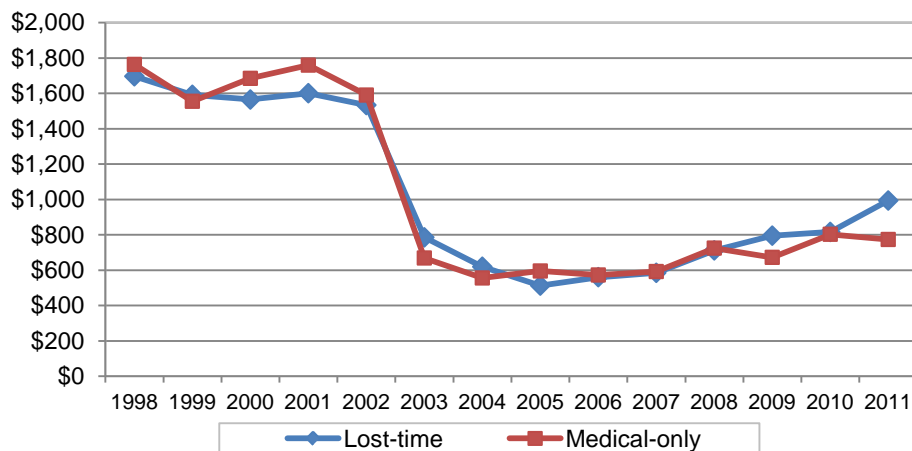


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Low Back Disc Surgery – 63030

Unlike the above spinal fusion, the average cost of low back disc surgery services decreased because of the changes in the 2003 ambulatory surgical center fee guideline. While Figure 3.9 is for the 12-month maturity, data for the 24-month maturity is very similar, indicating that these services are provided in the first year.

Figure 3.9: Average Cost per Service – Low Back Disc Surgery (63030), by Injury Year at 12 Months Post Injury

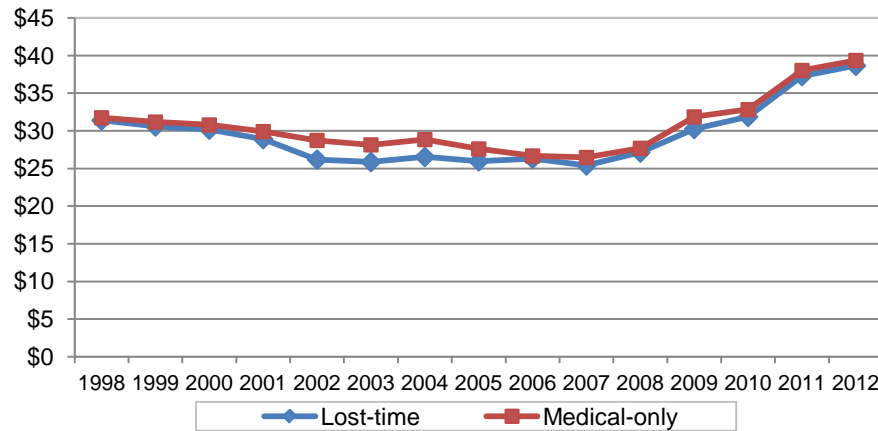


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Therapeutic Exercises – 97110

This physical medicine service is the most common and costly service code. Figure 3.10 shows an average cost per 15-minute session. This average cost fluctuated around \$30 per session, with a minor decrease around 2007 and a steady increase since 2008. It indicates that the substantial decrease in total costs for physical medicine was more due to changes in utilization than to changes in the unit price.

Figure 3.10: Average Cost per Service – Therapeutic Exercises (97110), by Injury Year at Six Months Post Injury

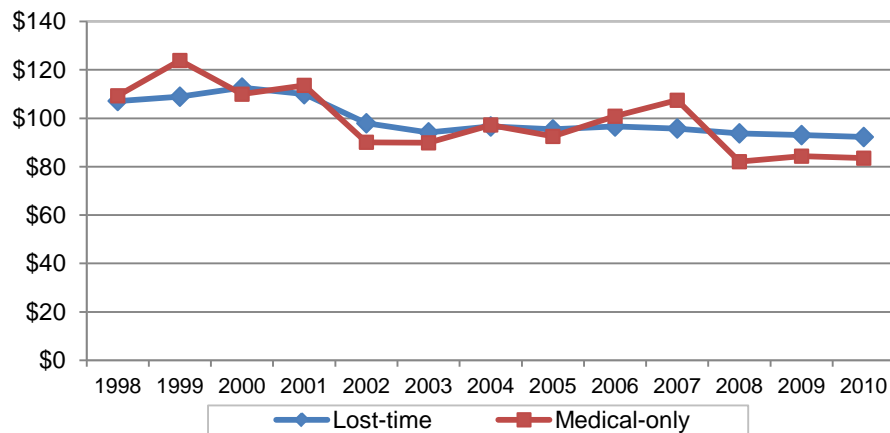


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Chronic Pain Management/Rehabilitation Service – 97799

This service is used to bill for ‘unlisted physical medicine service,’ including diverse services with different prices. Figure 3.11 shows only those for chronic pain management, distinguished by the CP modifier in the bill. The average price per service showed a long-term decrease.

Figure 3.11: Average Cost per Service – Chronic Pain Management/Rehabilitation Service (97799 with Modifier ‘CP’), by Injury Year at 24 Months Post Injury

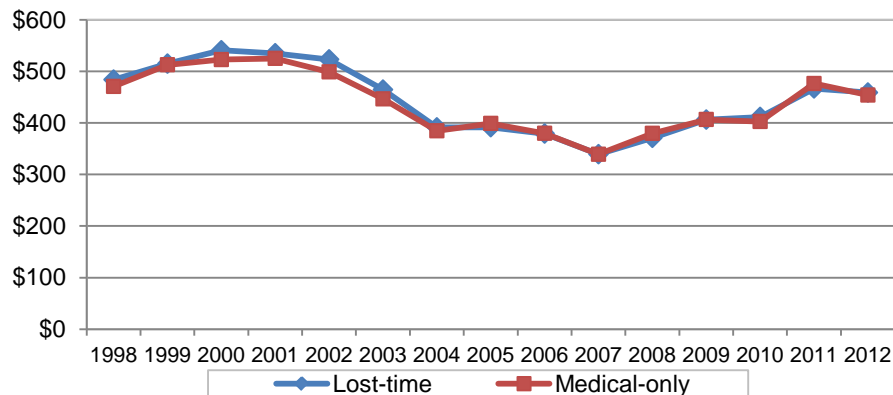


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

MRI – 73721

This service is one of the three MRI services in the top 20. The effect of the 2003 professional services fee guideline on diagnostic services was negative while the 2008 fee schedule appears to have increased the reimbursement rate.

Figure 3.12: Average Cost per Service – MRI Joint of Lower Extremity without Dye (73721), by Injury Year at Six Months Post Injury

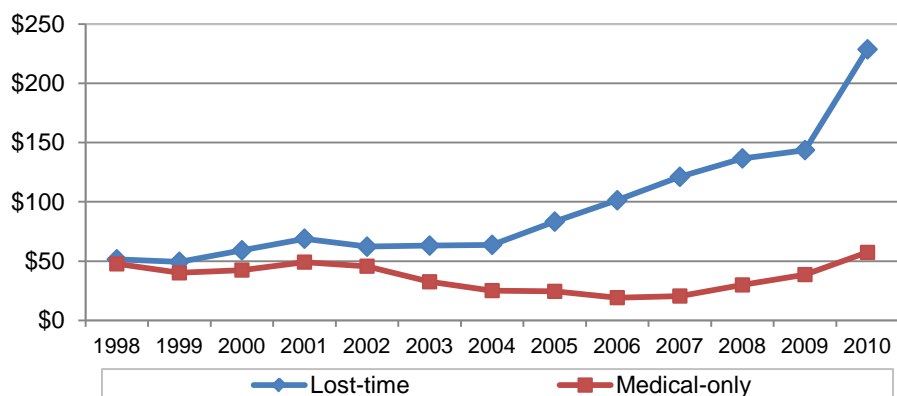


Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Durable Medical Equipment, Miscellaneous – E1399

Ranked 24th in total payments among all service codes, E1399 is the most costly DME code. It is used for miscellaneous charges for supplies (\$28.5 million total for 2005–2012). Because this code is a catch-all category, apparent price increases may be due to a changing mix of supplies toward higher-cost items. The increase in the average cost was accompanied by a significant decrease in the number of claims receiving this service, from about 20,000 in 2007 to 5,300 in 2010. This could explain the steep increase in the average cost for lost-time claims, as the lower number of claims might represent higher-severity claims more responsive to DME supplies than low-severity claims.

Figure 3.13: Average Cost per Service – Durable Medical Equipment, Miscellaneous (E1399), by Injury Year at 24 Months Post Injury



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

4. Cost and Utilization for Hospital/Institutional Services

Hospital/institutional services include hospital inpatient and outpatient services, services in skilled nursing facilities, home health care and other services provided at special facilities. However, about 90 percent of the bills are associated with hospital services. The majority of hospital bills (about 70 percent) are for services provided within the first six months from the injury date. Services at ambulatory surgical centers (ASC) are included in the professional service dataset and discussed in Section 3.

Total Cost and Utilization for Hospital/Institutional Services

Slightly less than a third of all claims that received health care benefits had one or more hospital/institutional service bills (see Table 4.1). This share was highest in 2003 at 33 percent and decreased since then to 29 percent in 2012.

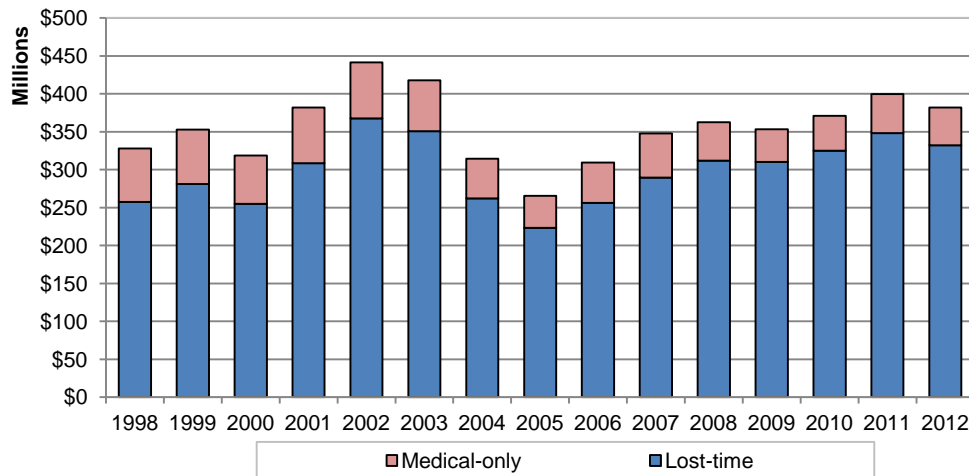
Table 4.1: Number and Share of Claims That Received Hospital/Institutional Services

Service Year	Claims - Medical Combined	Claims - Hospital/ Institutional	Hospital/ Institutional Claim Share	Lost-time Claims	Medical-only Claims
1998	483,876	153,906	31.8%	70,867	83,112
1999	454,939	146,349	32.2%	68,463	77,947
2000	430,133	132,031	30.7%	62,308	69,772
2001	429,373	135,397	31.5%	65,744	69,696
2002	434,629	142,662	32.8%	73,938	68,757
2003	398,411	131,909	33.1%	69,356	62,572
2004	357,624	111,197	31.1%	57,538	53,674
2005	382,312	98,649	25.8%	47,304	51,366
2006	380,521	108,568	28.5%	49,976	58,614
2007	381,253	112,435	29.5%	50,714	61,746
2008	371,266	108,953	29.3%	50,807	58,165
2009	340,489	98,704	29.0%	48,251	50,463
2010	336,065	100,267	29.8%	48,595	51,678
2011	334,208	102,641	30.7%	48,629	54,024
2012	329,771	96,788	29.4%	45,602	51,197

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013

Figure 4.1 presents a cumulative graph of total hospital costs by service year summing lost-time and medical-only claims costs. In terms of claim type, lost-time claims accounted for between 45 percent and 50 percent in the number of claims, but they accounted for over 85 percent of the total cost in each service year. Medical-only claims, even when utilizing hospital or institutional services, used relatively low-cost services. After the 2002 peak, the total cost decreased substantially until 2005 and increased to about \$350 million in 2007 with a slight increase since then. Because the cost share of lost-time claims is so dominant, some tables and figures below will only consider lost-time claims.

Figure 4.1: Total Cost, by Service Year by Claim Type, Hospital/Institutional Services



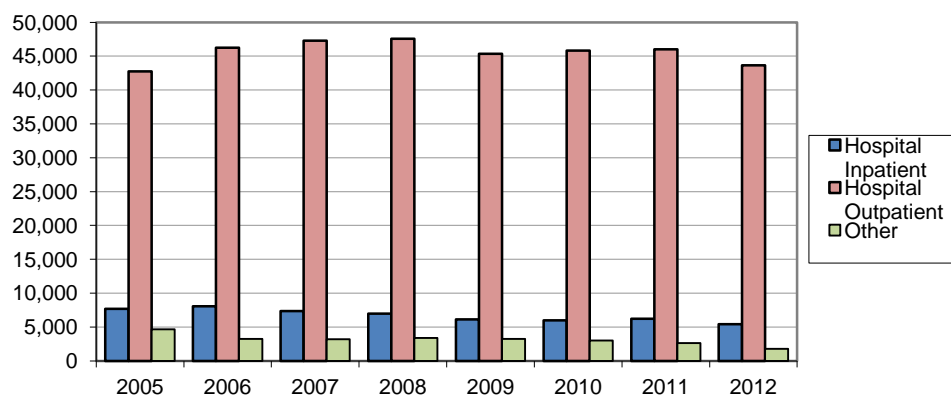
Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Hospital/Institutional Costs by Facility Type

Facility codes in the hospital billing data separate bills by the type of institution (hospital or skilled nursing facility) and by the nature of service location (inpatient or outpatient). This analysis focuses on the 2005–2012 period due to the availability of more reliable facility codes in the EDI 837 data.

Among lost-time claims, most claims received hospital outpatient services (see Figure 4.2). The data may be duplicative since one claim could receive several types of services and counted multiple times. But out of about 45,000 unique lost-time claims in 2012, less than 8,000 claims used services other than hospital outpatient services. Hospital outpatient claims represented 90 percent of all claims in 2005, which increased to 96 percent in 2012. The share of hospital inpatient claims decreased from 16 percent to 12 percent in the same period.

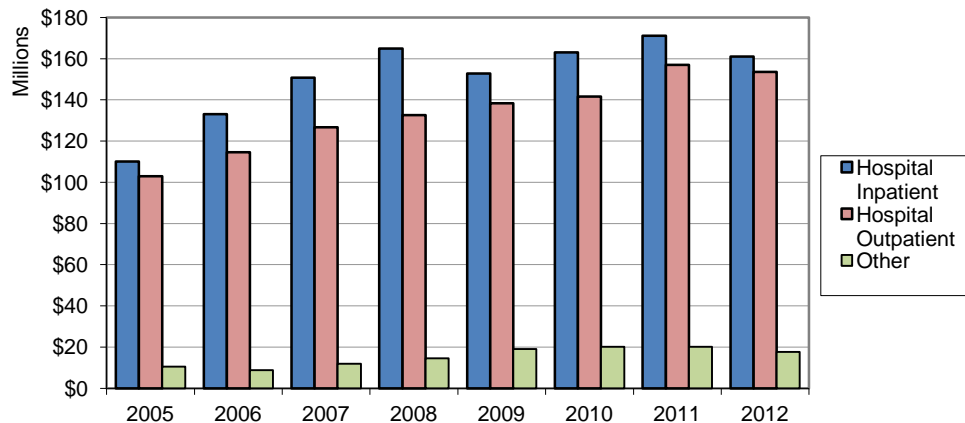
Figure 4.2: Number of Claims, by Facility Type, Hospital/Institutional Services, Lost-time Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Despite the fact that hospital outpatient services are the most commonly used services, however, total cost for hospital inpatient services is slightly greater than that for hospital outpatient services, 48 percent vs. 46 percent of the total, respectively, in 2012 (see Figure 4.3).

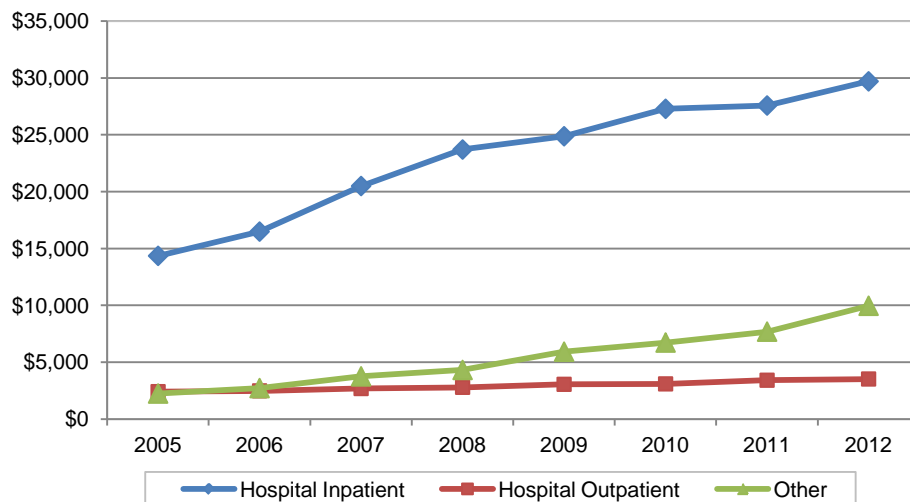
Figure 4.3: Total Cost, by Facility Type, Hospital/Institutional Services, Lost-time Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Consequently, the average cost per claim was much higher for hospital inpatient services (see Figure 4.4 for comparison among the three facility types). The average cost for hospital inpatient services was not only higher but has been increasing much faster than outpatient or other facility services from 2005 to 2008, but its growth rate decreased in 2009 when a new hospital fee guideline went into effect. The most recent service year data indicates that hospital cost continued to grow faster than professional cost.

Figure 4.4: Cost per Claim, by Facility Type, Hospital/Institutional Services, Lost-time Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Hospital/Institutional Costs by Injury Year

While costs by injury year show only partial pictures of the total costs by disregarding old and legacy claims, they may be more informative if the primary concern is for new injuries. Total costs for new injuries at 6-month, 12-month, and 24-month maturities all decreased since 1998 for medical-only claims but increased for lost-time claims (see Table 4.2).

Table 4.2: Total Hospital/Institutional Cost (Thousand Dollars), by Injury Year at 6, 12, 24 Months Post Injury

Injury Year	Lost-time Claims			Medical-only Claims		
	6 Months	12 Months	24 Months	6 Months	12 Months	24 Months
1998	\$135,373	\$174,662	\$214,562	\$49,103	\$56,303	\$62,519
1999	\$138,010	\$178,727	\$221,098	\$50,212	\$57,183	\$63,775
2000	\$120,722	\$165,716	\$226,444	\$43,544	\$50,622	\$58,581
2001	\$145,589	\$200,775	\$262,642	\$50,212	\$57,572	\$64,283
2002	\$158,354	\$212,576	\$262,687	\$44,731	\$51,017	\$55,815
2003	\$154,364	\$197,094	\$227,627	\$45,537	\$49,785	\$52,739
2004	\$113,226	\$137,139	\$164,931	\$37,172	\$39,866	\$42,111
2005	\$117,400	\$143,168	\$172,359	\$35,965	\$38,615	\$40,758
2006	\$145,319	\$174,250	\$203,830	\$43,158	\$45,627	\$47,827
2007	\$174,120	\$206,249	\$240,529	\$48,796	\$51,256	\$53,885
2008	\$180,895	\$218,321	\$258,405	\$40,836	\$42,544	\$44,295
2009	\$160,957	\$194,231	\$229,180	\$34,761	\$36,551	\$38,144
2010	\$176,563	\$211,094	\$244,491	\$38,571	\$40,625	\$42,822
2011	\$194,214	\$229,936		\$42,792	\$45,435	
2012	\$182,817			\$41,438		

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

The number of claims decreased for both lost-time and medical-only claims, but the decrease was slightly larger for medical-only claims (see Table 4.3). Average cost per claim increased greatly for lost-time claims: 85 percent increase since 1998 for the 6-month maturity group and 54 percent increase for the 24-month maturity group (see Table 4.4). The decrease in the number of claims, in addition to the upward influence from increases in utilization and price per service, resulted in higher average costs. The increase in the average cost was greater for the 6-month maturity group, implying that the cost increase was driven by increases in the cost of initial services.

Table 4.3: Number of Claims Receiving Hospital/Institutional Services, by Injury Year at 6, 12, 24 Months Post Injury

Injury Year	Lost-time Claims			Medical-only Claims		
	6 Months	12 Months	24 Months	6 Months	12 Months	24 Months
1998	40,321	43,927	45,811	74,997	76,648	77,658
1999	37,347	40,951	42,941	69,833	71,261	72,202
2000	34,005	38,140	41,146	62,695	64,164	65,244
2001	36,160	40,809	43,536	62,499	63,907	64,737
2002	38,527	42,463	44,263	61,216	62,220	62,801
2003	35,401	38,334	39,600	56,330	57,153	57,563
2004	30,222	32,351	33,696	49,166	49,750	50,105
2005	27,504	29,652	30,953	48,989	48,989	49,333
2006	30,454	32,387	33,344	55,910	55,910	56,193
2007	32,268	34,116	35,118	58,826	58,826	59,107
2008	32,921	34,834	35,780	55,500	55,500	55,742
2009	29,834	31,467	32,280	47,937	47,937	48,177
2010	31,460	33,143	33,912	49,533	49,533	49,765
2011	31,877	33,280		51,759	51,759	
2012	29,501			48,493		

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 4.4: Average Hospital/Institutional Cost per Claim, by Injury Year at 6, 12, 24 Months Post Injury

Injury Year	Lost-time Claims			Medical-only Claims		
	6 Months	12 Months	24 Months	6 Months	12 Months	24 Months
1998	\$3,357	\$3,976	\$4,684	\$655	\$735	\$805
1999	\$3,695	\$4,364	\$5,149	\$719	\$802	\$883
2000	\$3,550	\$4,345	\$5,503	\$695	\$789	\$898
2001	\$4,026	\$4,920	\$6,033	\$803	\$901	\$993
2002	\$4,110	\$5,006	\$5,935	\$731	\$820	\$889
2003	\$4,360	\$5,141	\$5,748	\$808	\$871	\$916
2004	\$3,746	\$4,239	\$4,895	\$756	\$801	\$840
2005	\$4,268	\$4,828	\$5,568	\$734	\$788	\$826
2006	\$4,772	\$5,380	\$6,113	\$772	\$816	\$851
2007	\$5,396	\$6,046	\$6,849	\$829	\$871	\$912
2008	\$5,495	\$6,267	\$7,222	\$736	\$767	\$795
2009	\$5,395	\$6,173	\$7,100	\$725	\$762	\$792
2010	\$5,612	\$6,369	\$7,210	\$779	\$820	\$860
2011	\$6,093	\$6,909		\$827	\$878	
2012	\$6,197			\$855		

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Professional and Hospital/Institutional Costs Combined

Data by claim type in this report will aid stakeholders in comparing Texas numbers with other states' costs. Many reports published by other workers' compensation agencies and research organizations primarily center on claims with more than seven days of lost time. This group of claims is roughly equivalent to the lost-time type claims in this report. In addition, in some reports, 'medical' costs often combine professional and hospital costs. To facilitate comparisons with this type of reports, Table 4.5 presents the number of claims, the total cost and the average cost per claim by claim type combining professional and hospital/institutional services. Services are by injury year with 12 months of maturity.

For example, *CompScope Medical Benchmarks* from the Workers Compensation Research Institute (WCRI) showed that, for 2010/2011 claims, Texas average cost was \$8,916 for claims with greater than seven days of lost time, and \$921 for claims with seven days or less of lost time, combining professional and hospital costs. These compare closely with \$9,154 and \$941 for 2010 injury year in Table 4.5. The small differences may be due to different definitions for the injury year and maturity, and different treatments for extreme values, outliers, and cases with missing data. Also, REG's results are based on all bills in the workers' compensation system instead of samples used by WCRI. In terms of the number of claims, the share of 'greater than seven days of lost time' claims in the WCRI report was 25 percent of all claims while it was 26 percent for the lost-time claims in Table 4.5.

Table 4.5: Number of Claims, Total and Average Costs, Professional and Hospital/Institutional Services Combined, by Injury Year at 12 Months Post Injury

Injury Year	Lost-time Claims			Medical-only Claims		
	Number of Claims	Total Cost (Thousand Dollars)	Average Cost per Claim	Number of Claims	Total Cost (Thousand Dollars)	Average Cost per Claim
1998	77,539	\$557,139	\$7,185	256,737	\$197,136	\$768
1999	73,719	\$531,568	\$7,211	228,680	\$190,953	\$835
2000	73,973	\$537,086	\$7,261	214,109	\$180,970	\$845
2001	73,541	\$617,033	\$8,390	206,365	\$190,154	\$921
2002	71,414	\$650,153	\$9,104	198,433	\$176,069	\$887
2003	63,619	\$563,895	\$8,864	181,179	\$165,594	\$914
2004	61,828	\$454,439	\$7,350	168,003	\$144,101	\$858
2005	58,573	\$456,204	\$7,789	177,098	\$152,169	\$859
2006	57,944	\$449,680	\$7,761	186,673	\$159,448	\$854
2007	58,810	\$476,785	\$8,107	192,769	\$166,332	\$863
2008	59,868	\$519,188	\$8,672	185,600	\$154,483	\$832
2009	55,396	\$490,899	\$8,862	164,393	\$147,074	\$895
2010	57,920	\$530,183	\$9,154	168,339	\$158,468	\$941
2011	57,560	\$575,251	\$9,994	172,046	\$181,373	\$1,054

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

5. Cost and Utilization for Dental Services

Payments for dental services in the Texas workers' compensation system accounted for about 0.4 percent of the total health care cost in 2012 (as discussed in Table 2.3). The majority of the dental cost was for medical-only claims, but the average cost per claim for lost-time claims was about twice that for the medical-only claims. This ratio is relatively low compared to the pattern found in professional or pharmacy costs where lost-time claims have overwhelmingly dominant costs.

Table 5.1: Number of Claims, Total and Average Costs per Claim for Dental Services, by Claim Type

Service Year	Lost-time Claims			Medical-only Claims		
	Number of Claims	Total Cost	Cost per Claim	Number of Claims	Total Cost	Cost per Claim
2005	199	\$297,834	\$1,497	423	\$477,323	\$1,128
2006	279	\$610,980	\$2,190	603	\$893,353	\$1,482
2007	388	\$1,024,338	\$2,640	844	\$1,502,117	\$1,780
2008	410	\$1,176,014	\$2,868	943	\$2,094,877	\$2,222
2009	357	\$1,430,004	\$4,006	914	\$1,933,585	\$2,116
2010	415	\$1,791,380	\$4,317	975	\$2,165,690	\$2,221
2011	406	\$1,750,932	\$4,313	1,007	\$2,456,751	\$2,440
2012	434	\$1,548,650	\$3,568	999	\$2,801,862	\$2,805

Note: Since the collection of dental billing data began in 2005, the table indicates that 2005 and 2006 data may be incomplete.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

The top 10 most billed dental procedures are shown in Table 5.2. They accounted for 50 percent of the total dental cost during the eight year period. Most common services were implant, crown, and root canal procedures.

Table 5.2: Top 10 Dental Services, by Total Cost (2005–2012 Cumulative Totals)

Rank	HCPCS	Number of Claims	Total Cost	Procedure Description
1	D6010	695	\$2,839,849	Surgical placement of implant body: endosteal implant
2	D3310	1,681	\$1,769,091	Endodontic therapy, anterior tooth (excluding final restoration)
3	D2750	1,080	\$1,749,240	Crown-porcelain fused to high noble metal
4	D2740	951	\$1,443,887	Crown-porcelain/ceramic substrate
5	D6750	497	\$992,455	Crown-porcelain fused to high noble metal
6	D6240	557	\$812,500	Pontic-porcelain fused to high noble metal
7	D2751	396	\$653,956	Crown-porcelain fused to predominantly base metal
8	D9999	1,026	\$637,334	Unspecified adjunctive procedure, by report
9	D6059	236	\$515,070	Abutment supported porcelain fused to metal crown (high noble metal)
10	D7210	1,060	\$497,707	Surgical removal of erupted tooth requiring elevation of mucoperiosteal flap and removal of bone and/or section of tooth

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Total dental payments are broken down by hospital referral region (HRR) in Table 5.3. HRRs are developed by the *Dartmouth Atlas of Health Care* project. In Texas, there are 24 HRRs constructed using Medicare hospitalization records and patient referral patterns. Two HRRs are removed from our analysis: ‘Texarkana’ and ‘Shreveport’ HRRs that are primarily located in Arkansas and Louisiana, respectively. Texas HRRs also roughly correspond to major metropolitan areas. For this analysis, patients’ HRRs are assigned based on the injured employees’ home ZIP codes since facility ZIP codes are incomplete in the data. The largest 5 metro areas (Houston, Dallas, Fort Worth, San Antonio and Austin) accounted for 70 percent of the claims and 74 percent of the total payments, which is along the lines of the shares observed in the overall medical data. The geographical distribution for the dental claims and services are similar to those of other types of medical services.

Table 5.3: Number of Claims and Cost per Claim (2005–2012 Cumulative Totals), by HRR, Dental Services

HRR	Number of Claims	Total Cost	Cost per Claim
Abilene	135	\$356,233	\$2,639
Amarillo	231	\$434,189	\$1,880
Austin	454	\$1,170,606	\$2,578
Beaumont	147	\$393,793	\$2,679
Bryan	76	\$287,773	\$3,786
Corpus Christi	197	\$404,346	\$2,053
Dallas	1,388	\$4,387,251	\$3,161
El Paso	192	\$382,248	\$1,991
Fort Worth	866	\$2,930,800	\$3,384
Harlingen	114	\$253,868	\$2,227
Houston	1,786	\$6,243,318	\$3,496
Longview	68	\$254,371	\$3,741
Lubbock	203	\$558,422	\$2,751
McAllen	106	\$267,320	\$2,522
Odessa	169	\$722,083	\$4,273
San Angelo	56	\$134,019	\$2,393
San Antonio	816	\$2,353,920	\$2,885
Temple	136	\$353,711	\$2,601
Tyler	206	\$560,284	\$2,720
Victoria	65	\$225,239	\$3,465
Waco	120	\$239,601	\$1,997
Wichita Falls	73	\$181,276	\$2,483
Total	7,604	\$23,094,671	\$3,037
Sum of 5 Metro HRRs	5,310	\$17,085,895	\$3,218
Share of 5 Metro HRRs	69.8%	74.0%	

Source: Texas Department of Insurance, Workers’ Compensation Research and Evaluation Group, 2013.

Note: 5 metropolitan areas are Austin, Dallas, Fort Worth, San Antonio, and Houston.

6. Cost and Utilization for Pharmacy Services

Pharmacy benefits in the Texas workers' compensation system are based on the rules contained in the Texas Administrative Code, Chapter 134, Subchapter F. These rules cover commonly used definitions, initial pharmaceutical coverage, prescribing of generics and over-the-counter drugs in addition to brand name drugs, a pharmacy fee guideline, open and closed formularies, rules pertaining to the transition to a closed formulary from an open formulary, and other pharmaceutical provisions. Changes in these rules are one of the most significant factors that affect the trends in pharmacy cost and utilization. For more information about pharmacy benefits, see the information page at www.tdi.texas.gov/wc/pharmacy/index.html.

This section reports the total and average cost for pharmacy benefits from 2005 to 2012. These costs are further analyzed by the brand/generic status, the "N" drug status, and the maturity, which reflect major changes in the pharmacy benefit rules. The pharmaceutical services guideline and the pharmacy fee guideline, first adopted in 2002, apply to the dispensing and reimbursement of prescription drugs and nonprescription drugs or over-the-counter medications for outpatient use in the Texas workers' compensation system. Doctors are required to consider generic equivalents or over-the-counter alternatives whenever clinically appropriate. The reimbursement rate is based on the Average Wholesale Price (AWP) with a multiplier (currently 1.25 for generic drugs and 1.09 for brand name drugs). Injured employees are entitled to receive clinically necessary pharmacy benefits for the first seven days after injury regardless of the claim's liability or compensability status since the insurance carriers may be reimbursed for these payments from the subsequent injury fund (SIF).

TDI-DWC began implementing a closed formulary guideline in September 2011. For injuries on or after September 1, 2011, pharmacy benefits are subject to the closed formulary that requires preauthorization for drugs identified with a status of "N" in the current edition of the *Official Disability Guidelines Treatment in Workers' Comp, Appendix A – ODG Workers' Compensation Drug Formulary*, or any compound that contains a "N" status drug, and any investigational or experimental drug. As of November 2013, there are 150 chemical entities on the "N" list. Legacy claims—claims occurred prior to September 1, 2011—became subject to the closed formulary beginning on September 1, 2013.

Utilization of Pharmacy Services by Claim Type

About 46 percent of all claims received at least one pharmacy service in 2012. Claims were about equally represented by lost-time and medical-only types (see Table 6.1). Lost-time claims decreased by 16 percent since 2005 while medical-only claims decreased by 11 percent in the same period. The decrease in the number of lost-time claims was less than in professional services, an indication of the longer term use of pharmacy services.

Table 6.1: Number of Claims and Shares, by Claim Type, Pharmacy Services

Service Year	All Medical, Number of Claims	Pharmacy Lost-time Claims		Pharmacy Medical-only Claims	
		Number of Claims	Share in All Medical	Number of Claims	Share in All Medical
2005	382,312	96,340	25.2%	80,119	21.0%
2006	380,521	93,268	24.5%	84,512	22.2%
2007	381,253	93,475	24.5%	91,324	24.0%
2008	371,266	93,182	25.1%	88,821	23.9%
2009	340,489	88,999	26.1%	77,737	22.8%
2010	336,065	88,931	26.5%	75,136	22.4%
2011	334,208	86,513	25.9%	73,312	21.9%
2012	329,771	81,067	24.6%	71,670	21.7%

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Total and Average Costs by Claim Type

Although there was about an equal number of lost-time and medical-only claims, costs were dominated by lost-time claims at \$119 million in 2012, accounting for 88 percent of the total pharmacy cost (see Table 6.2). Accordingly, the average pharmacy cost per claim for lost-time claims was about seven times greater than the average cost for medical-only claims.

Table 6.2: Total and Average Costs per Claim, by Claim Type, Pharmacy Services

Service Year	Lost-time Claims			Medical-only Claims		
	Number of Claims	Total Cost (Thousand Dollars)	Cost per Claim	Number of Claims	Total Cost (Thousand Dollars)	Cost per Claim
2005	96,340	\$114,804	\$1,192	80,119	\$21,757	\$272
2006	93,268	\$118,129	\$1,267	84,512	\$22,810	\$270
2007	93,475	\$122,891	\$1,315	91,324	\$23,339	\$256
2008	93,182	\$130,424	\$1,400	88,821	\$20,605	\$232
2009	88,999	\$128,175	\$1,440	77,737	\$21,906	\$282
2010	88,931	\$133,036	\$1,496	75,136	\$18,138	\$241
2011	86,513	\$128,743	\$1,488	73,312	\$16,276	\$222
2012	81,067	\$118,547	\$1,462	71,670	\$15,600	\$218

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Pharmacy Cost and Utilization by Maturity Group

Not surprisingly, lost-time claims received pharmacy benefits for a longer period than medical-only claims. In each service year, we can separate all services into distinct maturity groups depending on how long each claim had been in the system. Table 6.3 shows that, in 2012, 63 percent of the total cost was for claims that were in their 4th or later year (37 months or more) after their injury dates. These 'legacy' claims accounted for 15 percent of all claims while most claims were in their first year of treatment (see Table 6.4). The relatively large share of the first year maturity group was mainly due to the large number of short-term, medical-only claims in

this group. The average cost per claim increased greatly with increases in maturity (see Table 6.5).

Table 6.3: Total Cost, by Maturity Group, Pharmacy Services (Thousand Dollars)

Service Year	First Year Maturity	Second Year Maturity	Third Year Maturity	4+ Years Maturity
2005	\$26,860	\$13,251	\$11,245	\$85,205
2006	\$27,188	\$13,660	\$10,205	\$89,887
2007	\$31,252	\$13,402	\$10,265	\$91,311
2008	\$32,310	\$13,980	\$10,187	\$94,553
2009	\$33,206	\$15,529	\$10,747	\$90,598
2010	\$32,523	\$15,533	\$10,652	\$92,466
2011	\$30,515	\$13,944	\$10,243	\$90,314
2012	\$27,028	\$13,476	\$9,403	\$84,239

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 6.4: Number of Claims, by Maturity Group, Pharmacy Services

Service Year	First Year Maturity	Second Year Maturity	Third Year Maturity	4+ Years Maturity
2005	121,348	20,880	13,066	37,289
2006	125,526	19,970	11,763	35,851
2007	135,943	18,369	10,353	34,377
2008	133,795	18,728	10,172	32,979
2009	120,486	18,722	10,202	31,292
2010	121,897	16,575	9,346	29,009
2011	121,917	14,979	8,033	26,897
2012	117,401	14,439	7,275	24,904

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Table 6.5: Average Pharmacy Cost per Claim, by Maturity Group

Service Year	First Year Maturity	Second Year Maturity	Third Year Maturity	4+ Years Maturity
2005	\$221	\$635	\$861	\$2,285
2006	\$217	\$684	\$868	\$2,507
2007	\$230	\$730	\$992	\$2,656
2008	\$241	\$746	\$1,001	\$2,867
2009	\$276	\$829	\$1,053	\$2,895
2010	\$267	\$937	\$1,140	\$3,188
2011	\$250	\$931	\$1,275	\$3,358
2012	\$230	\$933	\$1,292	\$3,383

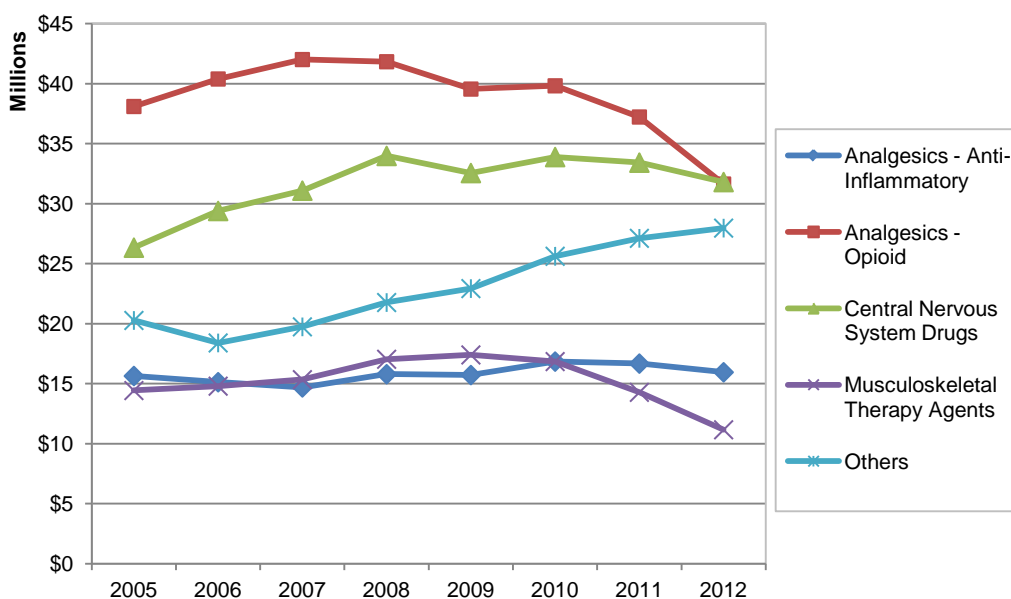
Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Pharmacy Cost and Utilization by Drug Group

Drugs are classified into five major groups: Analgesics – Anti-Inflammatory consisting of the so-called NSAIDs, Analgesics – Opioid, Central Nervous System (CNS) Drugs, Musculoskeletal Therapy Agents, and all others in ‘Others’ group. The CNS drug group comprises anti-anxiety agents, anti-depressants, hypnotics, and anticonvulsants. Although we grouped anticonvulsants with the CNS drugs following the Therapeutic Classification System used by Medi-Span, they may be clinically classified with musculoskeletal therapy agents. Anticonvulsants—mainly Gabapentin, Lyrica, Topamax and Neurontin—account for about half of the total cost within the CNS drug group. In the ‘Others’ group are all remaining drugs including dermatologicals, pharmaceutical chemicals and adjuvants, ulcer drugs, and corticosteroids.

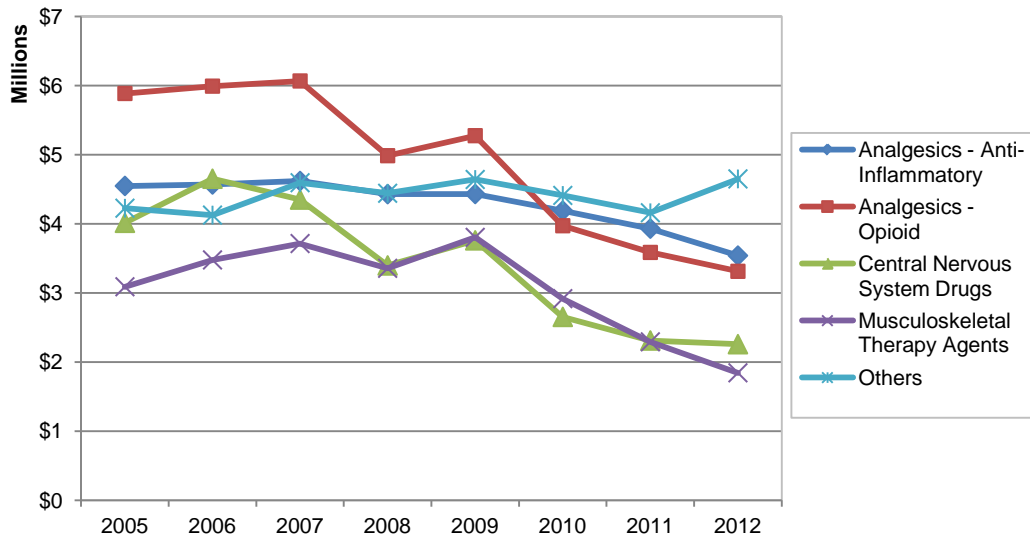
The four named drug groups accounted for 74 percent of the total pharmacy costs for lost-time claims, and 70 percent of medical-only claims costs in 2012 (see Figures 6.1 and 6.2). Among lost-time claims, total costs of Analgesics – Opioid and Musculoskeletal Therapy Agents groups decreased since 2007 while the Others category drugs showed a significant increase. Although relatively small, the total costs for medical-only claims increased in all groups until 2007, and then decreased significantly since then, with the exception of the Others group. New injuries are dominant in medical-only claims and the decrease since 2008 may have been related to medical fee and treatment guidelines and/or new pharmacy benefit rules such as the closed pharmacy formulary.

Figure 6.1: Total Pharmacy Cost, by Service Year by Drug Group, Lost-time Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

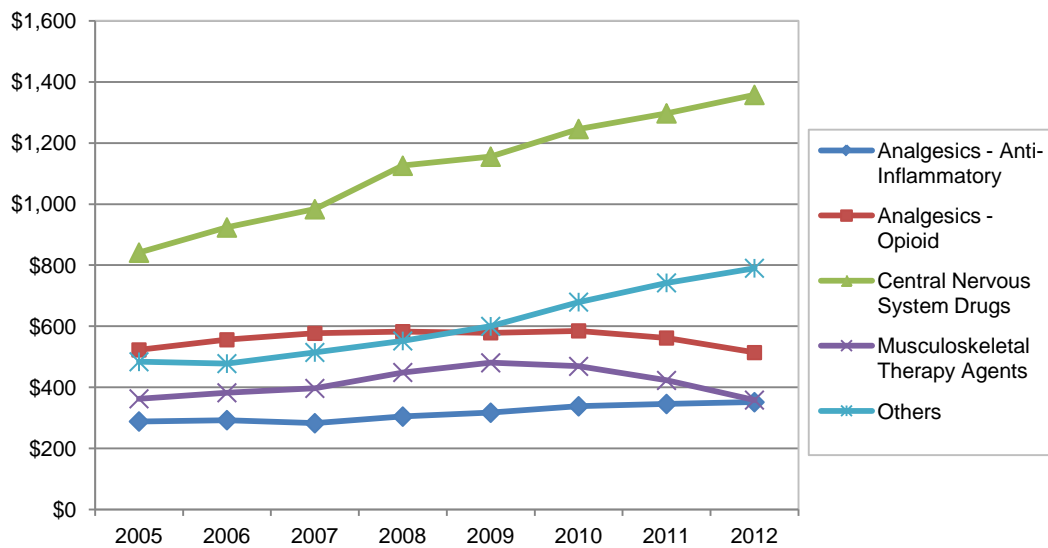
Figure 6.2: Total Pharmacy Cost, by Service Year by Drug Group, Medical-only Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

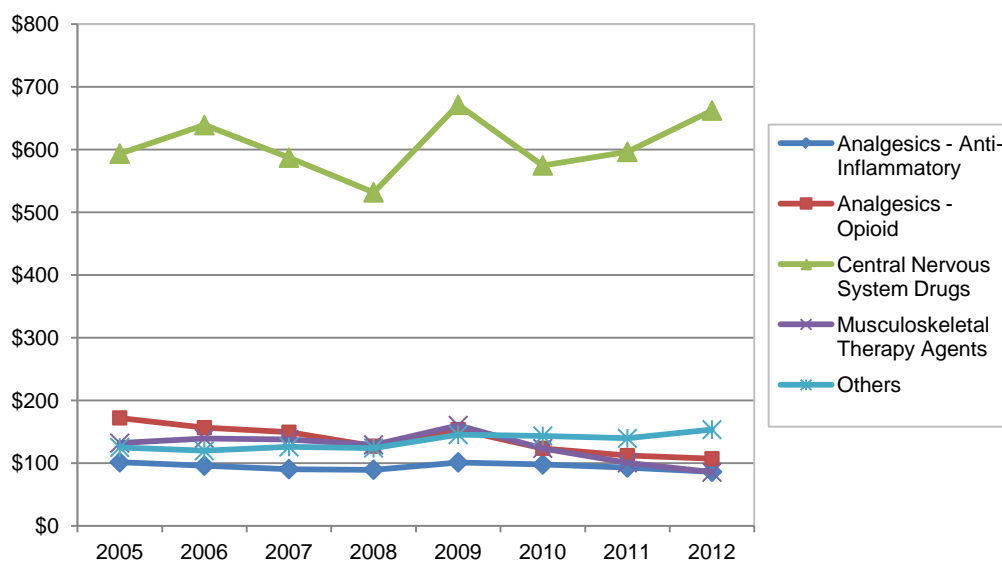
The average pharmacy cost per claim was highest for CNS drugs for both lost-time and medical-only claims as shown in Figures 6.3 and 6.4. It increased at a consistently high rate since 2005 although the average cost for medical-only claims increased at a slower rate. The average cost per claim for the Others group increased moderately, while average costs for other drug groups remained relatively stable. The relative number of claims receiving certain drugs was the lowest for CNS drugs for both claim types (see Table 6.6).

Figure 6.3: Average Pharmacy Cost per Claim, by Service Year by Drug Group, Lost-time Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Figure 6.4: Average Pharmacy Cost per Claim, by Service Year by Drug Group, Medical-only Claims



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

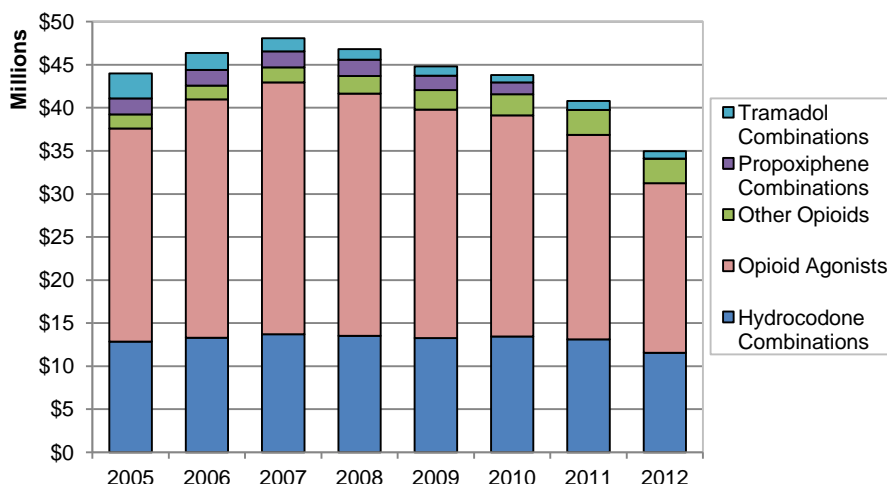
Table 6.6: Percent of Claims Receiving Certain Drug Groups, by Service Year

Drug Group	2005	2006	2007	2008	2009	2010	2011	2012
Lost-time Claims								
Analgesics - Anti- Inflammatory	56.29%	55.38%	55.60%	55.67%	55.70%	56.00%	55.75%	55.97%
Analgesics - Opioid	75.65%	77.90%	77.88%	77.05%	76.78%	76.52%	76.60%	75.93%
Central Nervous System Drugs	32.50%	34.12%	33.82%	32.40%	31.66%	30.58%	29.78%	28.90%
Musculoskeletal Therapy Agents	41.30%	41.49%	41.36%	40.73%	40.68%	40.40%	39.04%	38.41%
Others	43.49%	41.28%	41.04%	42.30%	42.94%	42.41%	42.23%	43.66%
Medical-only Claims								
Analgesics - Anti- Inflammatory	55.93%	56.29%	55.88%	55.69%	56.30%	56.92%	57.61%	57.22%
Analgesics - Opioid	42.65%	45.27%	44.47%	44.14%	44.17%	42.73%	43.62%	43.13%
Central Nervous System Drugs	8.44%	8.61%	8.11%	7.19%	7.20%	6.14%	5.29%	4.76%
Musculoskeletal Therapy Agents	29.22%	29.52%	29.53%	29.24%	30.54%	31.45%	31.13%	30.10%
Others	42.18%	40.78%	39.97%	40.34%	41.04%	40.95%	40.65%	42.28%

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

While CNS drugs had the highest average cost per claim, Analgesics – Opioid group drugs were the most costly in terms of total cost. CNS drugs were a close second and they may surpass the use of opioid drugs in total cost given the rapidly increasing per-claim cost and a decreasing use of opioids. The Analgesics – Opioid drug group can be further classified into five subclasses to analyze trends in utilization and costs within the opioid group. Among these subclasses, the ‘opioid agonists’ subclass accounted for about 56 percent of total opioid drug costs in 2012, followed by the ‘hydrocodone combinations’ subclass (see Figure 6.5).

Figure 6.5: Costs of Opioids, by Service Year by Drug Subclass



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of maturity, pharmacy services have the highest number of long-term claims in the system among all health care service types. To explore differences due to maturity, we compared services within the first three years (36 months) after injury with services for older injuries with more than three years maturity—often called “legacy claims.” Tables 6.7–6.9 present total cost, average cost per prescription, and average cost per claim by drug group broken down by maturity. These tables are totals of lost-time and medical-only claims, but there are more medical-only claims in the ‘0 to 3 Years’ maturity group. For legacy claims, the Analgesics – Opioid group was the most costly drug group in terms of total cost, closely followed by CNS drugs (see Table 6.7). For claims with up to three years maturity, opioids were also the most costly drugs until 2009. Analgesics – Anti-inflammatory and Others drug groups were most costly in 2012.

Table 6.7: Total Cost by Service Year, by Drug Group by Maturity (Thousand Dollars)

Maturity	Drug Group	2005	2006	2007	2008	2009	2010	2011	2012
0 to 3 Years	Analgesics - Anti-Inflammatory	\$11,443	\$11,034	\$11,362	\$12,092	\$12,484	\$13,240	\$12,750	\$11,693
	Analgesics - Opioid	\$12,812	\$12,757	\$13,806	\$13,542	\$13,501	\$12,510	\$11,589	\$9,917
	Central Nervous System Drugs	\$8,160	\$9,094	\$9,914	\$10,136	\$10,149	\$9,985	\$9,733	\$9,246
	Musculoskeletal Therapy Agents	\$8,236	\$8,465	\$9,264	\$10,162	\$11,426	\$10,425	\$8,395	\$6,380
	Others	\$10,705	\$9,703	\$10,574	\$10,544	\$11,922	\$12,548	\$12,236	\$12,671
More than 3 Years	Analgesics - Anti-Inflammatory	\$8,752	\$8,664	\$7,956	\$8,132	\$7,671	\$7,797	\$7,860	\$7,804
	Analgesics - Opioid	\$31,175	\$33,627	\$34,273	\$33,274	\$31,327	\$31,287	\$29,224	\$25,037
	Central Nervous System Drugs	\$22,195	\$24,956	\$25,527	\$27,245	\$26,170	\$26,559	\$26,004	\$24,820
	Musculoskeletal Therapy Agents	\$9,288	\$9,814	\$9,793	\$10,235	\$9,780	\$9,340	\$8,184	\$6,631
	Others	\$13,796	\$12,825	\$13,762	\$15,666	\$15,650	\$17,483	\$19,042	\$19,947

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

The average cost per prescription for the legacy group claims was highest for the Analgesics – Opioid group since 2005, but by 2010, per-prescription cost of ‘Others’ and CNS drugs were higher than that of the Analgesics – Opioid group (see Table 6.8). Among the ‘0 to 3 Years’ maturity group, CNS drugs were the most costly per prescription in all seven years. The high and increasing average cost of the Others drug group may be in part due to the inclusion of compounded drugs in the category.

Table 6.8: Average Cost per Prescription by Service Year, by Drug Group by Maturity

Maturity	Drug Group	2005	2006	2007	2008	2009	2010	2011	2012
0 to 3 Years	Analgesics - Anti-Inflammatory	\$64	\$59	\$58	\$62	\$70	\$73	\$70	\$69
	Analgesics - Opioid	\$43	\$42	\$45	\$44	\$46	\$43	\$42	\$40
	Central Nervous System Drugs	\$83	\$88	\$99	\$104	\$108	\$109	\$112	\$127
	Musculoskeletal Therapy Agents	\$64	\$65	\$69	\$77	\$89	\$83	\$71	\$62
	Others	\$57	\$45	\$46	\$56	\$77	\$84	\$82	\$84
More than 3 Years	Analgesics - Anti-Inflammatory	\$101	\$97	\$99	\$103	\$109	\$115	\$121	\$133
	Analgesics - Opioid	\$122	\$130	\$140	\$138	\$137	\$138	\$137	\$133
	Central Nervous System Drugs	\$109	\$114	\$121	\$131	\$136	\$140	\$146	\$160
	Musculoskeletal Therapy Agents	\$86	\$88	\$94	\$102	\$106	\$106	\$100	\$95
	Others	\$93	\$75	\$90	\$110	\$138	\$153	\$162	\$174

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of the average cost per claim, CNS drugs were also the costliest (see Table 6.9). Cost increases were greater for legacy claims than new injury claims. Per-claim cost for CNS drugs grew by 59 percent since 2005, second only to the 108 percent increase for the ‘Others’ drug group, which includes compounded drugs.

Table 6.9: Average Cost per Claim by Service Year, by Drug Group by Maturity

Maturity	Drug Group	2005	2006	2007	2008	2009	2010	2011	2012
0 to 3 Years	Analgesics - Anti-Inflammatory	\$139	\$132	\$128	\$137	\$154	\$163	\$159	\$152
	Analgesics - Opioid	\$158	\$150	\$156	\$155	\$168	\$158	\$147	\$133
	Central Nervous System Drugs	\$393	\$424	\$464	\$503	\$546	\$573	\$594	\$639
	Musculoskeletal Therapy Agents	\$174	\$175	\$183	\$203	\$243	\$219	\$183	\$148
	Others	\$177	\$164	\$172	\$169	\$207	\$220	\$219	\$230
More than 3 Years	Analgesics - Anti-Inflammatory	\$482	\$527	\$517	\$572	\$580	\$654	\$717	\$761
	Analgesics - Opioid	\$1,093	\$1,195	\$1,268	\$1,300	\$1,291	\$1,384	\$1,398	\$1,301
	Central Nervous System Drugs	\$1,181	\$1,315	\$1,348	\$1,554	\$1,611	\$1,727	\$1,824	\$1,882
	Musculoskeletal Therapy Agents	\$541	\$599	\$614	\$697	\$713	\$739	\$716	\$642
	Others	\$866	\$880	\$986	\$1,152	\$1,189	\$1,471	\$1,714	\$1,804

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Pharmacy Cost and Utilization by Brand/Generic Status

The pharmaceutical service guideline in 2002 required doctors to prescribe generic drugs when available and clinically appropriate. Table 6.10 shows that lost-time claims accounted for about 88 percent of the total cost in 2012 and that, among lost-time claims, brand drugs accounted for 53 percent of the total cost. The number of claims receiving brand-name drugs decreased significantly, but per-claim and per-prescription costs increased. Medical-only claims accounted for 12 percent of the total cost in 2012, and more generic drugs were used since 2008. However, generic drug prescriptions were far more numerous, and their unit price per prescription was typically about a quarter of a brand drug. In terms of average cost per claim, brand-name drugs were two to four times costlier than generic drugs. Since each claim may have received both generic and brand drugs, the total cost per claim (shown earlier in Table 6.2) would be some combination of the two averages.

Table 6.10: Total and Average Costs, by Generic Status by Claim Type

Service Year	Brand					Generic				
	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim
Lost-time Claims										
2005	\$56,134	372,101	56,400	\$151	\$995	\$52,391	874,571	87,537	\$60	\$599
2006	\$59,516	370,012	52,016	\$161	\$1,144	\$56,138	959,279	87,758	\$59	\$640
2007	\$61,044	344,471	49,070	\$177	\$1,244	\$59,123	957,242	88,581	\$62	\$667
2008	\$70,403	359,726	48,493	\$196	\$1,452	\$57,591	965,406	88,130	\$60	\$653
2009	\$69,482	327,499	44,839	\$212	\$1,550	\$56,099	889,566	84,048	\$63	\$667
2010	\$69,720	303,914	40,615	\$229	\$1,717	\$60,421	928,887	84,676	\$65	\$714
2011	\$63,309	252,131	34,482	\$251	\$1,836	\$61,552	933,763	83,003	\$66	\$742
2012	\$52,765	191,272	27,664	\$276	\$1,907	\$60,646	859,440	78,186	\$71	\$776
Medical-only Claims										
2005	\$11,116	96,123	32,296	\$116	\$344	\$10,016	239,975	68,770	\$42	\$146
2006	\$11,465	92,750	30,602	\$124	\$375	\$11,131	272,707	76,043	\$41	\$146
2007	\$11,057	81,662	29,915	\$135	\$370	\$11,949	280,858	82,840	\$43	\$144
2008	\$10,115	70,684	28,673	\$143	\$353	\$10,156	246,624	80,505	\$41	\$126
2009	\$10,880	64,547	23,496	\$169	\$463	\$10,714	226,970	71,066	\$47	\$151
2010	\$8,070	45,661	18,073	\$177	\$447	\$9,715	212,911	69,787	\$46	\$139
2011	\$6,298	32,646	12,696	\$193	\$496	\$9,557	214,299	69,336	\$45	\$138
2012	\$5,090	22,760	8,533	\$224	\$597	\$9,692	208,599	68,746	\$46	\$141

Note: Rx = prescription.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Cost statistics for claims show that total costs did not change significantly in six years, but the number of claims receiving brand name drugs decreased substantially in both new and legacy groups (see Table 6.11). The number of claims receiving generic drugs fluctuated moderately in

the 0 to 3 year maturity claim group while its cost increased. An increasing cost per prescription for brand drugs and a decreasing number of claims for generic drugs were primary factors in the increasing average cost per claim.

Table 6.11: Total and Average Costs, by Generic Status by Maturity

Service Year	Brand					Generic				
	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim
0 to 3 Years										
2005	\$22,605	207,227	64,844	\$109	\$349	\$25,330	617,731	125,831	\$41	\$201
2006	\$23,242	197,762	60,062	\$118	\$387	\$26,340	687,328	133,364	\$38	\$198
2007	\$24,503	187,082	58,021	\$131	\$422	\$28,972	722,370	141,877	\$40	\$204
2008	\$27,206	190,752	57,673	\$143	\$472	\$28,456	706,694	140,397	\$40	\$203
2009	\$28,157	174,518	50,377	\$161	\$559	\$29,989	655,124	128,367	\$46	\$234
2010	\$25,539	149,310	42,498	\$171	\$601	\$32,100	672,880	129,558	\$48	\$248
2011	\$20,536	113,189	32,902	\$181	\$624	\$33,211	687,801	129,261	\$48	\$257
2012	\$15,379	76,276	23,491	\$202	\$655	\$32,962	645,973	125,348	\$51	\$263
More than 3 Years										
2005	\$44,645	260,997	25,807	\$171	\$1,730	\$37,077	496,815	33,406	\$75	\$1,110
2006	\$47,739	265,000	24,112	\$180	\$1,980	\$40,929	544,658	33,157	\$75	\$1,234
2007	\$47,598	239,051	22,353	\$199	\$2,129	\$42,100	515,730	31,961	\$82	\$1,317
2008	\$53,312	239,654	20,800	\$222	\$2,563	\$39,291	505,332	30,442	\$78	\$1,291
2009	\$52,205	217,528	19,177	\$240	\$2,722	\$36,824	461,412	28,883	\$80	\$1,275
2010	\$52,251	200,265	17,266	\$261	\$3,026	\$38,036	468,917	26,946	\$81	\$1,412
2011	\$49,070	171,585	15,239	\$286	\$3,220	\$37,896	460,203	25,075	\$82	\$1,511
2012	\$42,476	137,756	13,481	\$308	\$3,151	\$37,376	422,049	23,315	\$89	\$1,603

Note: Rx = prescription.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of pharmacy utilization, the average number of prescriptions increased for generic drugs (see Table 6.12). For legacy claims, the average number of generic prescriptions per claim increased by 22 percent since 2005. For generic drugs, the primary reason for the increase in the drug cost per claim was the increase in utilization while the increase in brand drug cost per claim was largely due to increases in the average cost per prescription.

Table 6.12: Average Number of Prescriptions per Claim, by Generic Status by Maturity

Maturity	Drug Type	2005	2006	2007	2008	2009	2010	2011	2012
0 to 3 Years	Brand	3.2	3.3	3.2	3.3	3.5	3.5	3.4	3.2
	Generic	4.9	5.2	5.1	5.0	5.1	5.2	5.3	5.2
More than 3 Years	Brand	10.1	11.0	10.7	11.5	11.3	11.6	11.3	10.2
	Generic	14.9	16.4	16.1	16.6	16.0	17.4	18.4	18.1

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Overall, the use of generic drugs in lieu of brand name drugs is indicated by the increasing share of generics in the total cost and utilization. Table 6.13 shows that the share of generic drugs increased in terms of the number of prescription for both new and legacy claims. However, in terms of total cost, the share of generic drugs decreased slightly until 2008 for both new and legacy claims. Since 2008, shares of generic drugs increased in the number of prescriptions and the total cost.

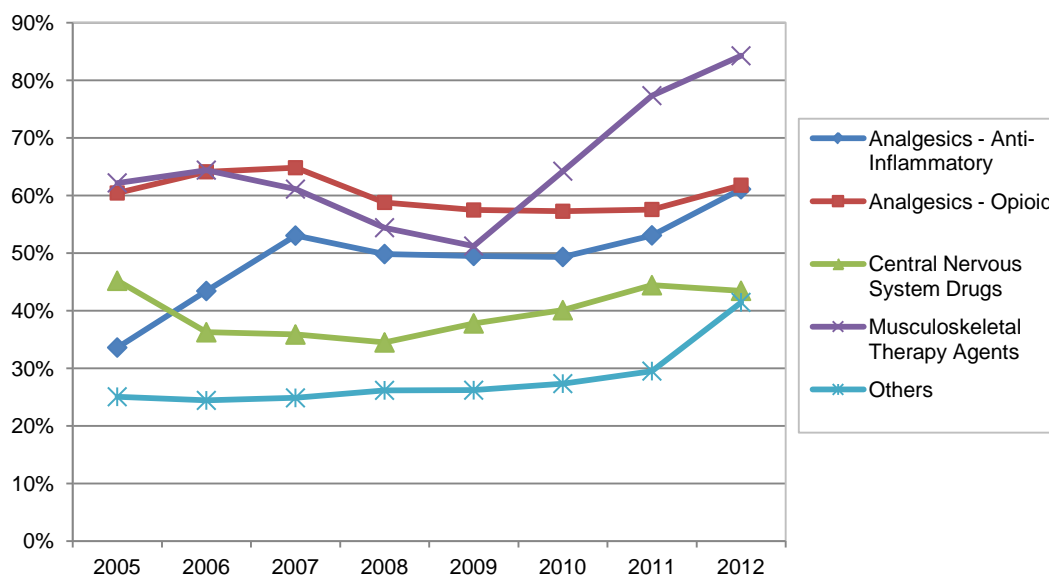
Table 6.13: Shares of Generic Drugs, by Service Year by Maturity

Maturity	2005	2006	2007	2008	2009	2010	2011	2012
By Number of Prescription								
0 to 3 Years	74.9%	77.7%	79.4%	78.7%	79.0%	81.8%	85.9%	89.4%
More than 3 Years	65.6%	67.3%	68.3%	67.8%	68.0%	70.1%	72.8%	75.4%
By Total Cost								
0 to 3 Years	52.8%	53.1%	54.2%	51.1%	51.6%	55.7%	61.8%	68.2%
More than 3 Years	45.4%	46.2%	46.9%	42.4%	41.4%	42.1%	43.6%	46.8%

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of drug group, the Musculoskeletal Therapy Agents drug group had the highest rate of generic substitution in 2012 at 84 percent, after increasing rapidly since 2010 (see Figure 6.6). The Analgesics – Opioid drug group maintained about a 60 percent generic substitution rate since 2005. Other drug groups generally showed a slight increasing trend in generic substitution since 2008.

Figure 6.6: Generic Drug's Share in Total Cost, by Service Year by Drug Group



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

Pharmacy Cost and Utilization by N-drug Status

The pharmacy closed formulary that went into effect on September 1, 2011, and updated monthly, currently contains approximately 150 chemical entities with ‘N’ drug status which requires preauthorization. Ninety four of these have generic equivalents, and 28 of them are opioids and related entities. Claims with injury dates on or after September 1, 2011, are subject to the closed formulary, and under a transitional rule, all claims in the Texas workers’ compensation system are subject to the closed formulary regardless of the injury date beginning September 1, 2013. The pharmacy closed formulary affected only new injuries in the last four months of 2011 and new claims in 2012, and N-drug data in this report is not sufficient to evaluate the effect of the closed formulary on legacy claims.

About a third of those who received pharmacy services received at least one N-drug (see Table 6.14). There were a small number of claims (about 2,000) that received solely N-drugs. N-drug uses decreased significantly since 2011 in terms of the number of prescriptions and the number of claims even though only new claims were subject to the closed formulary. N-drug usage was higher for lost-time claims at about 22 percent of the total pharmacy cost in 2012; N-drug usage was significantly lower in medical-only claims. For the medical-only claims, N-drugs accounted for 14 percent of the total cost in 2012.

Table 6.14: Total and Average Costs, by N-drug Status by Claim Type

Service Year	N-drug					Other				
	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim
Lost-time Claims										
2005	\$32,726	246,875	33,739	\$133	\$970	\$82,079	1,092,767	94,863	\$75	\$865
2006	\$36,600	257,606	33,531	\$142	\$1,092	\$81,529	1,155,564	91,764	\$71	\$888
2007	\$37,550	246,708	32,957	\$152	\$1,139	\$85,341	1,133,976	92,041	\$75	\$927
2008	\$39,224	243,580	32,943	\$161	\$1,191	\$91,200	1,121,106	91,625	\$81	\$995
2009	\$38,733	227,124	32,006	\$171	\$1,210	\$89,442	1,019,931	87,334	\$88	\$1,024
2010	\$40,886	228,372	31,488	\$179	\$1,298	\$92,150	1,032,641	87,136	\$89	\$1,058
2011	\$36,741	199,494	27,597	\$184	\$1,331	\$92,002	1,019,440	84,914	\$90	\$1,083
2012	\$25,753	133,749	18,225	\$193	\$1,413	\$92,794	955,006	80,140	\$97	\$1,158
Medical-only Claims										
2005	\$4,831	45,012	10,441	\$107	\$463	\$16,926	304,631	78,745	\$56	\$215
2006	\$5,116	47,939	11,597	\$107	\$441	\$17,694	327,123	82,728	\$54	\$214
2007	\$4,902	42,155	11,501	\$116	\$426	\$18,437	333,859	89,336	\$55	\$206
2008	\$4,489	35,425	12,432	\$127	\$361	\$16,116	290,168	86,426	\$56	\$186
2009	\$5,399	37,317	12,666	\$145	\$426	\$16,507	260,751	75,522	\$63	\$219
2010	\$4,341	29,728	11,161	\$146	\$389	\$13,797	234,569	72,977	\$59	\$189
2011	\$3,451	23,870	8,990	\$145	\$384	\$12,825	229,010	71,556	\$56	\$179
2012	\$2,174	12,139	3,457	\$179	\$629	\$13,426	227,318	70,969	\$59	\$189

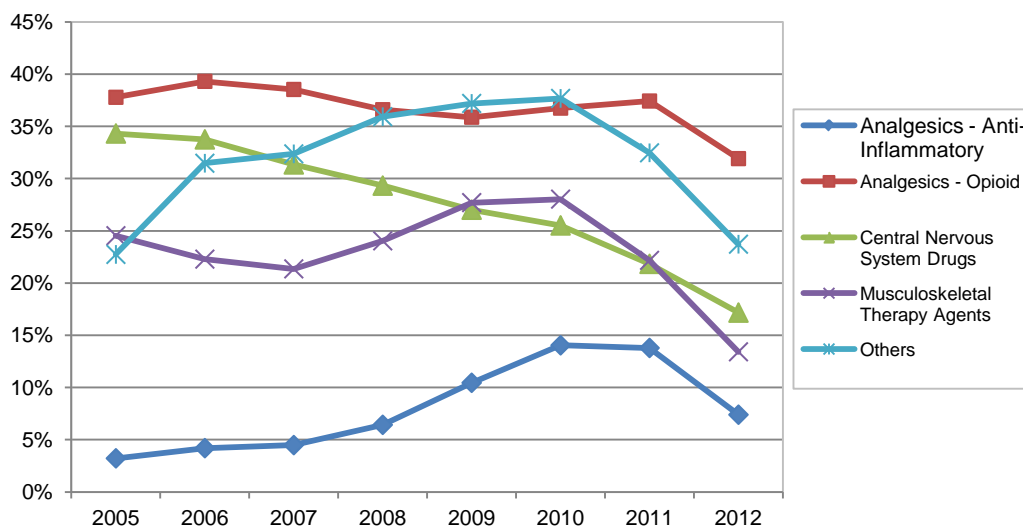
Note: Rx = prescription.

Source: Texas Department of Insurance, Workers’ Compensation Research and Evaluation Group, 2013.

The average cost per claim was considerably higher for lost-time claims due to their longer service duration and resultant higher utilization. Among lost-time claims, the average cost of N-drugs per claim was 22 percent higher than that of non-N-drugs, a relatively low price differential. But the per-prescription cost was much higher for N-drugs—more than doubles that of non-N-drugs. This indicates a higher utilization in non-N-drugs. Among medical-only claims, the average cost of N-drugs per claim was more than twice that of non-N-drugs.

In terms of N-drug use by drug group, the share of N-drugs in the total cost was highest for the Analgesics – Opioid drug group (see Figure 6.7). Prior to 2011, this share was growing for Analgesics – Anti-Inflammatory, Musculoskeletal Therapy Agents, and Others drug groups while it was decreasing for CNS drugs. For CNS drugs, the share of N-drugs was decreasing even though the average cost per claim was increasing. N-drug shares were clearly decreasing since 2011 in all drug groups.

Figure 6.7: N-drug Cost Share in Total Cost, by Service Year by Drug Group



Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

In terms of N-drug use by maturity, we compared pharmacy services given within three years from injury (0 to 36 months of maturity) with services for more mature claims (more than 36 months of maturity) (see Table 6.15). Cost shares by N-drug status did not change substantially since 2005: there was a slight decrease in N-drug cost in legacy claims but an increase in new claims. The number of claims receiving N-drugs decreased rapidly among the old injury claims. There was not much difference in the average cost per claim between N-drugs and non-N drugs even though N-drugs are twice as expensive as other drugs per prescription. Utilization for non-N drugs was much higher. Among 0 to 3 years maturity group, there was a significant decrease

in the number of claims, prescriptions, and costs for N-drugs in 2012, reflecting the effect of the closed formulary on new claims.

Table 6.15: Total and Average Costs, by N-drug Status by Maturity

Service Year	N-drug					Other				
	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim	Total Cost (Thousand Dollars)	Number of Rx	Number of Claims	Average Cost per Rx	Average Cost per Claim
0 to 3 Years										
2005	\$8,665	103,110	27,087	\$84	\$320	\$42,691	783,584	140,571	\$54	\$304
2006	\$9,287	107,916	28,314	\$86	\$328	\$41,765	829,899	142,429	\$50	\$293
2007	\$9,435	102,354	27,953	\$92	\$338	\$45,484	862,598	150,372	\$53	\$302
2008	\$10,702	102,374	30,124	\$105	\$355	\$45,775	817,426	148,281	\$56	\$309
2009	\$12,682	104,304	30,530	\$122	\$415	\$46,800	744,961	134,633	\$63	\$348
2010	\$13,312	102,328	29,370	\$130	\$453	\$45,396	734,992	133,999	\$62	\$339
2011	\$10,737	85,278	24,613	\$126	\$436	\$43,966	730,301	132,337	\$60	\$332
2012	\$5,444	40,894	11,431	\$133	\$476	\$44,463	700,249	128,489	\$63	\$346
More than 3 Years										
2005	\$28,891	188,777	18,485	\$153	\$1,563	\$56,314	613,814	36,417	\$92	\$1,546
2006	\$32,429	197,629	18,013	\$164	\$1,800	\$57,458	652,788	35,004	\$88	\$1,641
2007	\$33,018	186,509	17,578	\$177	\$1,878	\$58,293	605,237	33,601	\$96	\$1,735
2008	\$33,012	176,631	16,184	\$187	\$2,040	\$61,541	593,840	32,177	\$104	\$1,913
2009	\$31,449	160,137	15,071	\$196	\$2,087	\$59,149	535,721	30,530	\$110	\$1,937
2010	\$31,915	155,772	14,112	\$205	\$2,262	\$60,551	532,217	28,280	\$114	\$2,141
2011	\$29,455	138,085	12,714	\$213	\$2,317	\$60,858	518,088	26,231	\$117	\$2,320
2012	\$22,483	104,994	10,825	\$214	\$2,077	\$61,757	482,058	24,440	\$128	\$2,527

Note: Rx = prescription.

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.



7. Summary: Trends in Changing Cost Components

Medical costs, combining professional and hospital costs, in the Texas workers' compensation system decreased by nine percent between 1998 and 2005 and increased by 11 percent between 2005 and 2012, resulting in a one percent overall increase since 1998. When pharmacy and dental costs (available only since 2005) were added, all health care costs increased by 10 percent between 2005 and 2012 service years.

Analyzing by provider bill type, the total cost of professional services decreased by seven percent since 1998 while the total cost of hospital services increased by 17 percent. Pharmacy cost decreased by two percent from 2005 to 2012. However, because the number of claims decreased by 32 percent, the average costs per claim increased at a greater rate: since 1998, professional average cost increased by 39 percent, and hospital cost by 85 percent, while pharmacy average cost increased by 13 percent since 2005.

Changes in total health care cost or expenditure over time in the workers' compensation system are combinations of changes in its components that include the number of claims treated, the level of utilization for health care services, and the level of prices or fees paid for such services. However, it is difficult to measure interrelationships among these factors.

Prices per service are adjusted periodically through changes in the medical professional services fee guideline. At the same time, prices are also subject to increases in the medical care price inflation. Many observers in the workers' compensation system note that the changes in total cost are often a result of changing level of service utilization in addition to price changes that occur only periodically. It is also plausible that the changes in prices and utilization are negatively related so that, when price decreases, the level of utilization increases to result in the same level of total cost, or vice versa.

Data presented in this report indicate that the main factor behind the increase in the average cost per claim is the significant decrease in the number of claims treated while the price per service and the level of utilization increased. The number of claims decreased by 33 percent and 37 percent for professional and hospital services, respectively, from 1998 to 2012.

To evaluate the relative significance of cost factors or components in the overall change, we present a summary table of cost components in Table 7.1. In addition to the number of claims, the utilization metric is further divided into the frequency and the intensity components. Prices can also be divided into changes due to inflation and changes in real prices. It should be noted that Table 7.1 is limited to professional services because professional bills are the only data set that contains sufficient information about utilization metrics.

Table 7.1 summarizes the rate of change in these components since 1998 in three distinct time periods. From 1998 to 2002, system costs generally increased rapidly. From 2002 to 2007, system costs declined equally rapidly due to various reforms implemented during the period including new fee guidelines, preauthorization rules, and the reorganization of the regulatory agency itself from Texas Workers' Compensation Commission to Division of Workers' Compensation in the Texas Department of Insurance. The period from 2007 to 2012 represents a mature stage of these and continuing reforms. This period showed continuing decreases in some costs and a stable or slightly increasing trend in others.

The four columns numbered from (1) to (4) represent the four basic components of system costs: the number of claims, the service frequency (visits), the service intensity, and the service price. By multiplying these components, we get the total cost (shown in the (5) column). After dividing the total cost by the number of claims, we get the average cost per claim, that is (6) = (5) ÷ (1). Price columns (4), (5) and (6) are shown in current prices without adjustments for price inflation as column series (a), and with adjustments for inflation using MEI in column series (b).

Table 7.1: Percent Changes in Costs and Utilization in Current and Inflation-Adjusted Prices, by Claim Type, Professional Services for Selected Time Periods

Time Period	Number of Claims (1)	Number of Visits (2)	Number of Services per Visit (3)	Cost per Service		Total Cost		Cost per Claim	
				Current Price (4a)	1998 Price (4b)	Current Price (5a)	1998 Price (5b)	Current Price (6a)	1998 Price (6b)
Lost-time Claims									
1998-2002	7.8%	18.0%	15.3%	-5.9%	-17.7%	37.9%	20.7%	28.0%	12.0%
2002-2007	-25.9%	-22.6%	-14.7%	21.5%	3.2%	-40.5%	-49.5%	-19.8%	-31.9%
2007-2012	-11.8%	0.2%	0.3%	32.4%	19.9%	17.3%	6.3%	33.0%	20.4%
1998-2012	-29.5%	-8.5%	-1.4%	51.3%	1.8%	-3.8%	-35.2%	36.5%	-8.1%
Medical-only Claims									
1998-2002	-20.1%	15.8%	9.6%	-0.8%	-13.2%	0.7%	-11.9%	26.0%	10.3%
2002-2007	-8.0%	-14.1%	-11.2%	12.4%	-4.5%	-21.1%	-33.0%	-14.2%	-27.1%
2007-2012	-10.9%	-1.4%	-1.7%	34.4%	21.7%	16.1%	5.2%	30.3%	18.0%
1998-2012	-34.5%	-1.9%	-4.2%	50.0%	0.9%	-7.7%	-37.9%	40.9%	-5.2%

Source: Texas Department of Insurance, Workers' Compensation Research and Evaluation Group, 2013.

For lost-time claims, average cost per claim increased by 36.5 percent from 1998 to 2012 (see column 6a). Adjusted for inflation, the average cost per claim decreased by 8.1 percent (column 6b) since inflationary prices increased by 49 percent during the same period according to the MEI. The number of claims and the level of utilization all decreased, resulting in the overall decrease in the total cost by 3.8 percent (column 5a). If we adjust for inflation, the total cost decreased by 35.2 percent (column 5b).

The main factor in the overall decrease in total costs was the large decline in the number of claims. Because the number of claims decreased more steeply than the level of utilization, the overall cost decreased in spite of the increase in the cost per service. Medical-only claims showed similar trends with a higher rate of decrease in the number of claims and a lower rate of decrease in utilization.



Appendix: Measuring Service Utilization

A measurement for service utilization can be decomposed into two measures: service frequency and service intensity. Total utilization is a product of frequency and intensity. Service frequency is measured by the number of visits to a particular health care provider on a given day. Service intensity is measured by the number of services in a given visit.

Number of Visits

The number of visits is the unit of service in measuring and comparing service frequency. A unique service visit is identified by a ‘visit ID’ that is unique to the day of the visit and the doctor or provider ID. A unique visit ID accounts for a visit to a doctor’s office on a given day regardless of the number of services or bills associated with that visit whether the bill was paid by the insurance carrier or not. Since bills do not provide service time, multiple visits to a same provider on a same day are counted as one visit.

Number of Services

A visit consists of one or more services and a service is identified by a unique service code known as American Medical Association’s Current Procedural Terminology (CPT) or Medicare’s Healthcare Common Procedure Coding System (HCPCS). Each bill is considered a ‘service.’ Even though one bill is equal to one service, certain services are customarily billed in a multi-unit bill or a bundle. In these cases, the number of services is based on the days/units specified in the bill.

However, it is not a simple matter to properly count the number of services from the medical bills. Some codes such as anesthesia and injection services are billed by units like milliliters or milligrams. These service bills are treated as one unit of service due to the inconsistent nature of unit measures reported.

Physical medicine services are the one service group that requires further attention regarding service units. These services are billed according to special billing rules. Therefore in this study, these bills are adjusted to produce accurate measurements of utilization to the extent possible. This procedure is detailed in the section below.

Utilization Metrics for Physical Medicine Services

Physical medicine service bills are by far the most numerous bills, accounting for about half of all professional bills. Sixty five million service bills out of 135 million total bills from 1998 to

2011 were physical medicine services. In addition, 85 percent of these bills are charges for one unit of service. Most of these are service-based codes that are billed as one service regardless of time involved. The remaining 15 percent of the physical medicine bills were charges for multiple treatment sessions in one bill using time-based codes, usually in increments of 15 minutes, and therefore considering these bills as one service would underestimate or miscalculate the actual level of service utilization. Therefore, special attention has been given to these bills by adjusting their units of service.

Considering the above 15 percent of physical medicine services with multiple billed units, there were eight CPT codes that together accounted for 98 percent of the total cost of the multiple service bills. These are therapy exercises (97110), neuromuscular reeducation (97112), aquatic therapy/exercises (97113), manual therapy (97140), therapeutic activities (97530), work hardening (97545 and 97546), and other physical medicine procedures (97799). For these service codes, a new service utilization unit was calculated based on multiple factors including amount of charges, actual payments, units billed, and the median charge and pay amounts. In addition, work hardening and rehabilitation procedures had special billing rules that sometimes confused some billers and payers/reviewers, resulting in inconsistent units billed. The units for these codes were adjusted statistically.

Qualitative Service Intensity

Another potential dimension in the utilization measurement is the qualitative difference in service intensity. For example, some CPT/HCPCS codes are already differentiated by service intensity or qualitative differences. There are different CPT codes for office visits of different length and quality. A suitable measurement of intensity could be created as a unit of service intensity—for example by assigning one unit for 99201, two units for 99202 and so on—relative to other codes. But even this measurement is inadequate to distinguish qualitative differences among these service codes. In this study, one billed service is counted as one service utilization for all codes except for the eight physical medicine codes that are recoded.



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Texas Department of Insurance
Workers' Compensation Research and Evaluation Group

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Per Chapter 405 of the *Texas Labor Code*, the Workers' Compensation Research and Evaluation Group (REG) at the Texas Department of Insurance is responsible for conducting professional studies and research on various system issues, including:

- the delivery of benefits;
 - litigation and controversy related to workers' compensation;
 - insurance rates and rate-making procedures;
 - rehabilitation and reemployment of injured employees;
 - the quality and cost of medical benefits;
 - employer participation in the workers' compensation system;
 - employment health and safety issues; and
 - other matters relevant to the cost, quality, and operational effectiveness of the workers' compensation system.
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