



# Investigating the Drivers of the 2015 Workers Compensation Medical Severity Decline

## INTRODUCTION

NCCI reported at its 2016 *Annual Issues Symposium* that workers compensation (WC) lost-time medical claim severity decreased by an estimated 1% in Accident Year (AY) 2015 [1]. This marked the first time in more than two decades that medical severity declined year over year. Between AY 1995 and AY 2014, medical severity steadily increased and the cumulative change substantially exceeded medical price inflation. The average annual growth between AY 1995 and AY 2002, a period that witnessed a rapid increase in lost-time medical severity, was 9%. This compares to an average annual growth rate of 6% between AY 2002 and AY 2009.

NCCI also reported at its 2017 *Annual Issues Symposium* that WC lost-time medical severity increased by an estimated 5% in AY 2016. Even with this increase, the average annual growth rate in lost-time medical severity between AY 2009 and AY 2016 was 2%. Growth in medical lost-time claim severity also outpaced growth in indemnity severity overall from AY 1995 to AY 2016. Medical costs are now approximately 60% of total WC loss costs.

This study investigates the cost drivers of the change in total medical severity—lost-time and medical-only claims—in AY 2015 by measuring the effect of price and utilization changes on overall medical costs.

## KEY FINDINGS

- Paid medical costs per claim (lost-time plus medical-only) declined 1% in AY 2015
- The mix of injuries by diagnosis has remained stable between AY 2012 and AY 2015
- A 3% decline in paid costs per claim for physician services accounts for most of the medical severity decline in AY 2015—a 3% decline in utilization of physician services is a major driver
- Paid costs per claim declined in AY 2015 for most types of physician services
- Paid hospital costs continue to increase; in AY 2015, paid hospital costs per claim increased 2%
- Paid emergency room costs per claim continue to increase as well, increasing 5% in AY 2015
- Approximately half of the states had medical severity decreases in AY 2015

## STUDY DATA

For states except Texas, the data source used in this study is NCCI's Medical Data Call (MDC). For Texas, the data source is Division of Workers' Compensation Medical State Reporting Public Use Data File (PUDF).<sup>1</sup> The MDC captures transaction-level detail on WC medical bills processed on or after July 1, 2010, including dates of service, charges, payments, procedure codes, and diagnosis codes.

<sup>1</sup> Texas Department of Insurance, Division of Workers' Compensation, Austin, TX.

For this study, we used MDC experience evaluated as of March 2016 for:

- Services provided during the year of injury for injuries occurring between January 1, 2012, and December 31, 2015, and processed within three months of the end of the year of injury. For example, for a claim with injury date October 1, 2013, we use services provided between October 1, 2013, and December 31, 2013, processed by March 31, 2014.
- All claims with at least one medical service. This includes lost-time and medical-only claims.
- Data for the following states has been included: AK, AL, AR, AZ, CO, CT, DC, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MD, ME, MO, MS, MT, NC, NE, NH, NM, NV, OK, OR, RI, SC, SD, TN, TX, UT, VA, VT, and WV.

## TERMINOLOGY

Terms used throughout this study include:

- Accident Year (AY)—The year in which the work-related injury took place
- Claim—Unless specified otherwise, claims include lost-time and medical-only claims
- Cost—The total dollars paid per claim (Cost = Price x Utilization)
- Price—The total dollars paid for an individual service
- Utilization—The intensity of services provided per claim, including:
  - The number of medical units provided on a claim, e.g., 15 minutes versus 30 minutes
  - The mix of services provided on a claim, e.g., a shift from less expensive X-rays to more expensive MRIs

## WORKERS COMPENSATION CHANGES IN MEDICAL PRICES, UTILIZATION, AND COSTS

### Overall Medical Costs

WC paid medical costs per claim declined in AY 2015. To compare medical severity for different AYs, Exhibit 1a shows the paid medical costs per claim for AYs 2012 to 2015 at a maturity of one year.<sup>2</sup> This exhibit shows the paid medical costs per claim declined in AY 2015 by 1%. Questions that may come to mind when observing such a decrease include:

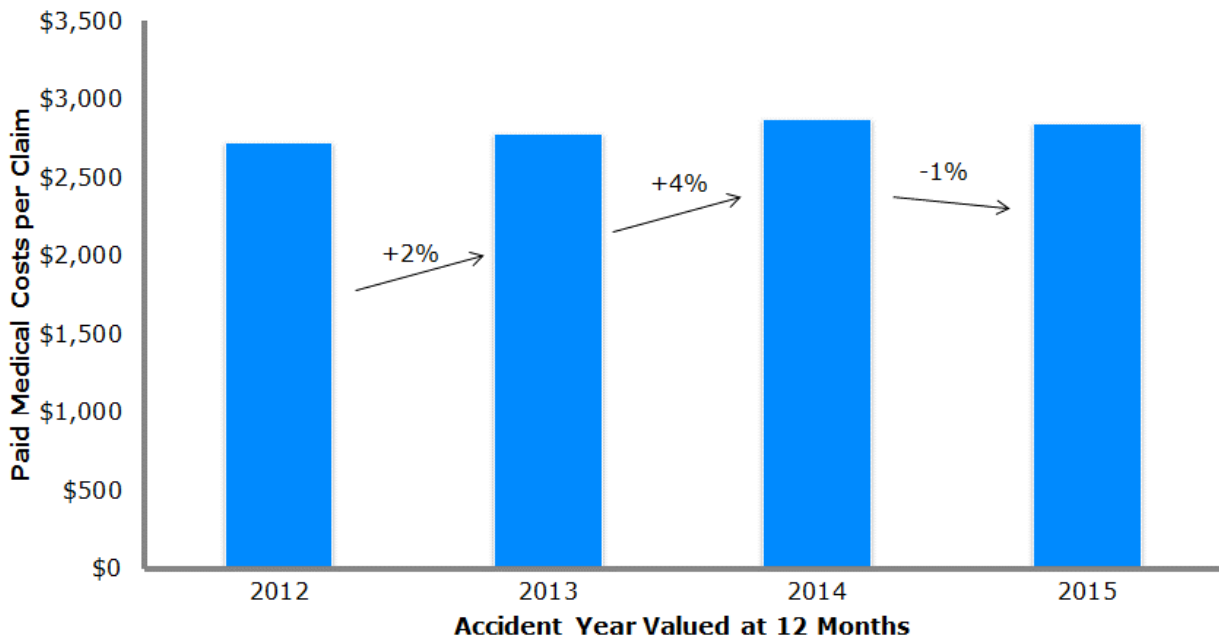
1. Has there been a change in the mix of injuries by diagnosis for WC claims?
2. Is there a specific state or group of states driving the decrease?

Previous NCCI research [2] found that a change in the WC mix of injuries by diagnosis between 1996/97 and 2001/02 affected the resulting average medical lost-time claim severity. However, Exhibit 1b shows that the mix of injuries by diagnosis has remained relatively stable between AY 2012 and AY 2015. Therefore, the mix of injuries by diagnosis does not have a substantial effect on the observed decrease in AY 2015.

Medical severity decreases were observed for approximately half of the states in this study for AY 2015. State-specific investigations will be discussed later in this paper.

## Paid Medical Costs per Claim Declined in AY 2015

Valued at 12 Months



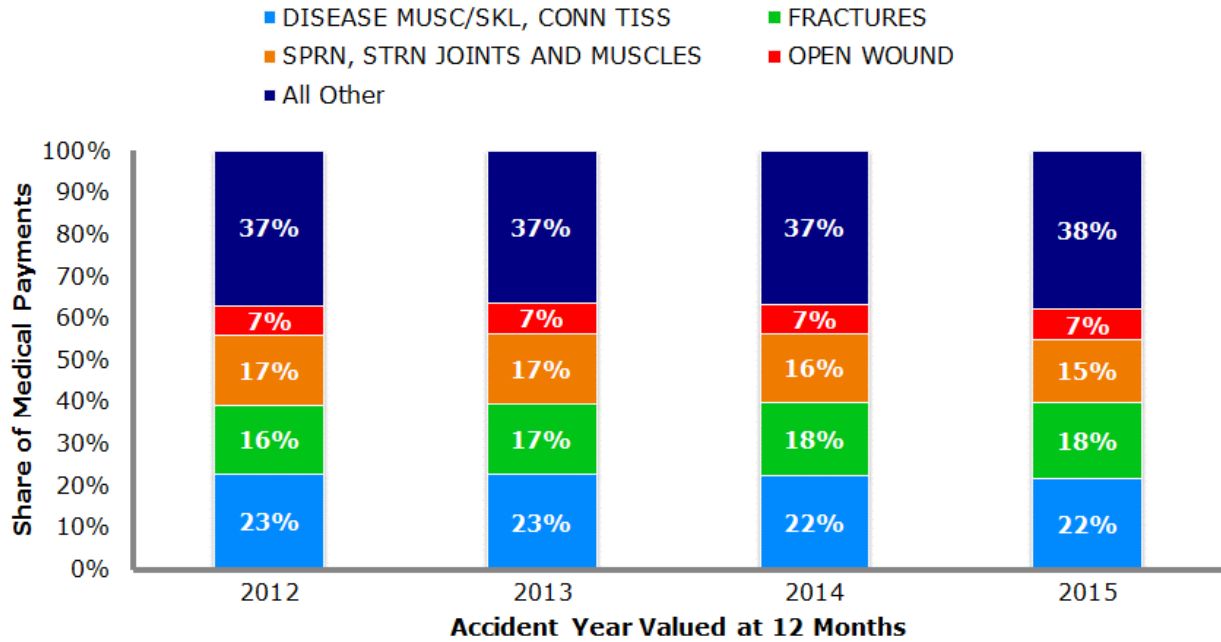
NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 1a**

<sup>2</sup> Medical services provided during the year of injury and processed within three months of the end of that year. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013.

# The Mix of Injuries by Diagnosis Has Remained Stable Between AY 2012 and AY 2015

Valued at 12 Months



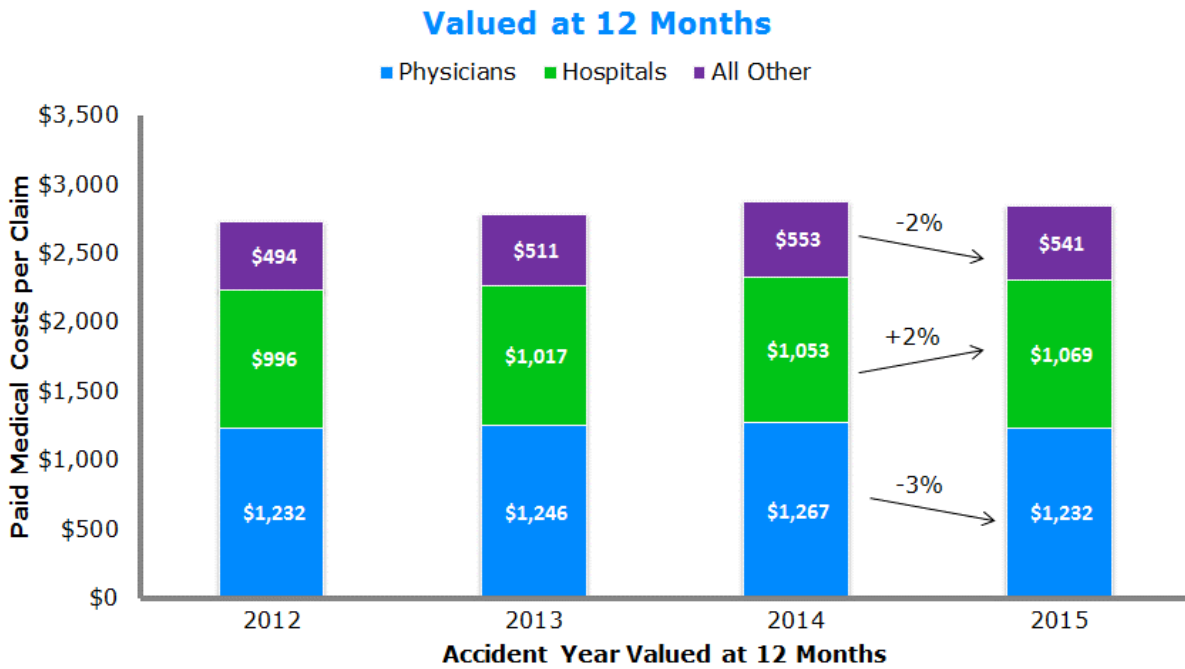
NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

Exhibit 1b

Medical costs can be analyzed by medical service category: physicians, hospitals (inpatient and outpatient), drugs, ambulatory surgical centers, medical care commodities, and other. Because physician and hospital services account for more than 80% of accident year WC medical costs valued at 12 months, cost changes in these categories can have a significant effect on overall medical costs. Exhibit 1c shows the paid medical costs per claim shown in Exhibit 1a, by medical service category. This exhibit shows that paid costs per claim for physician services decreased in AY 2015 by 3%, while paid hospital costs per claim increased by 2%. With physician services representing approximately 40% of WC medical costs, its decrease is the largest contributor to the 1% decrease in overall AY 2015 paid medical costs per claim.

The “All Other” medical costs shown in Exhibit 1c (including prescription drugs, ambulatory surgical centers, medical care commodities, and other medical services) collectively decreased by 2% in AY 2015. Partly offsetting the observed declines in the physician and all other categories, hospital costs per lost-time claim increased in AY 2015.

## Paid Physician Costs per Claim Account for Most of the 1% Medical Severity Decline in AY 2015



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 1c**

**Physician Costs**

Paid costs per claim for physician services account for most of the 1% decrease in overall medical costs per claim observed in AY 2015. Physician services include services such as evaluation and management, physical medicine, surgery, and radiology.

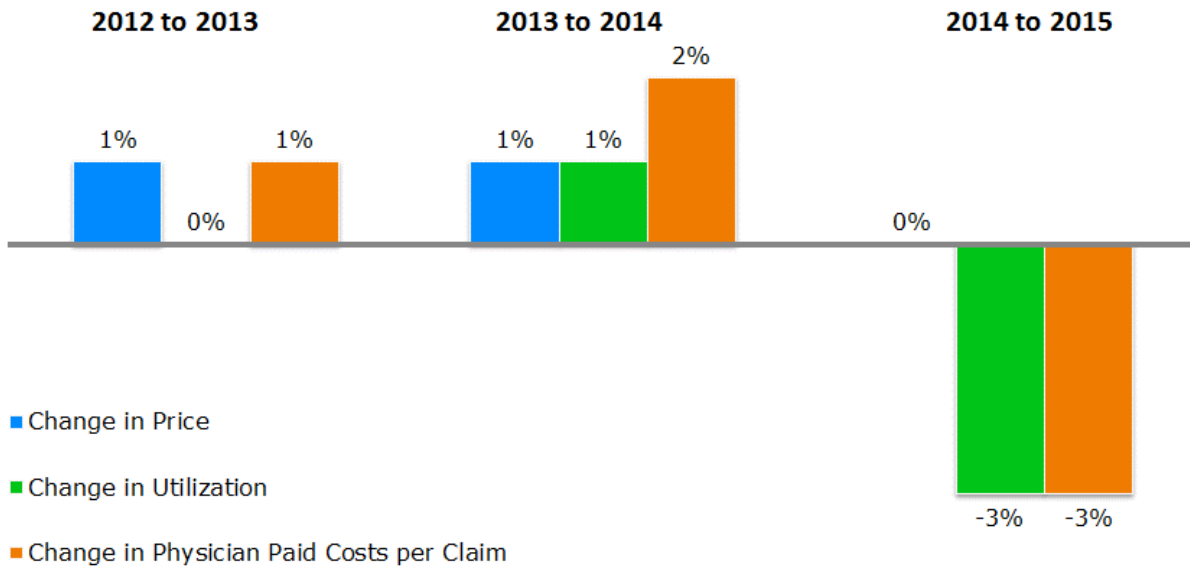
Any year-to-year change in average cost per claim is a combination of changes in:

- **Price**—The portion of the total cost change that can be attributed to changes in prices relative to the previous year.
- **Utilization**—The difference between the total cost change and the price change. The change in utilization includes changes in the number of services per claim and the impact of changes in the mix of medical services (e.g., from previously used services to more costly alternatives).

Exhibit 2a displays the year-to-year changes in price, utilization, and costs per claim for physician services. This exhibit shows prices for physician services have remained relatively stable and utilization was the major contributor to the AY 2015 decline in paid cost per claim for physician services. In fact, the price change for physician services was almost unchanged in AY 2015, while the 3% decrease in utilization is completely responsible for the overall decrease in paid costs per claim for physician services.

## Utilization Is the Major Contributor to the AY 2015 Decline in Paid Physician Costs per Claim

### Physician Price and Utilization Changes Valued at 12 Months



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 2a**

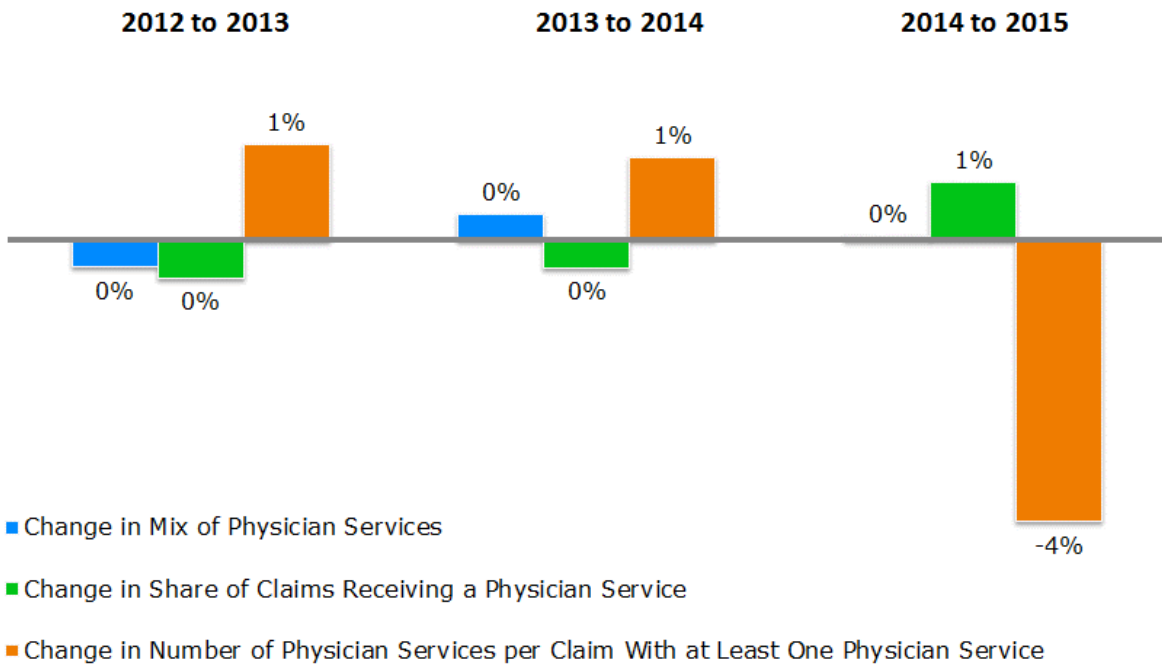
Exhibit 2b breaks down the utilization changes into three contributors:

1. The change in the mix of physician services
2. The change in the share of claims receiving a physician service
3. The change in the number of physician services<sup>3</sup> per claim with at least one physician service

This exhibit shows that changes in the number of physician services per claim are the largest contributor to the utilization changes for the years shown. This also illustrates that for the years included, the mix of physician services and the share of claims receiving a physician service have remained relatively stable. Although the AY 2015 share of medical claims with at least one physician service increased by 1%, the 4% decrease in the number of services per claim with at least one service caused the overall AY 2015 utilization to decline.

## Physician Utilization Components

Valued at 12 Months



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 2b**

<sup>3</sup> The number of physician services includes all billed services. Multiple billed services could be included in one physician visit.

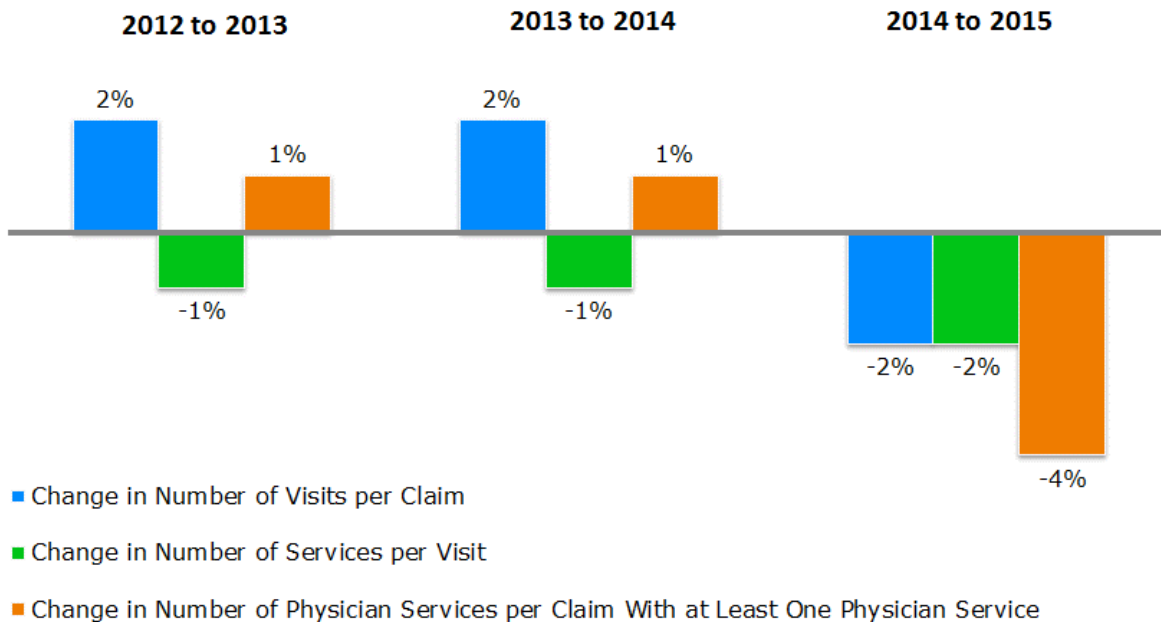
Exhibit 2c breaks down the change in the number of physician services per claim with at least one physician service into two contributors:

1. The change in number of physician visits per claim
2. The change in number of services per physician visit

This exhibit shows that, for AY 2013 and AY 2014, the change in the number of visits per claim was the largest contributor to the change in the number of physician services per claim. For AY 2015, the change in the number of physician visits per claim and the change in the number of services per physician visit contribute equally to the overall change in the number of physician services per claim.

## Change in Number of Physician Services per Claim With at Least One Physician Service

Valued at 12 Months



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 2c**



Exhibit 2d summarizes the AY 2015 changes in costs, prices, and utilization for different physician service categories. This exhibit shows that the paid cost per claim decreased for all physician services with the exception of evaluation and management, which increased by 1% due to a 1% increase in prices.

## 2015 Changes in Physician Services

Service Category	Cost Components			Utilization Components			Share of Physician Payments
	Change in Paid Cost per Claim	Price Change	Utilization Change	Change in Mix of Services	Change in Share of Claims Receiving a Service	Change in the Number of Services per Claim With at Least One Service	
Evaluation and Management	+1%	+1%	0%	0%	+1%	-2%	30%
Medicine	-2%	+1%	-4%	-1%	0%	-3%	31%
Surgery	-5%	-2%	-4%	0%	-1%	-2%	22%
Radiology	-7%	-3%	-4%	-2%	0%	-2%	11%
All Other	-6%	0%	-6%	+7%	-5%	-7%	6%
<b>Overall</b>	<b>-3%</b>	<b>0%</b>	<b>-3%</b>	<b>0%</b>	<b>1%</b>	<b>-4%</b>	<b>100%</b>

NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. "All Other" includes anesthesia, which is 3% of all physician payments. Data used with permission.

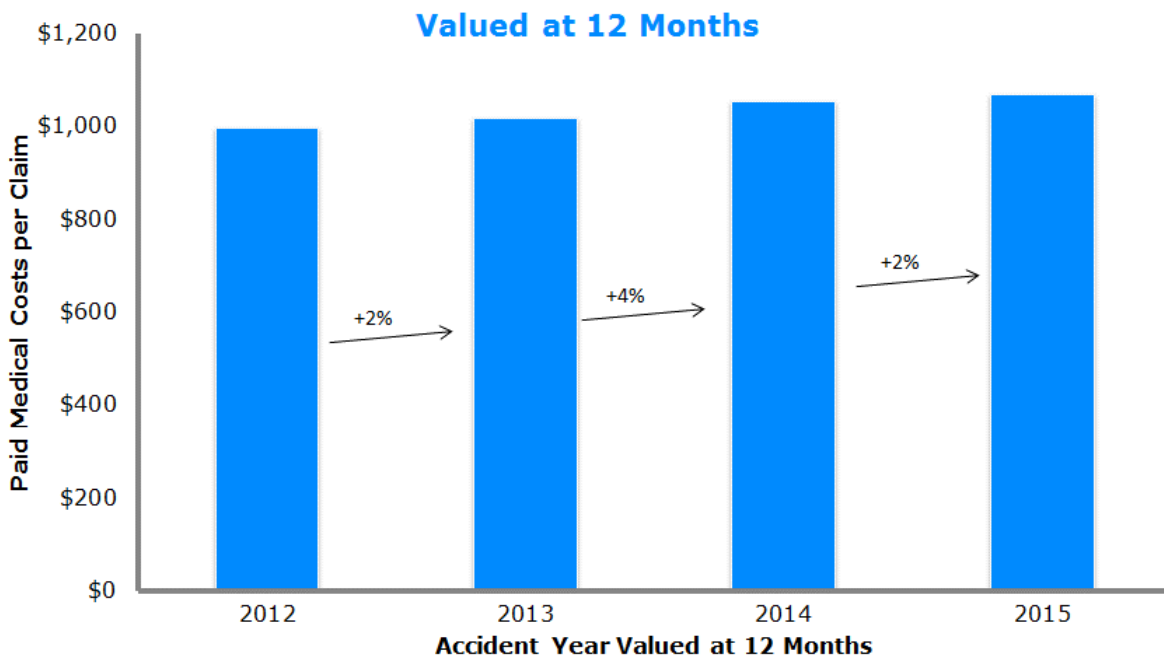
**Exhibit 2d**

**Hospital Costs**

While overall paid medical costs per claim decreased in AY 2015, paid medical costs per claim for hospital services increased 2%. Hospital services include services provided during hospital inpatient stays and hospital outpatient visits. Examples of hospital costs include payments for room and board, the use of an operating room, or intensive care unit stay.

Exhibit 3 depicts the recent changes in paid hospital costs per claim. The AY 2015 increase continues a trend of increases in paid hospital costs per claim. Between AY 2012 and AY 2015, the average year-to-year increase is about 2.5%. Since the share of claims requiring hospital services has been fairly steady, the percent changes in paid hospital costs per claim requiring hospital services are similar to the percent changes in hospital costs per claim for all claims.

**Paid Hospital Costs per Claim Continue to Increase in AY 2015**



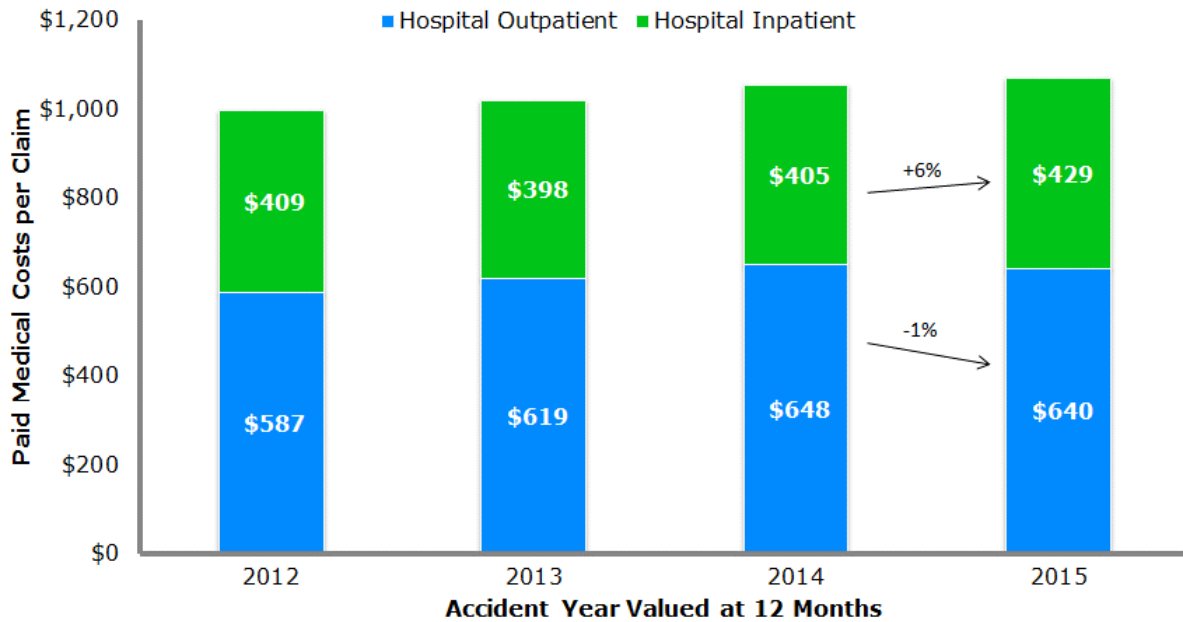
NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 3**

Exhibit 4 breaks down recent paid hospital costs per claim into hospital inpatient and hospital outpatient components. The hospital inpatient increase of 6% is a major contributor to the AY 2015 2% increase in paid hospital costs per claim. This increase in hospital inpatient paid per claim was partially offset by a decrease of 1% for hospital outpatient services.

## Paid Hospital Inpatient Costs per Claim Increased 6% in AY 2015

Valued at 12 Months



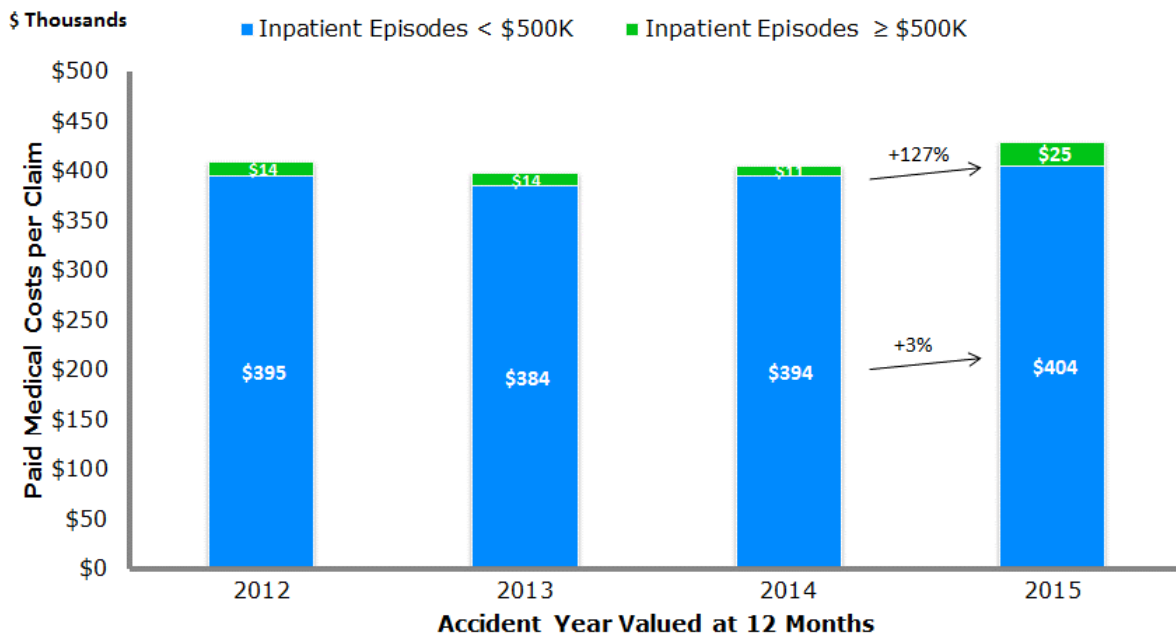
NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 4**

Exhibit 5 divides paid hospital inpatient costs into two components: paid costs per claim for hospital inpatient episodes (stays) costing less than \$500K and paid costs per claim for hospital inpatient episodes costing at least \$500K.

The biggest single change is the 127% increase in hospital inpatient paid per claim for inpatient episodes costing at least \$500K. An increase in the number of inpatient episodes with costs over \$500K is a major driver of the 6% increase. Such episodes include severe burn cases, serious injuries to head or legs, and claimants developing sepsis. In AY 2015, there were almost twice as many such episodes as in AY 2014. In AY 2015, approximately 6% of inpatient costs were for episodes costing more than \$500K, while in 2014 this share was about 3%.

## Paid Hospital Inpatient Costs per Claim Valued at 12 Months



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

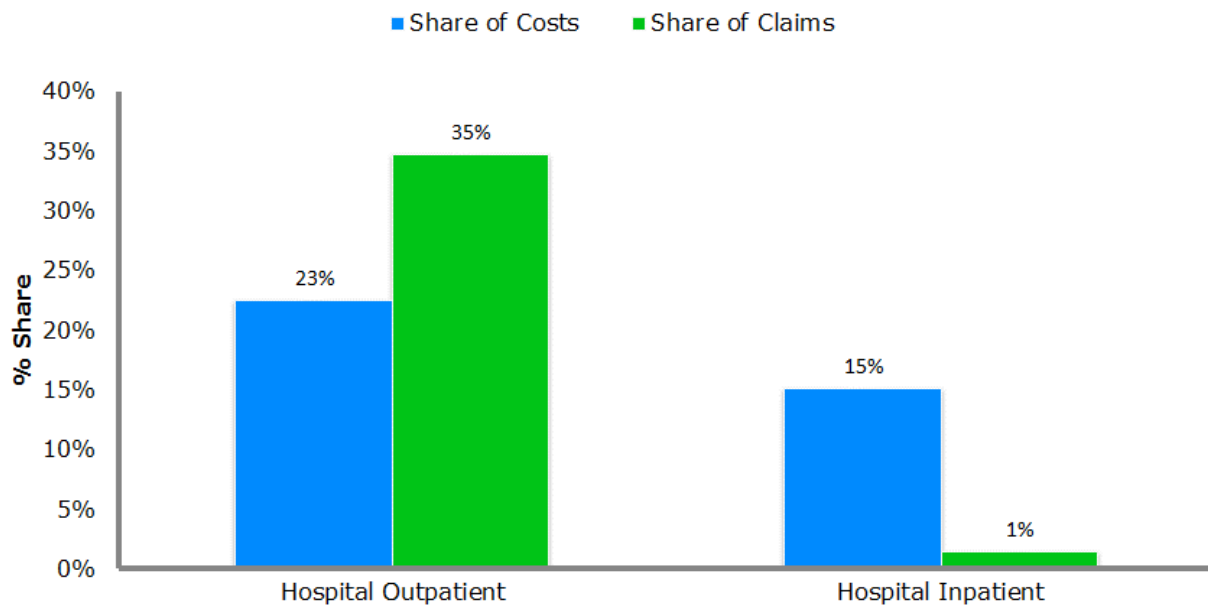
**Exhibit 5**

For injuries that occurred during 2015 and services provided by year-end 2015, Exhibit 6 shows share of costs and share of claims for hospital outpatient and inpatient services.

- Only 1% of these claims had hospital inpatient services, but the cost of these services was 15% of total paid medical costs
- Conversely, 35% of these claims had hospital outpatient services, but the cost of these services was 23% of total paid medical costs

## Hospital Inpatient Claims Are a Significant Share of Costs But a Smaller Share of Claims

AY 2015 Valued at 12 Months



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. A claim can have both inpatient and outpatient service. In such a case, it would be included in both inpatient and outpatient share of claims. Data used with permission.

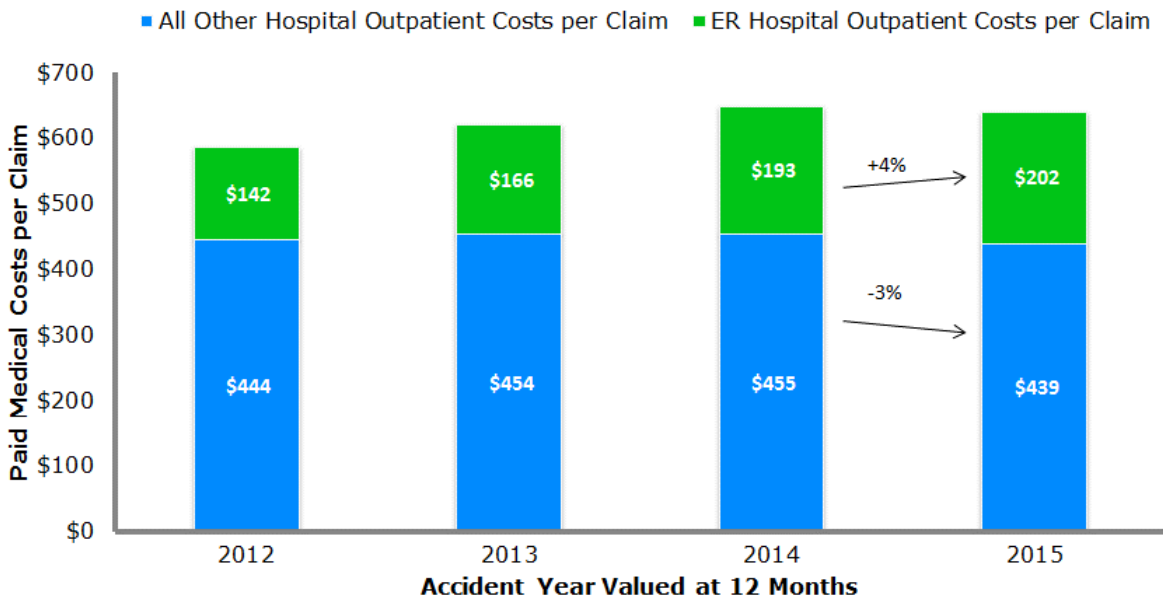
Exhibit 6

Exhibit 7 breaks down recent hospital outpatient costs into two categories: Emergency Room (ER) and All Other Hospital Outpatient Costs.

- On average, ER hospital outpatient costs are 28% of total hospital outpatient costs
- ER hospital outpatient costs per claim have been increasing recently
- In AY 2015, ER costs increased 4% while costs for All Other Hospital Outpatient Services decreased 3%

## Emergency Room Paid Hospital Outpatient Costs per Claim Increased 4% in AY 2015

Valued at 12 Months



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**Exhibit 7**

Hospital inpatient paid costs were the main driver of the AY 2015 hospital costs increase of 2%. A larger than usual number of hospital inpatient episodes costing at least \$500K caused hospital inpatient costs per claim to increase by 6%. Furthermore, ER Hospital Outpatient Costs increased 4%, while All Other Hospital Outpatient Costs decreased 3%.

**State Results**

Exhibit 8 shows the AY 2015 paid medical cost per claim for Physicians, Hospital Inpatient, Hospital Outpatient, and All Other medical categories by state. The exhibit is a heat map where red indicates paid costs per claim that are higher than the average<sup>4</sup> and green indicates paid costs per claim lower than the average. For example, in AY 2015, Alaska had medical costs per claim higher than the average in all categories. Maryland is an example where all medical cost per claim categories were lower than the average.

**2015 Medical Cost per Claim**

Valued at 12 months

State	Total	Physicians	Hospital Inpatient	Hospital Outpatient	All Other
Average	Yellow	Yellow	Yellow	Yellow	Yellow
Alaska	Red	Red	Red	Red	Red
Alabama	Yellow	Green	Yellow	Yellow	Yellow
Arkansas	Yellow	Green	Yellow	Yellow	Yellow
Arizona	Yellow	Yellow	Yellow	Yellow	Yellow
Colorado	Yellow	Yellow	Yellow	Green	Yellow
Connecticut	Yellow	Yellow	Green	Yellow	Yellow
District of Columbia	Green	Green	Green	Green	Green
Florida	Yellow	Green	Red	Yellow	Yellow
Georgia	Yellow	Yellow	Yellow	Green	Yellow
Hawaii	Yellow	Yellow	Green	Yellow	Yellow
Iowa	Yellow	Yellow	Yellow	Yellow	Yellow
Idaho	Yellow	Yellow	Yellow	Yellow	Yellow
Illinois	Yellow	Yellow	Yellow	Yellow	Yellow
Indiana	Yellow	Yellow	Yellow	Yellow	Yellow
Kansas	Yellow	Green	Yellow	Yellow	Yellow
Kentucky	Yellow	Green	Yellow	Yellow	Yellow
Louisiana	Yellow	Yellow	Yellow	Yellow	Yellow
Maryland	Green	Green	Green	Green	Green
Maine	Green	Green	Green	Green	Green
Missouri	Yellow	Yellow	Yellow	Yellow	Yellow
Mississippi	Yellow	Yellow	Red	Yellow	Yellow
Montana	Yellow	Green	Yellow	Yellow	Yellow
North Carolina	Yellow	Green	Yellow	Yellow	Yellow
Nebraska	Yellow	Green	Yellow	Yellow	Yellow
New Hampshire	Yellow	Yellow	Green	Yellow	Yellow
New Mexico	Yellow	Yellow	Yellow	Yellow	Yellow
Nevada	Green	Green	Green	Green	Green
Oklahoma	Yellow	Green	Yellow	Yellow	Yellow
Oregon	Yellow	Yellow	Green	Yellow	Yellow
Rhode Island	Green	Green	Green	Green	Green
South Carolina	Yellow	Green	Yellow	Yellow	Yellow
South Dakota	Yellow	Green	Yellow	Yellow	Yellow
Tennessee	Yellow	Yellow	Yellow	Yellow	Yellow
Texas	Yellow	Yellow	Yellow	Yellow	Yellow
Utah	Yellow	Green	Yellow	Yellow	Yellow
Virginia	Yellow	Yellow	Yellow	Yellow	Yellow
Vermont	Yellow	Green	Yellow	Yellow	Yellow
West Virginia	Green	Green	Yellow	Yellow	Yellow

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**Exhibit 8**

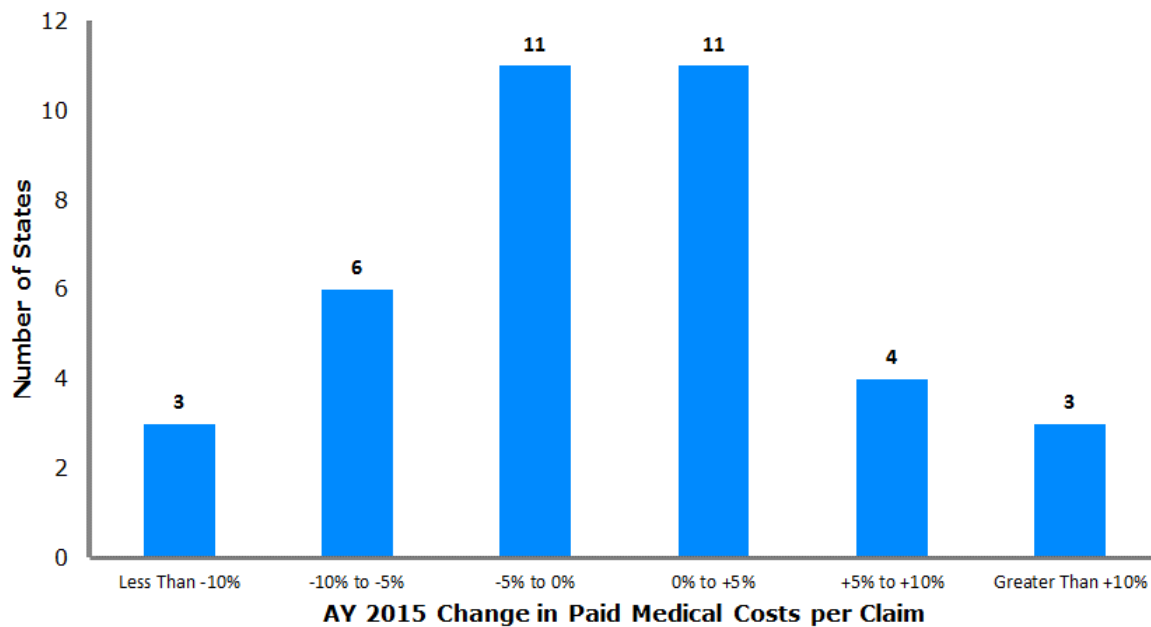
<sup>4</sup> Simple average of paid medical costs per claim for states included in this study.

Exhibit 9 shows the distribution of states by AY 2015 change in paid medical costs per claim for the 38 states for which NCCI provides ratemaking services. In approximately half of the states, paid medical cost per claim decreases were observed in AY 2015.

The range of the individual state severity changes for AY 2015 is -13% to +20%. Examples of cost drivers underlying the largest observed changes may include:

- A smaller number of costly hospital outpatient visits
- Implementation of a hospital fee schedule
- Increase in physician costs per claim
- Increase in hospital outpatient costs per claim
- A greater-than-usual number of injuries that required extensive hospitalization

## Distribution of States by AY 2015 Change in Paid Medical Costs per Claim



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**Exhibit 9**

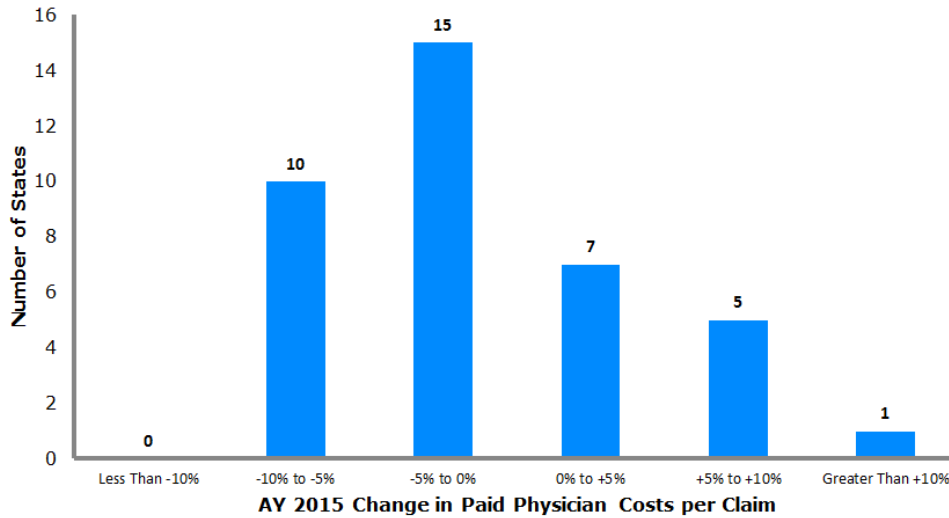
Exhibits 9a and 9b show the distribution of states by AY 2015 change in paid physician costs per claim and paid hospital costs per claim, respectively.

Exhibit 9a shows that the majority of states experienced changes in paid physician costs per claim in the range of +/-10%. Only one state experienced an increase greater than 10% and no state had a decrease of more than 10%.

Conversely, the histogram of changes in Exhibit 9b shows more of a uniform distribution of changes in paid hospital costs per claim. Six states had a decrease of greater than 10% and 10 states had an increase of more than 10%. This observation is not surprising since, as mentioned above, hospital costs in any year can be greatly influenced by the presence of injuries that require extensive hospitalization or by an implementation of a hospital fee schedule.



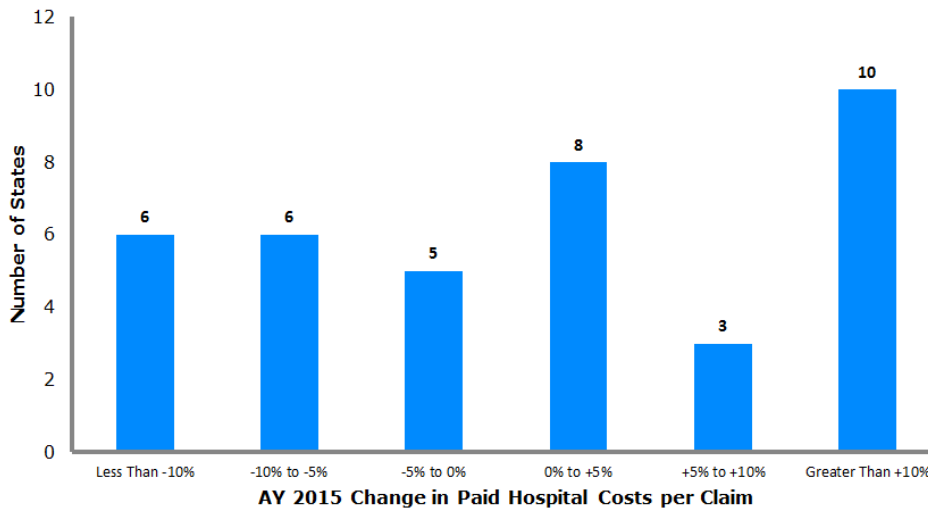
## Distribution of States by AY 2015 Change in Paid Physician Costs per Claim



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 9a**

## Distribution of States by AY 2015 Change in Paid Hospital Costs per Claim



NCCI analysis is based on MDC for medical services provided during the year of injury. For example, AY 2013 includes services processed by March 31, 2014, for services rendered in 2013 for claims with accident dates in 2013. Data used with permission.

**Exhibit 9b**

## CLOSING REMARKS

Between AY 2014 and AY 2015, a moderation in the paid costs per claim for physician services was a primary driver underlying the observed improvement in workers compensation average medical severity. The key contributor to the AY 2015 decline in paid physician costs per claim was the decrease in utilization of physician services. Both the number of services per physician visit and the number of physician services per claim with at least one physician service decreased.

Between AY 2012 and AY 2015, the mix of injuries by diagnosis remained relatively stable and had, at most, a minor effect on the AY 2015 decrease.

The AY 2015 decrease in the paid costs per claim for physician services was partially offset by an increase in paid costs per claim for hospital services.

No individual state was solely responsible for the AY 2015 medical paid severity decrease.

## REFERENCES

- [1] NCCI, 2016 *State of the Line Guide*, [ncci.com/Articles/Documents/II\\_AIS-2016-SOL-Guide.pdf](http://ncci.com/Articles/Documents/II_AIS-2016-SOL-Guide.pdf).
- [2] Tanya Restrepo and Harry Shuford, "Significant Changes in the Factors Driving Medical Severity 1996–2001 vs. 2001–2006," NCCI, July 2010, [ncci.com/Articles/Documents/II\\_NCCI\\_Publishes\\_Medical\\_Severity\\_Study\\_Update.pdf](http://ncci.com/Articles/Documents/II_NCCI_Publishes_Medical_Severity_Study_Update.pdf).