



# The Impact of Fee Schedule Updates on Physician Payments

Presented by:

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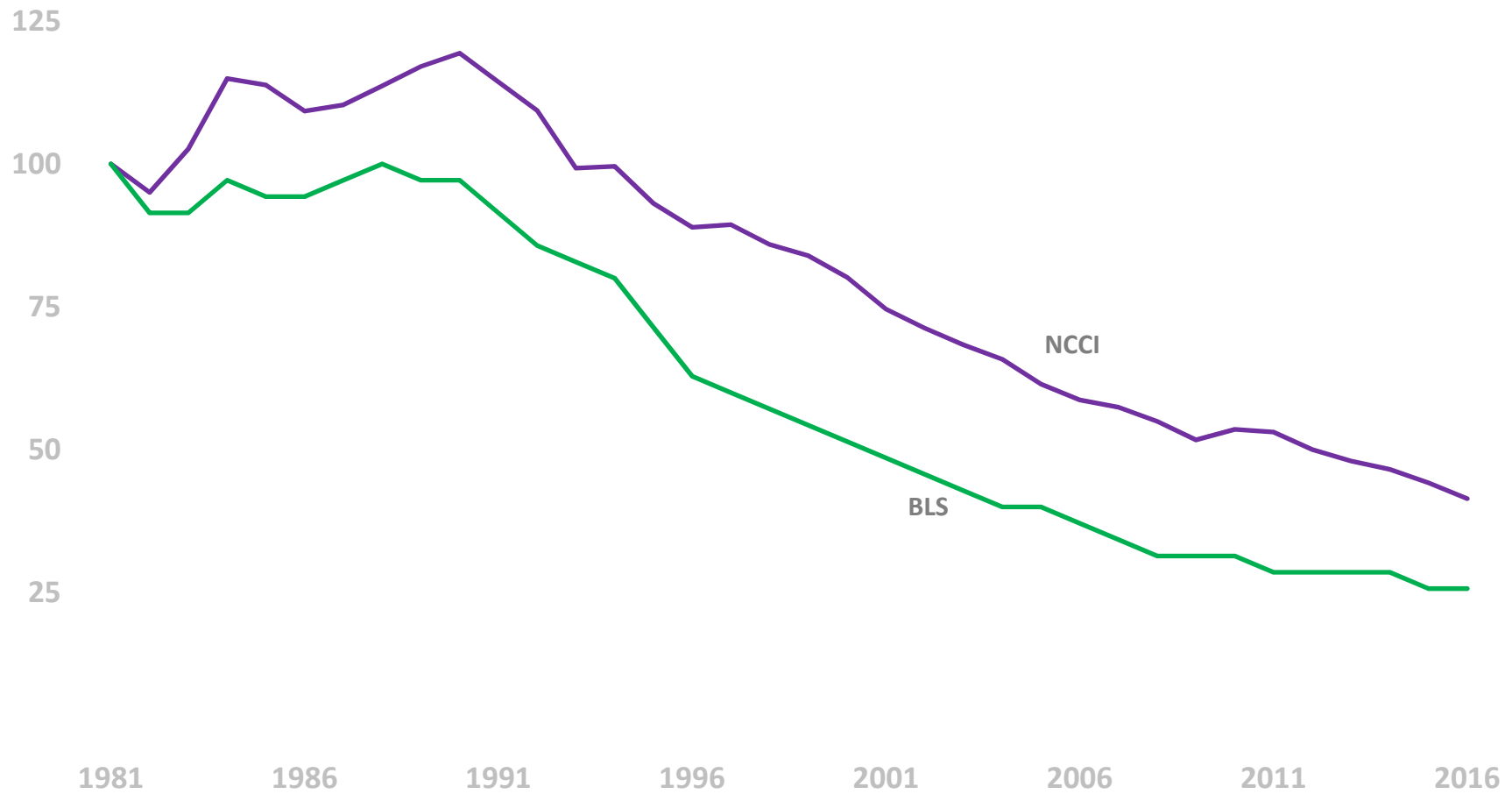
New Orleans, Louisiana

# Agenda

- Background: Medical Costs in Workers Compensation
- Medical Fee Schedules and Loss Costs
- Price Realization - Univariate Regression Model
- Price Realization - Multivariate Autoregressive Model

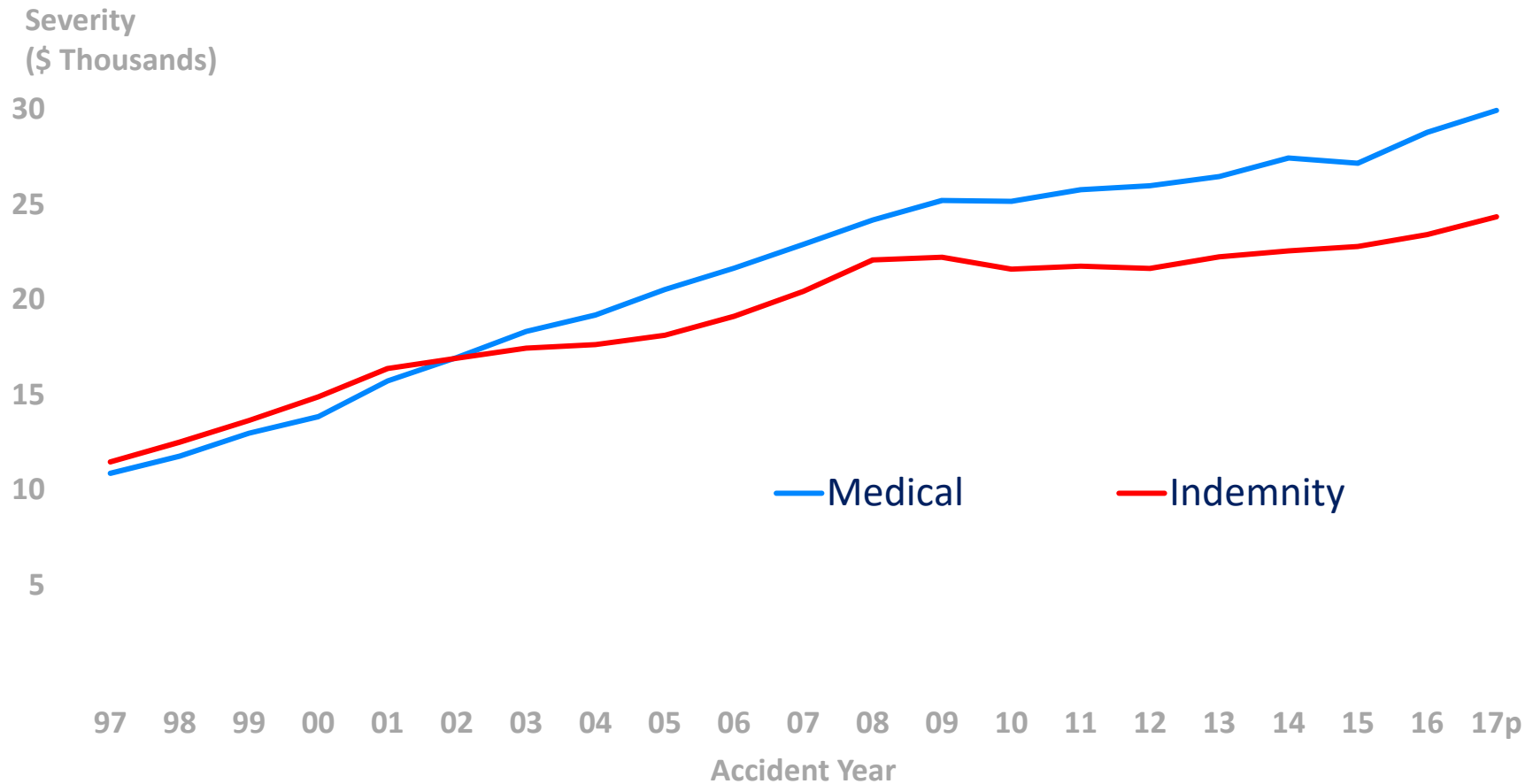
# NCCI of Lost-Time Claim Frequency

Index 1981 = 100



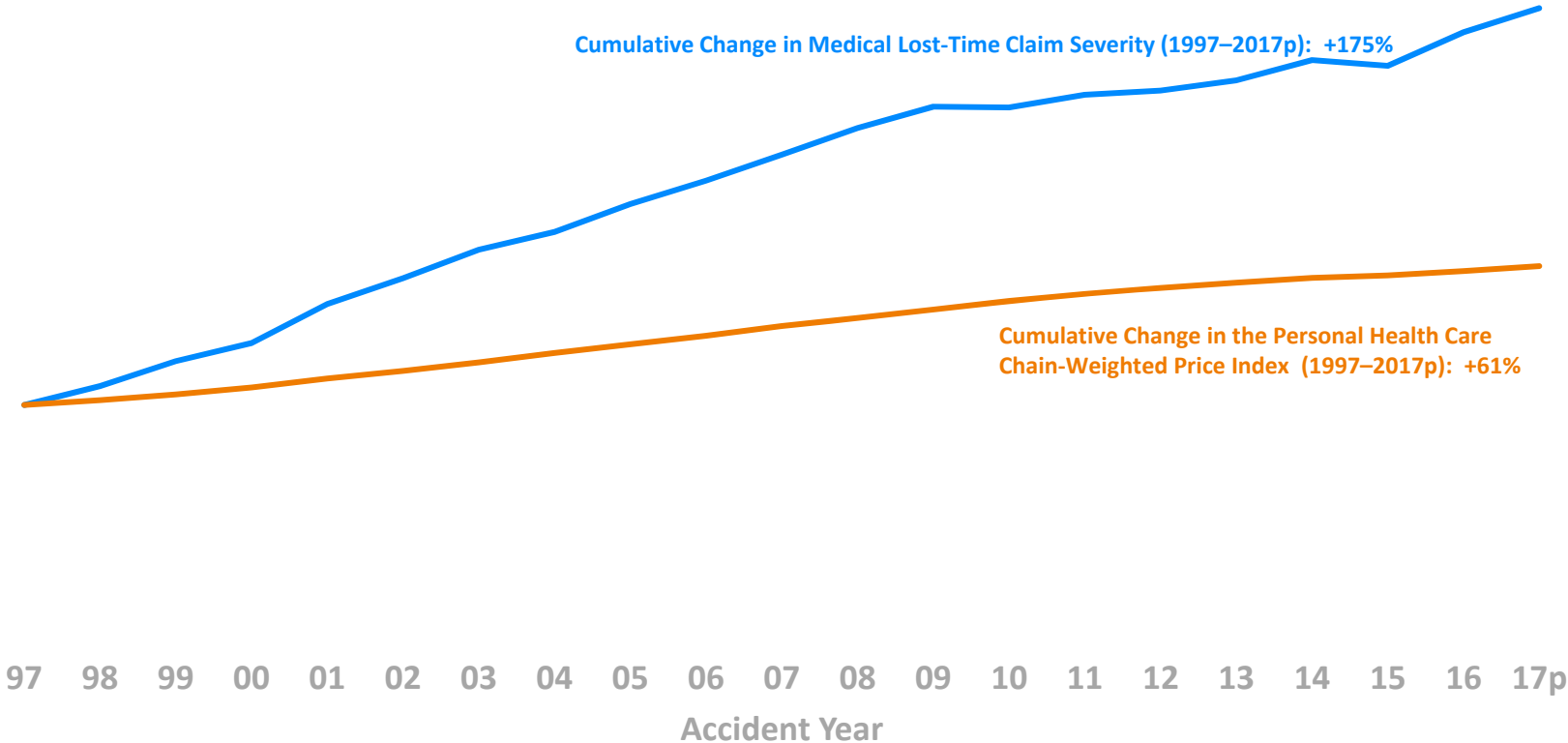
# WC Average Lost-Time Claim Severity

## Private Carriers and State Funds—NCCI States



# WC Average Medical Lost-Time Claim Severity

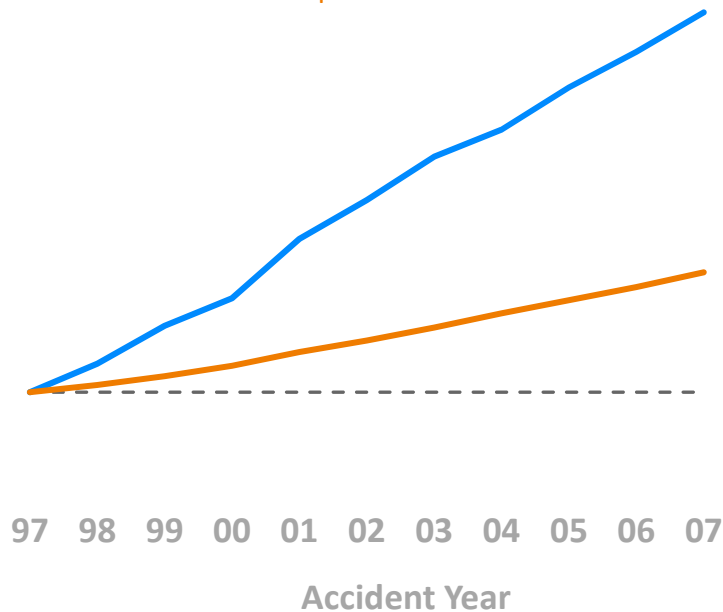
Private Carriers and State Funds—NCCI States



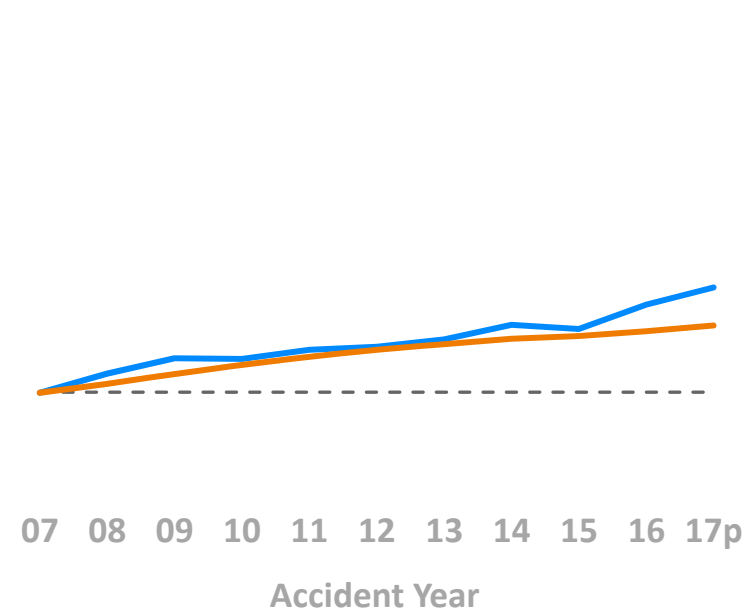
# Relative Growth Rates—Medical Severity vs. Price Inflation

Private Carriers and State Funds—NCCI States

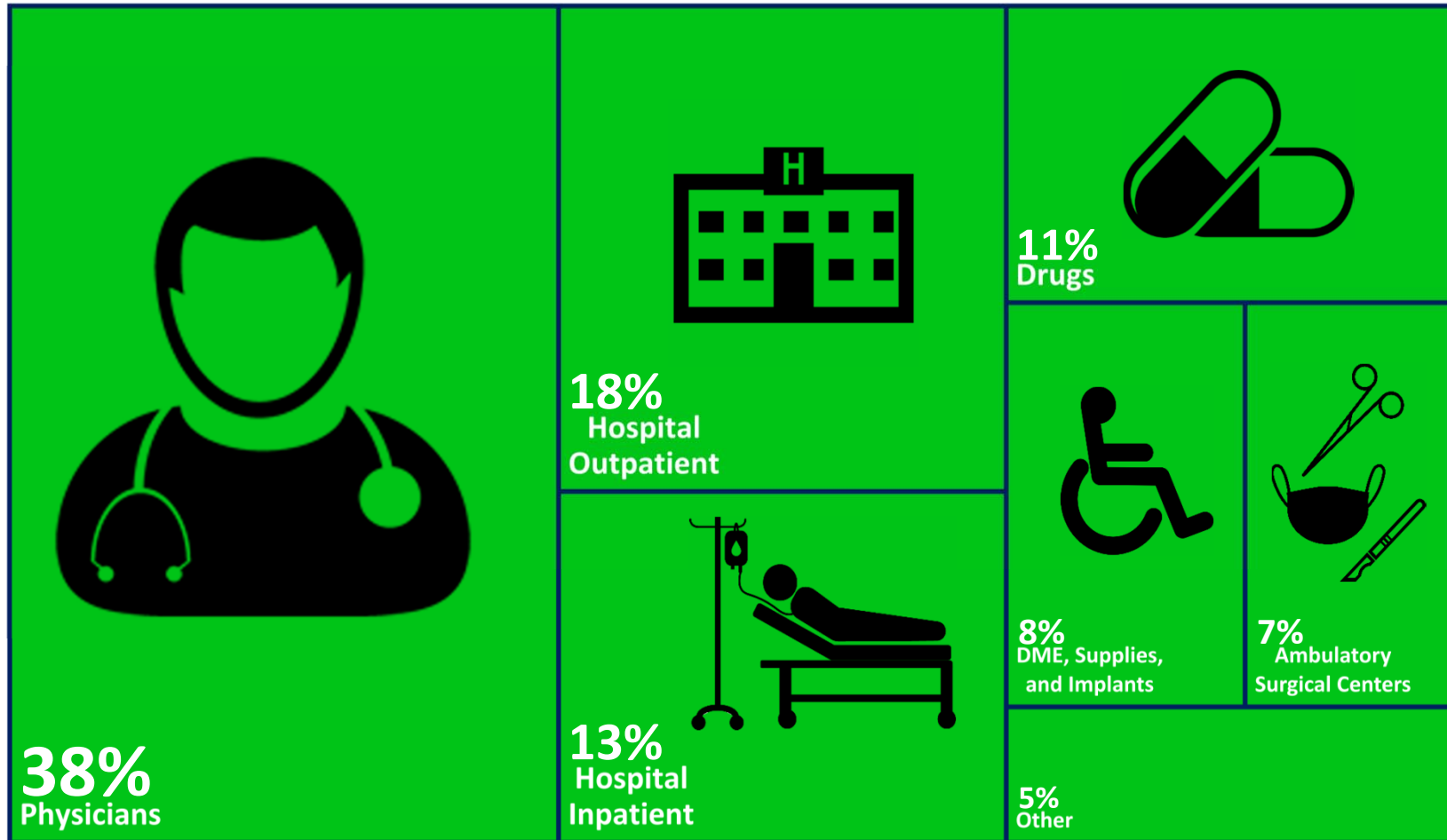
Medical lost-time claim severity grew approximately **4.5%** per year **faster** than **medical care prices**



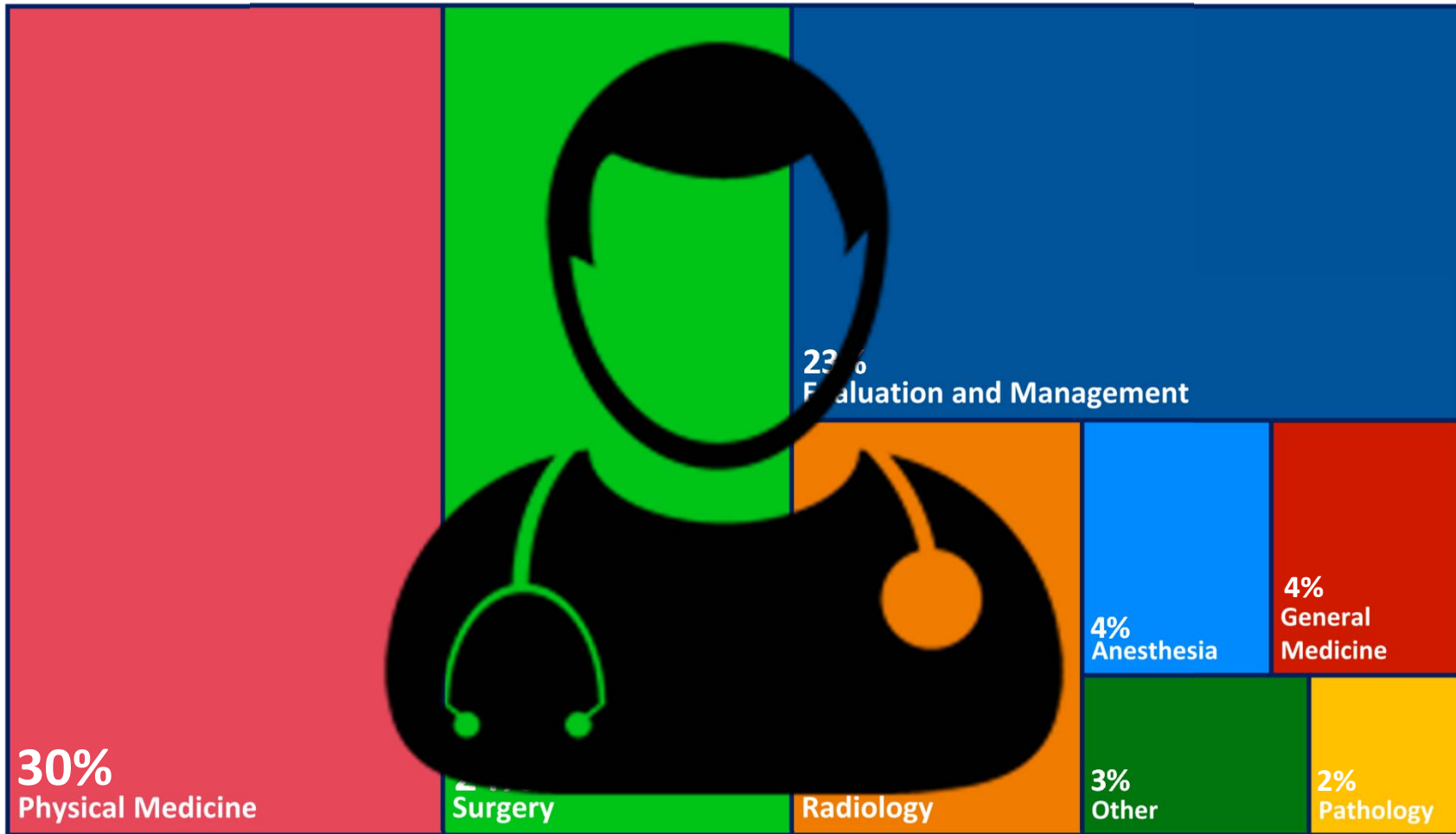
Change in Medical lost-time claim severity and **medical care prices** tracked one another



# Distribution of Medical Costs



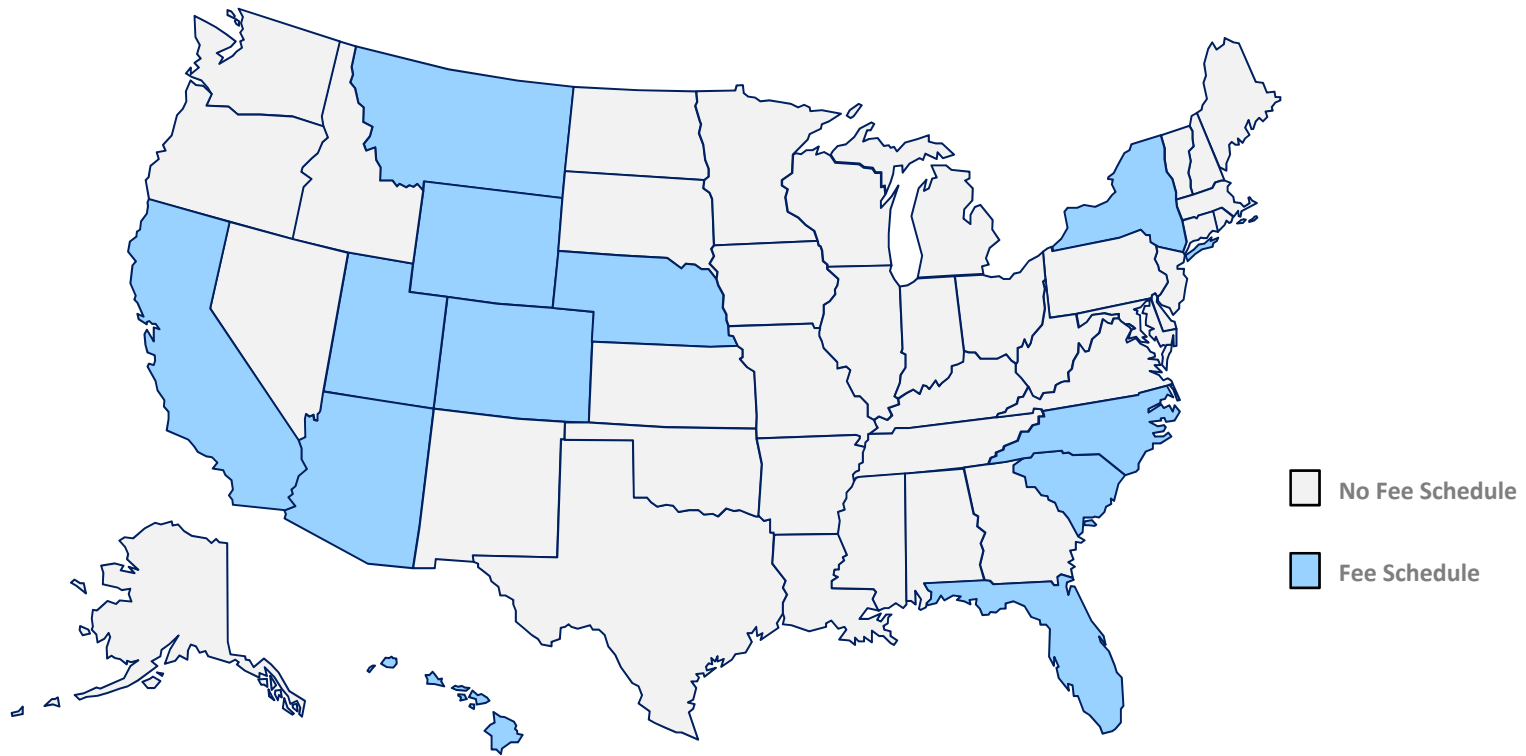
# Distribution of Physician Costs





# States With Physician Fee Schedules as of Year-End 1979

## 12 States in Total





# What is a Fee Schedule?

- A fee schedule is a catalog containing:
  - A list of alphanumeric procedure codes identifying a wide array of medical services.
  - The Maximum Allowable Reimbursement (MAR) for each procedure code.
- Represents a cost control measure for medical losses.
- Workers compensation fee schedules are created by state legislatures, and typically updated by rule.

# A Fee Schedule Excerpt

<b>CPT</b>	<b>2018</b>	<b>CPT</b>	<b>2018</b>
<b><u>CODE</u></b>	<b><u>FEE</u></b>	<b><u>CODE</u></b>	<b><u>FEE</u></b>
90901	\$59.28	97164	\$55.84
97012	\$39.01	97165	\$116.33
97014	\$33.95	97166	\$139.61

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↑  
Procedure  
Code

# A Fee Schedule Excerpt

<u>CPT</u> <u>CODE</u>	<u>2018</u> <u>FEE</u>	<u>CPT</u> <u>CODE</u>	<u>2018</u> <u>FEE</u>
90901	\$59.28	97164	\$55.84
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↑ Procedure Code

↑ MAR

# A Fee Schedule Excerpt

<u>CPT</u> <u>CODE</u>	<u>2018</u> <u>FEE</u>	<u>CPT</u> <u>CODE</u>	<u>2018</u> <u>FEE</u>
90901	\$59.28	97164	\$55.84
97012	\$39.01	97165	\$116.33
97014	\$33.95	97166	\$139.61

↑ Procedure Code      ↑ MAR

When a medical service provider performs “untimed electrical muscle stimulation” (97014), the WC insurer cannot pay more than \$33.95.

# Not All Services Have a MAR

- Some procedures are not included on the fee schedule due to difficulty in cost estimates:
  - Rarely used or newly developed procedures
  - Open-ended time/resource requirements
- Which procedure is probably not on the fee schedule?

Code	Description
29405	Apply Short Plaster Leg Cast
29999	Unlisted Complex Arthroscopy Procedure
30400	Simple Nose Reconstruction



# Fee Schedules Affect WC Ratemaking

- Medical service providers generally are reimbursed at or near the MAR in states with a fee schedule.
- Thus, when the MARs in a fee schedule are updated, medical payments tend to move in tandem.
- Fee schedule updates are thus benefit level changes – loss costs need to be adjusted.

# How Do States Establish Fee Schedules?

- Many states base their fee schedule on Medicare reimbursement levels.
- Some states develop their own fee schedule based on group health payments or benchmarks from neighboring states.
- Other states just limit payments to a percentage of Usual and Customary Rates (UCR), or have no fee schedule at all.
- Most states with fee schedules update MARs annually.

# How Does NCCI Price Fee Schedule Changes?

- This basic process covers a wide array of scenarios:
  - Determine the percentage change in MAR for each procedure code with a MAR
  - Weight the change for each procedure code by the latest Service Year payments for that code
  - Multiply the average MAR change by a “price realization factor” to estimate the paid loss change
  - Multiply the impact by the physician share of total WC benefit costs

# Physician Example

- State X physician MARs are currently 150% of 2017 Medicare. Their new fee schedule will be 160% of 2018 Medicare.
- There are only three medical services in State X:

Code	Description	SY 2016 Paid
29405	Apply Short Leg Cast	\$400,000
29999	Unlisted Complex Arthroscopy	\$100,000
30400	Simple Nose Reconstruction	\$500,000

Hypothetical example.

# Step 1: Determine the % Change in MARs

Code	2017 TN MAR	2018 TN MAR	% Change in MAR
29405	\$126	\$128	+1.6%
29999	N/A	N/A	-
30400	\$1,560	\$1,680	+7.7%

Hypothetical example.

Codes without a MAR are assumed to be unaffected by fee schedule updates.

## Step 2: Payment-Weight the % Changes

Code	2016 Payments	Weight	% Change in MAR
29405	\$400,000	40%	+1.6%
29999	\$100,000	10%	-
30400	\$500,000	50%	+7.7%
<b>Total</b>	<b>\$1,000,000</b>		

Hypothetical example.

Payment data is from NCCI's Medical Data Call for the latest service year.

## Step 3: Payment-Weight the % Changes

Code	2016 Payments	Weight	% Change in MAR
29405	\$400,000	40%	+1.6%
29999	\$100,000	10%	-
30400	\$500,000	50%	+7.7%
<b>Total</b>	<b>\$1,000,000</b>		<b>+4.5%</b>

Hypothetical example.

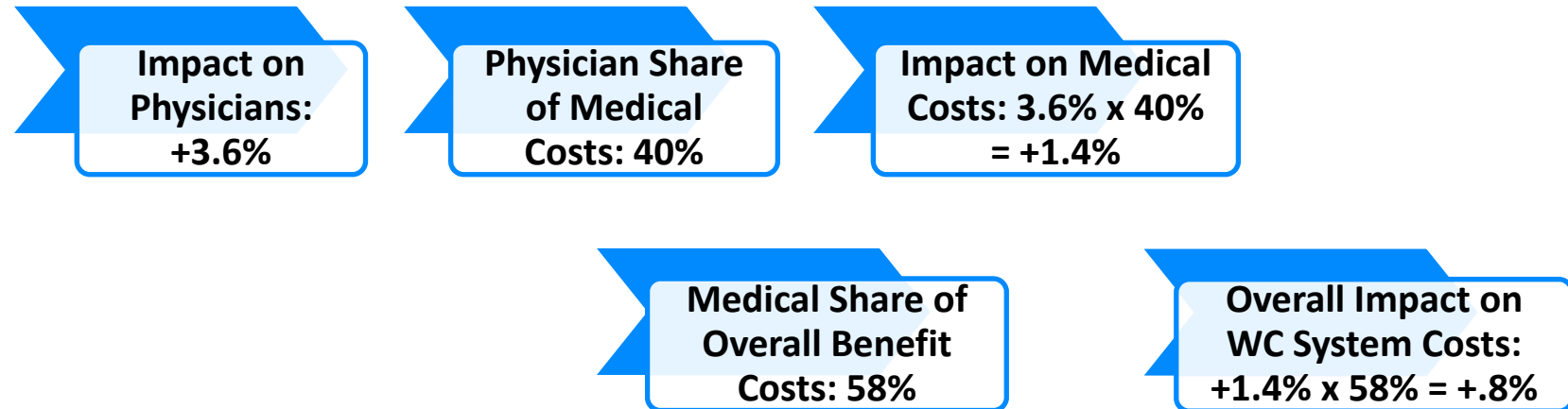
Payment data is from NCCI's Medical Data Call for the latest service year.

## Step 4: Apply the Realization Factor

- Now, translate the change in average MAR to an expected change in medical payments (losses).
- Based on our research, 80% of a change in MAR is realized as a change in prices.
- **+4.5%** change in physician MARs  $\Rightarrow$  **+3.6%** change in physician payments



# Step 5: Impact on Overall Benefit Costs



# Background

- Physician payments comprise the largest share of medical costs for workers compensation (WC) claims ( $\approx 40\%$ )
- NCCI needs to accurately estimate the impact of physician fee schedule updates for rate/loss cost filings
- Most of the analysis process is deterministic; the only unknown is the price realization factor
- NCCI began collecting a new Medical Data Call from affiliates in 2011
- Sufficient volume of data now available for analysis

# Key Findings

- Changes to medical fee schedules for physician services affect prices paid for services that are subject to the fee schedule
- Approximately 80% of any change in MAR for a procedure code will be realized as a change in prices paid.\* This relationship generally holds for:
  - Both increases and decreases in MAR
  - Various types of physician services
  - Different magnitudes of changes in MAR
- An estimated price response of 80% to MAR changes is a reasonable estimate for any of the states included in this study
- Payments for services paid out-of-network are somewhat more responsive to MAR changes than payments for services paid in-network
- Most of the impact of a MAR change on prices paid is realized within one year from the date of a fee schedule change; the carryover effect of MAR changes from the prior year is relatively minor
- There is no discernable substitution effect on physician services in response to fee schedule changes

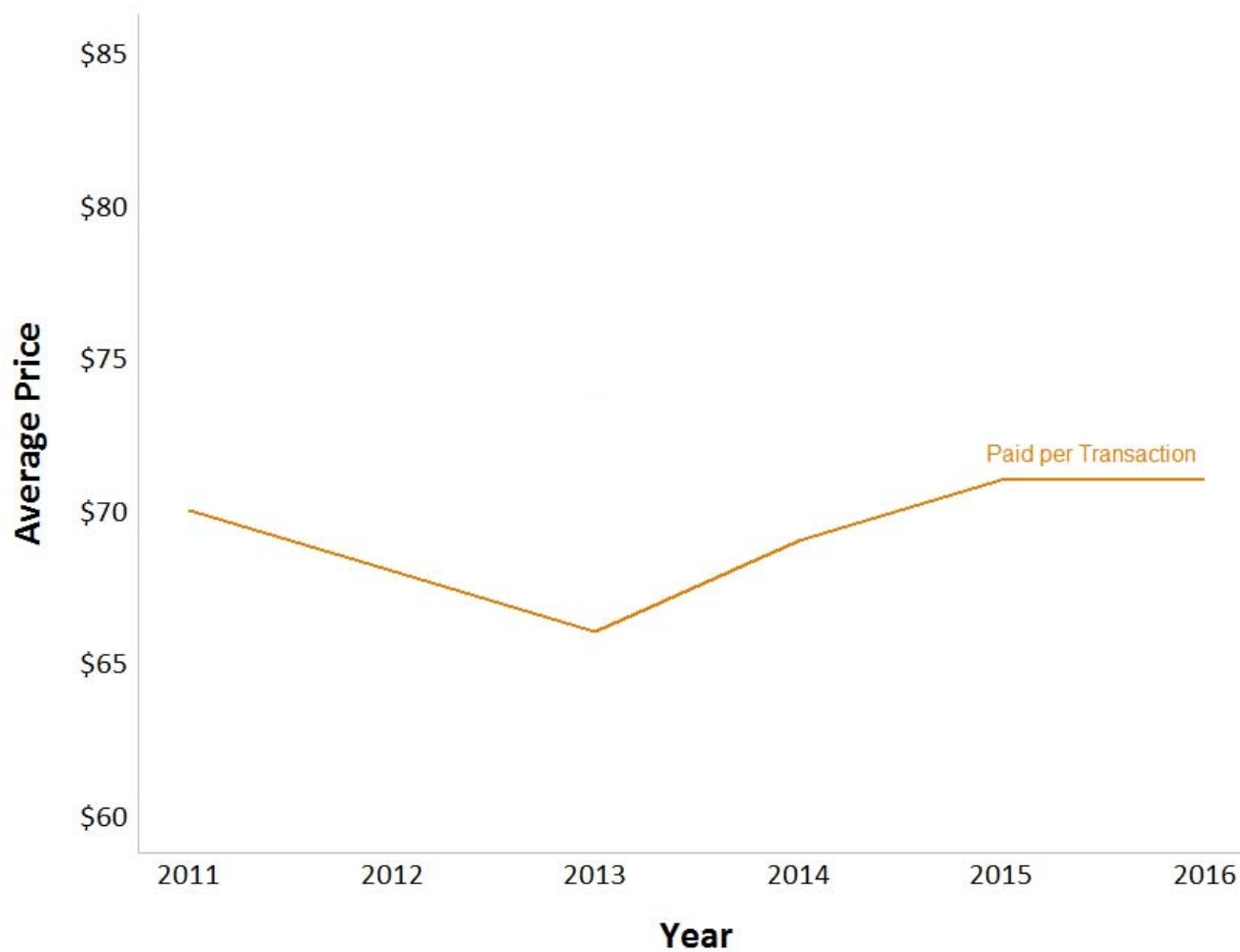
\*NCCI recognizes that this relationship might not hold if the fee schedule is set at a substantially uncompetitive level.

# Data

- The data source used in this study is NCCI's Medical Data Call\*
- Data subject to the following limitations was used:
  - Services, other than anesthesia, provided between January 1, 2011 and December 31, 2016
  - NCCI states with an enforceable physician fee schedule that was updated at least once during the study period
  - Payments for a procedure code within a state with less than a 300% year-to-year change in MAR or change in price paid per transaction (PPT)
  - Transactions that were not considered outliers during the data validation process
  - Transactions not subject to a payment modifier
- The resulting data set consists of 65.7 million transactions representing \$4.5 billion in physician payments.
- These transactions were aggregated into a total of 28,193 state, year, and procedure code combinations.

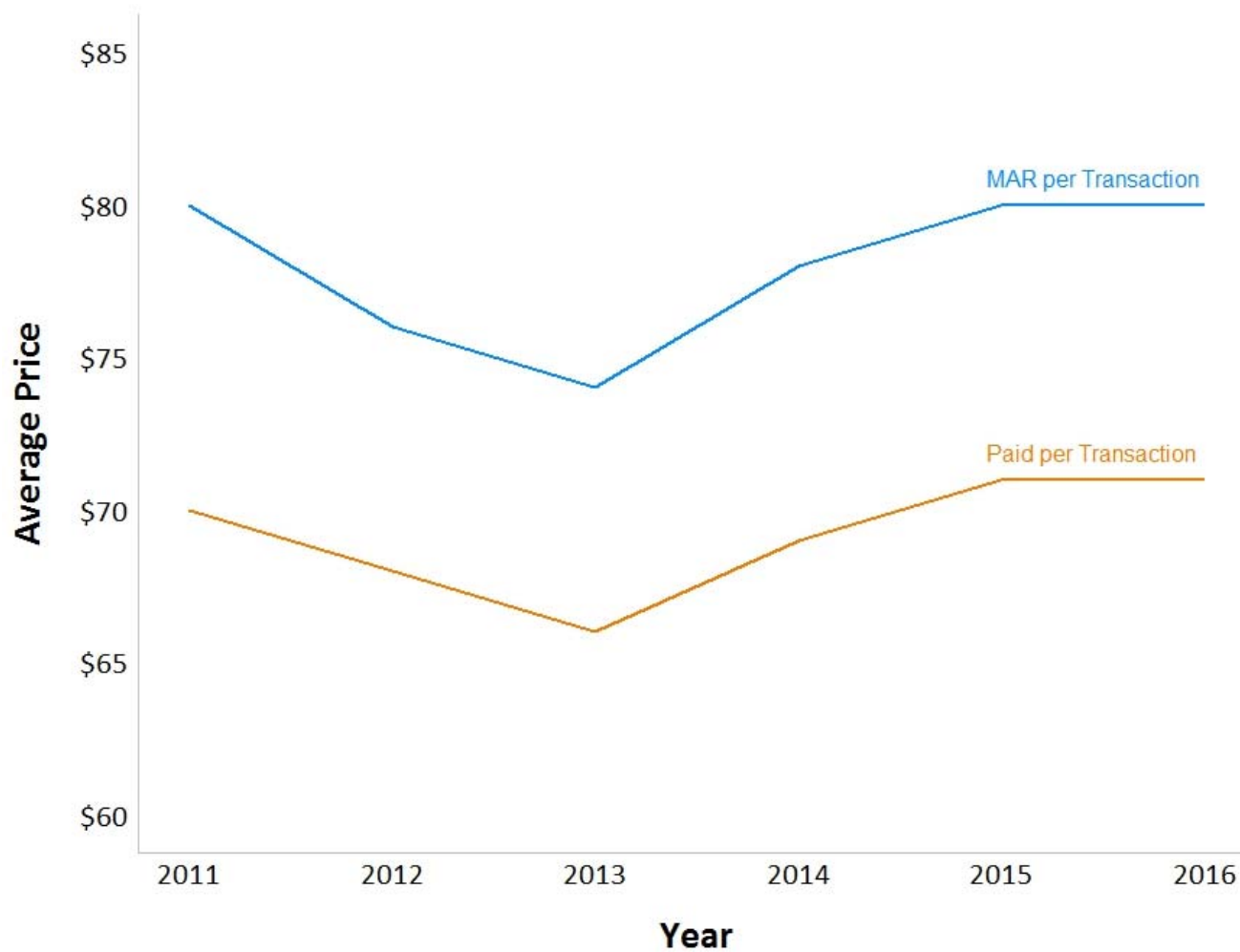
\*For Texas, the data source is DWC Medical State Reporting Public Use Data File.

# Fee Schedules Have an Effect On Prices Paid



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# Fee Schedules Have an Effect On Prices Paid

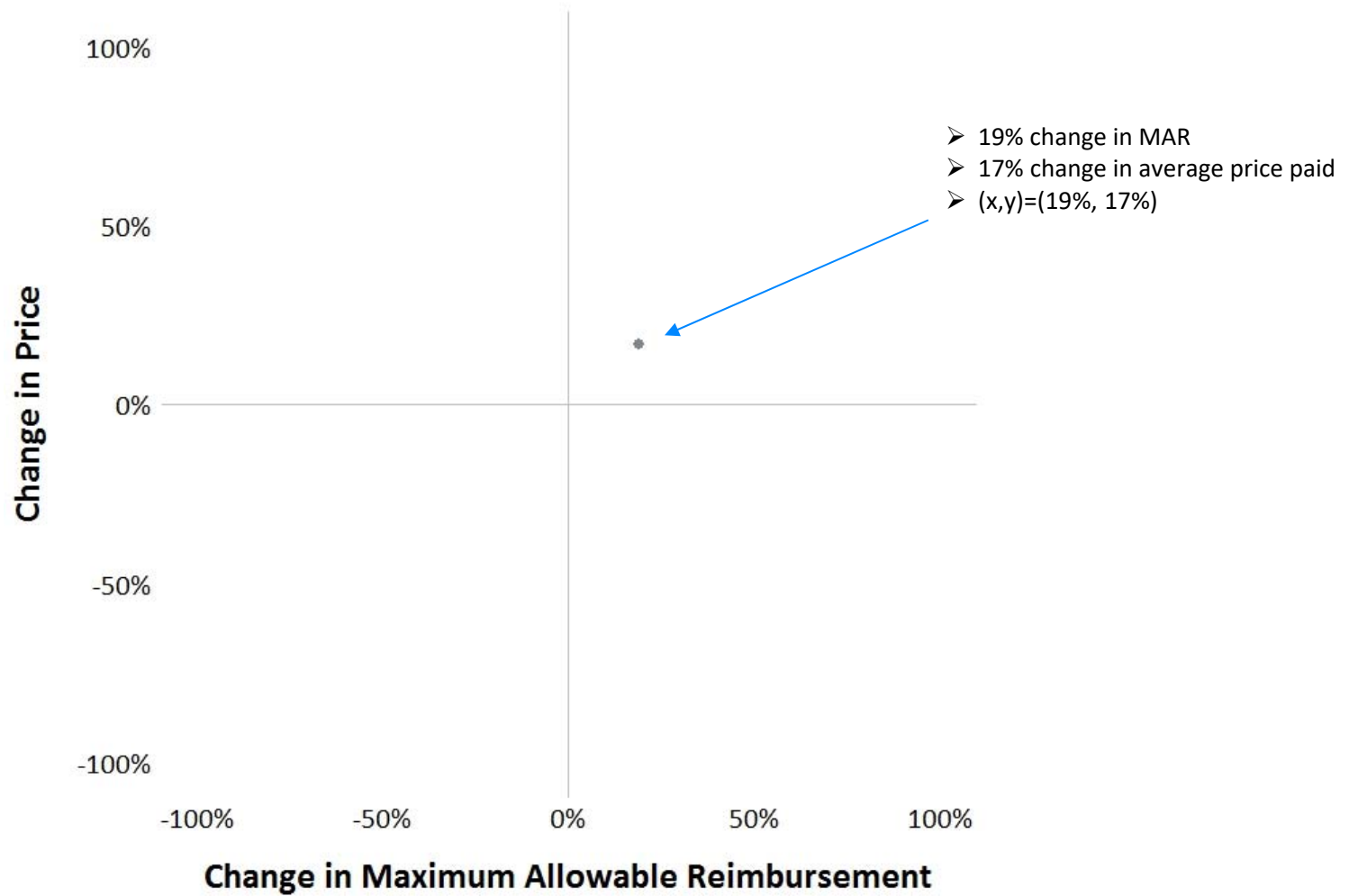


NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016



# Single Observation

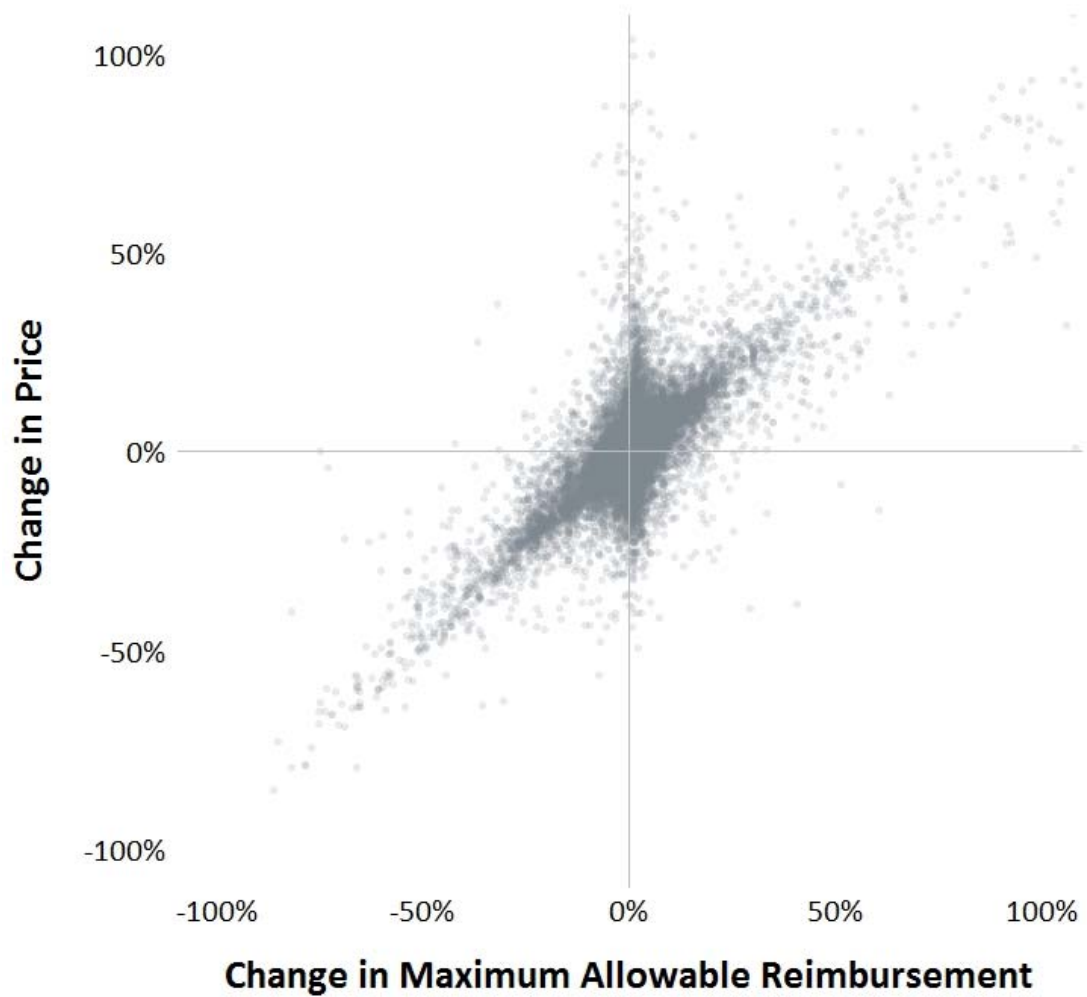
## Change In Price VS. Change in MAR



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# All Observations

## Change In Price VS. Change in MAR

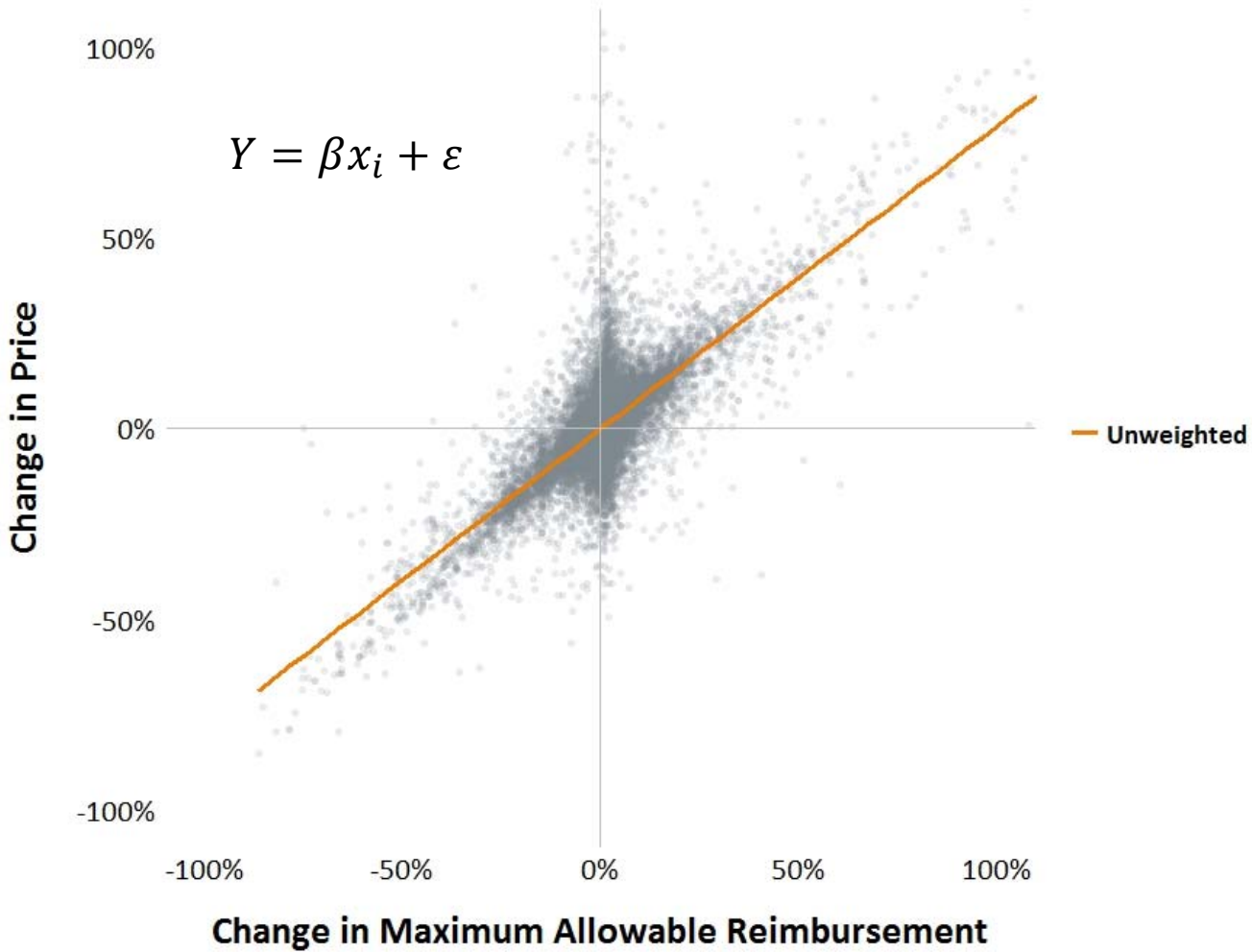


NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016



# Fitted Univariate Linear Regression Line

## Change In Price VS. Change in MAR

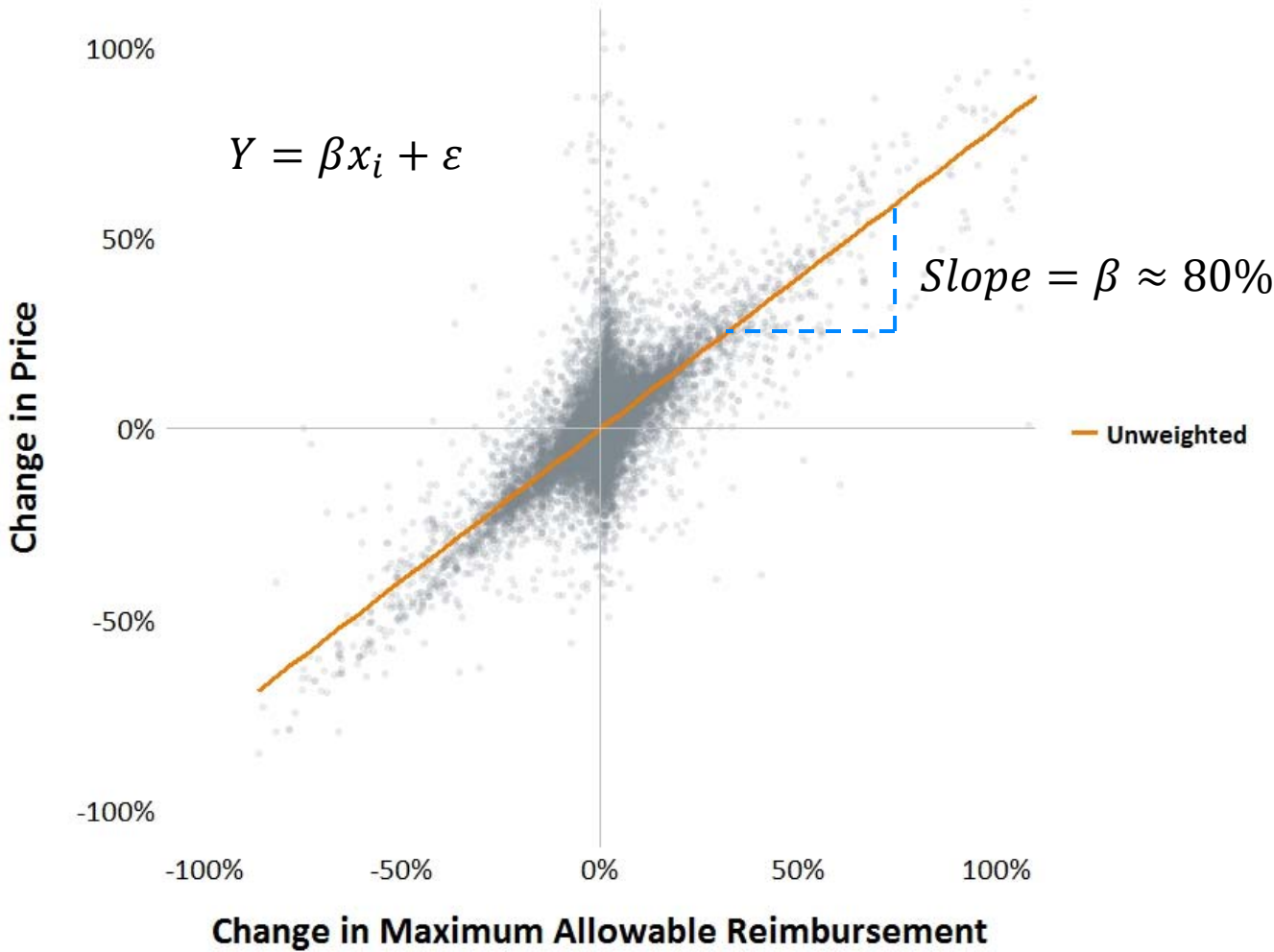


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# Fitted Univariate Linear Regression Line

Change In Price VS. Change in MAR

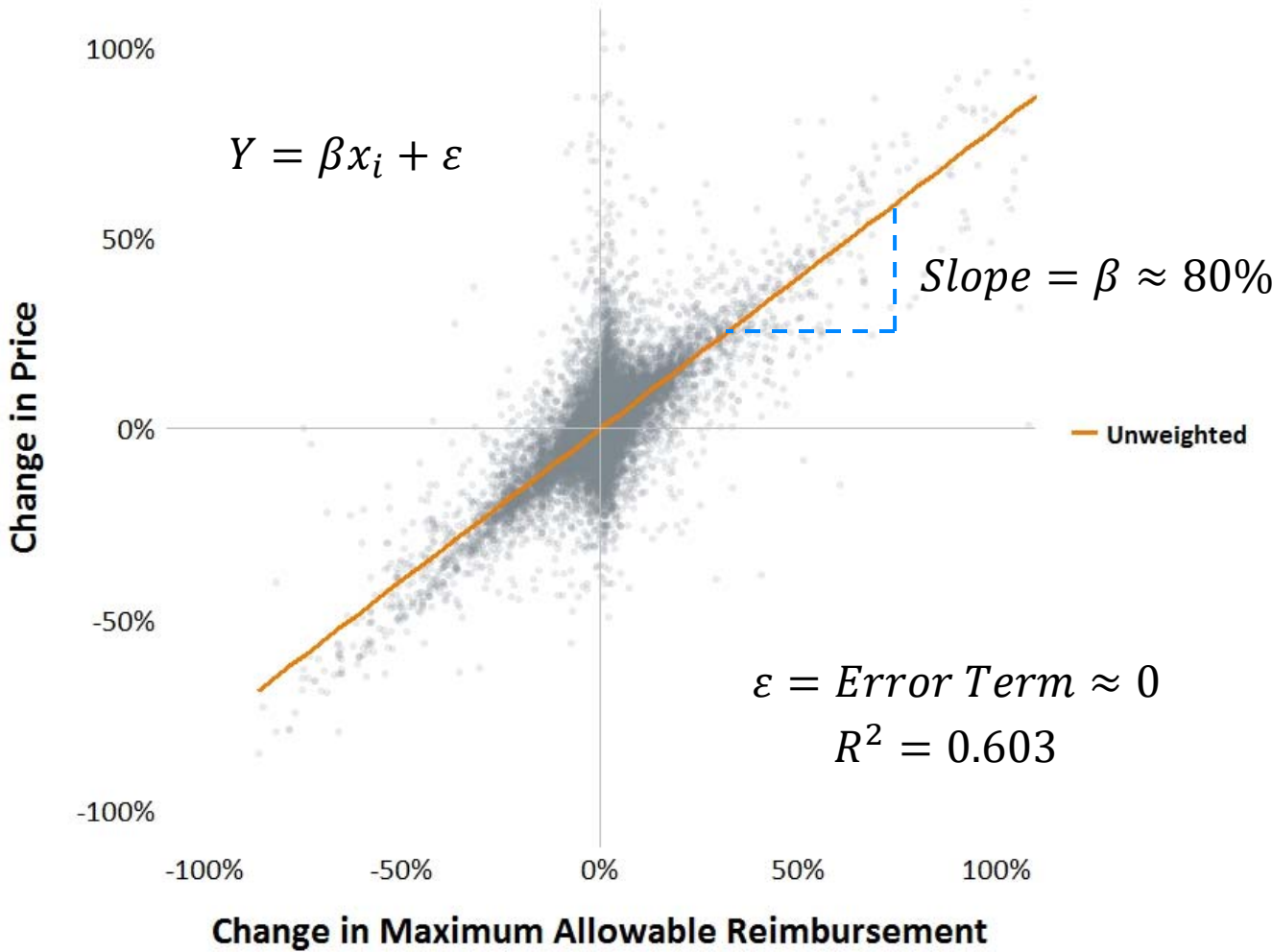


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# Fitted Univariate Linear Regression Line

Change In Price VS. Change in MAR

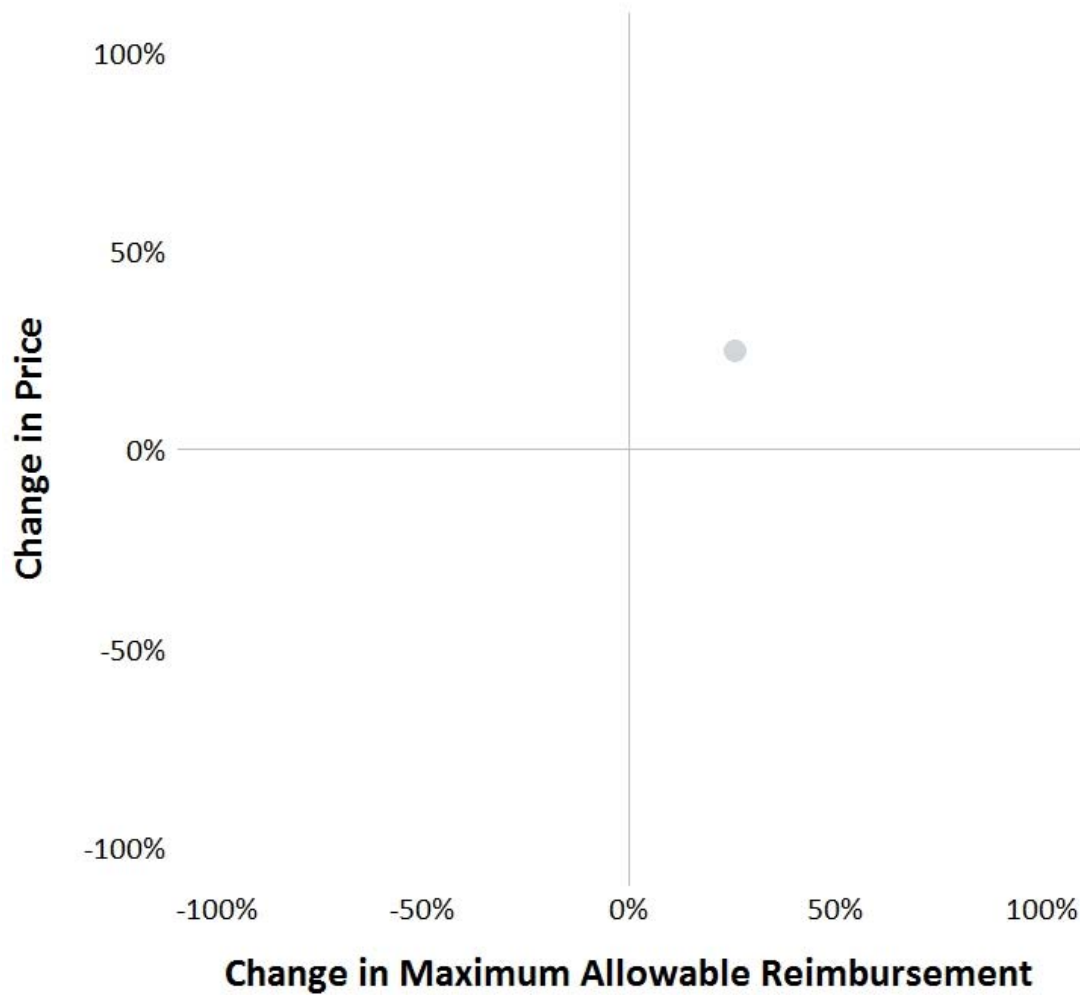


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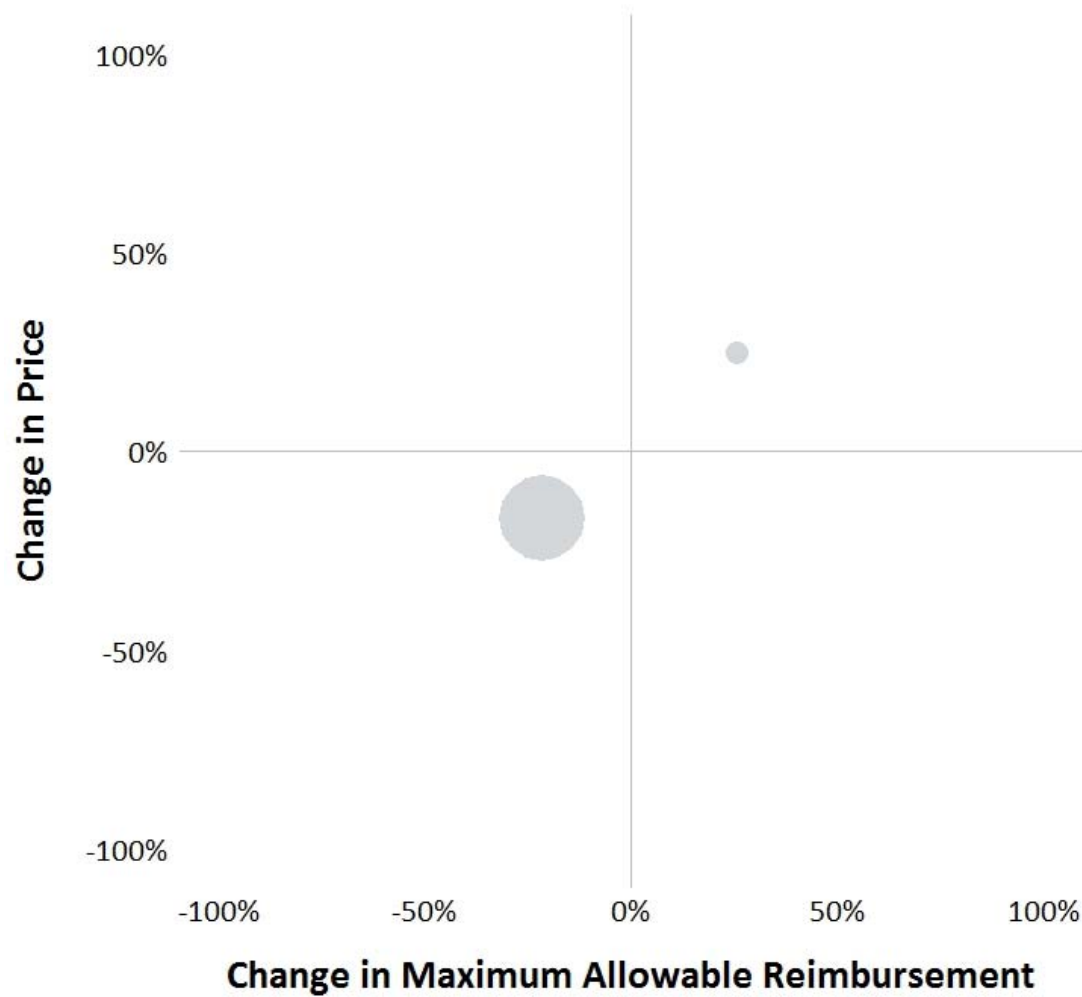
# Not All Observations Are Created Equal

## Cost-Weighted Change In Price VS. Change in MAR



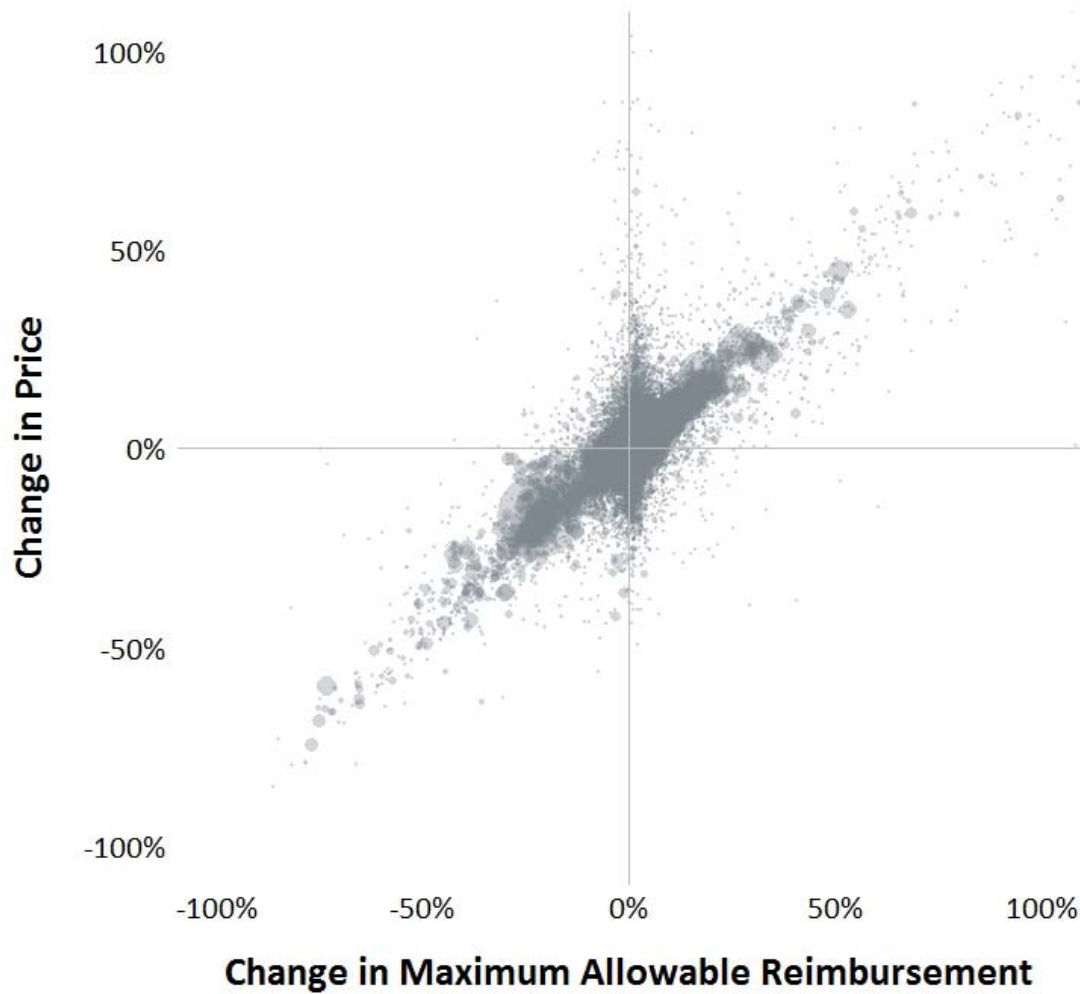
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Cost-Weighted Change In Price VS. Change in MAR



# Not All Observations Are Created Equal

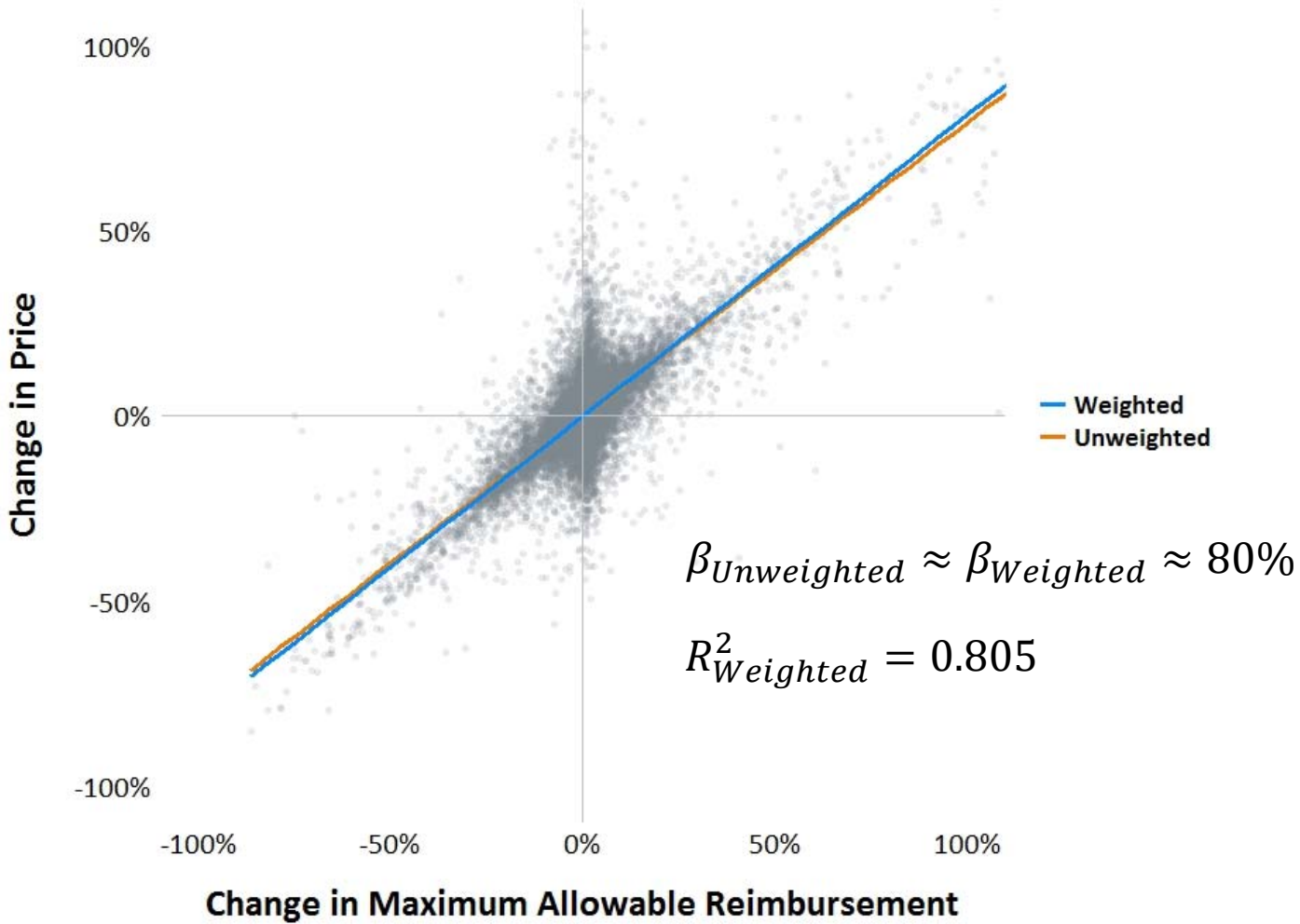
## Cost-Weighted Change In Price VS. Change in MAR



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# Fitted Univariate Linear Regression Line

## Change In Price VS. Change in MAR

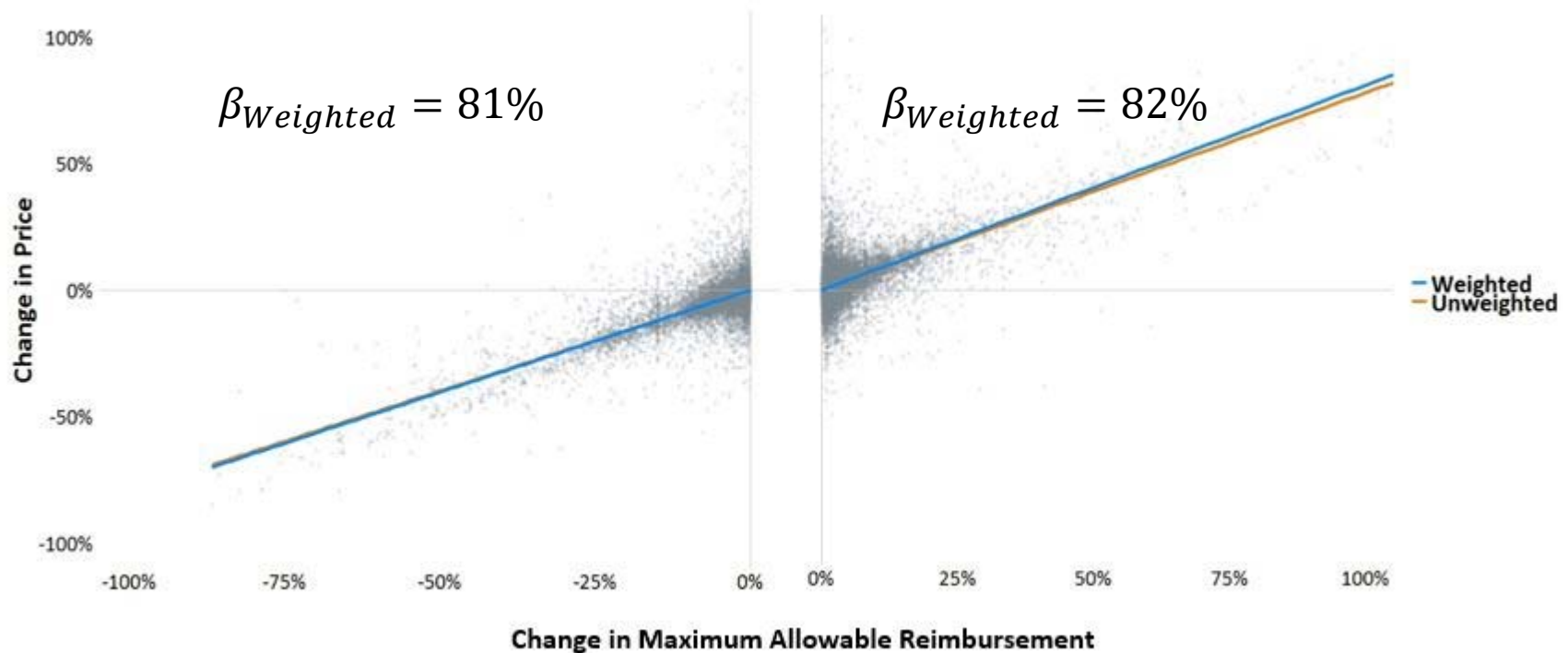


NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016



# Similar Price Responsiveness For Both Increases and Decreases in MARs

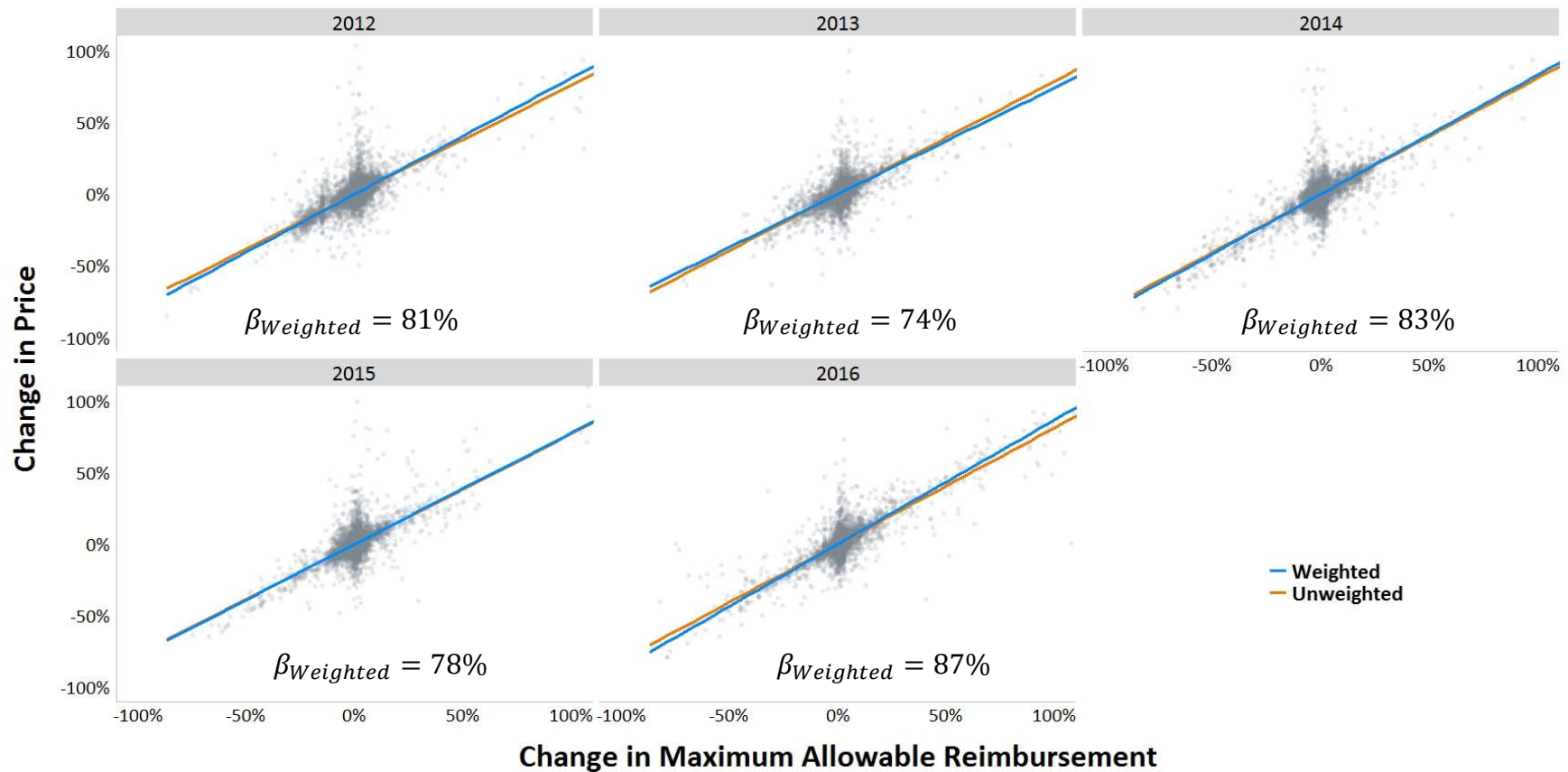
Change In Price VS. Change in MAR



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

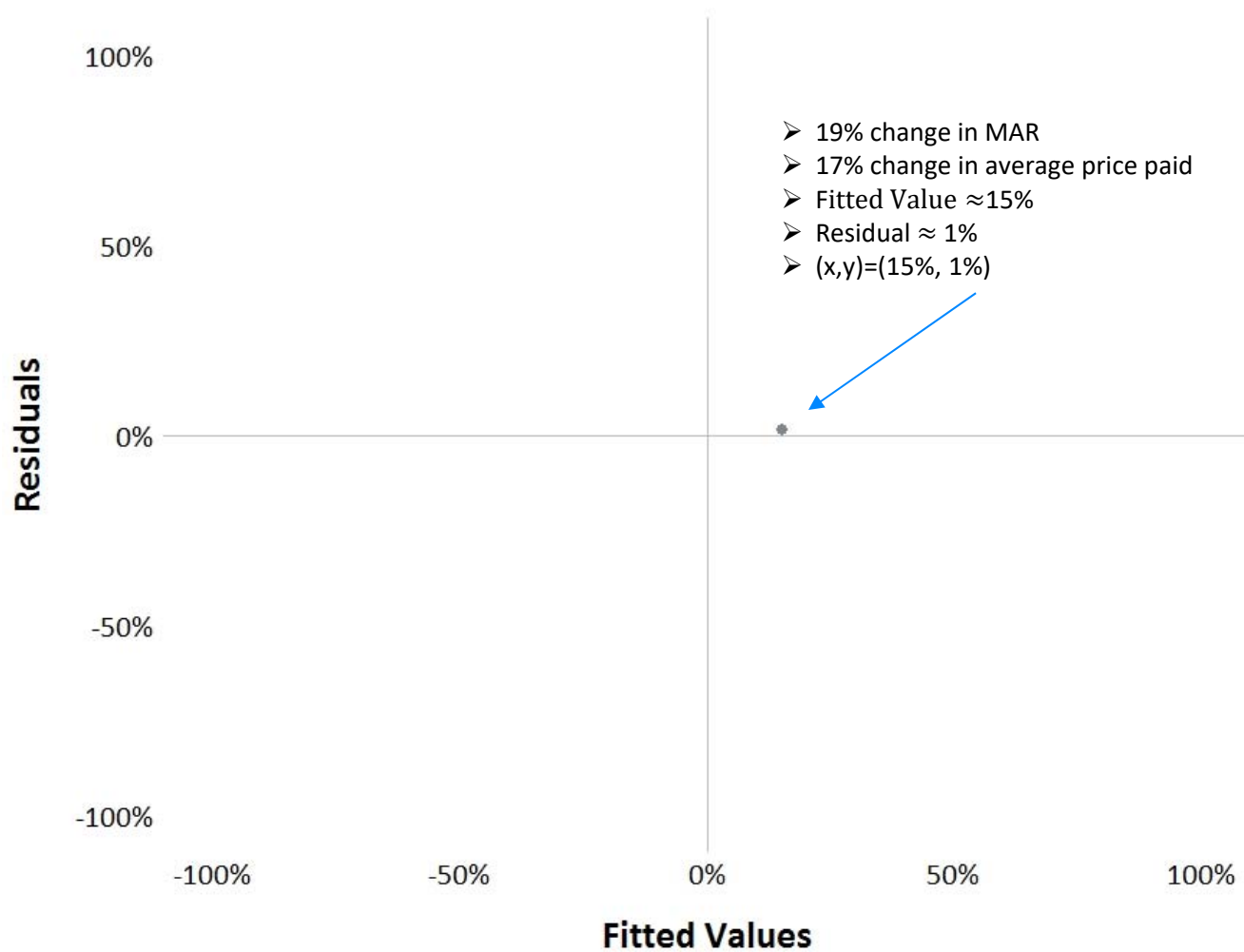


# Price Responsiveness to MAR Changes Is Generally Consistent By Years



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# A Single Regression Residual



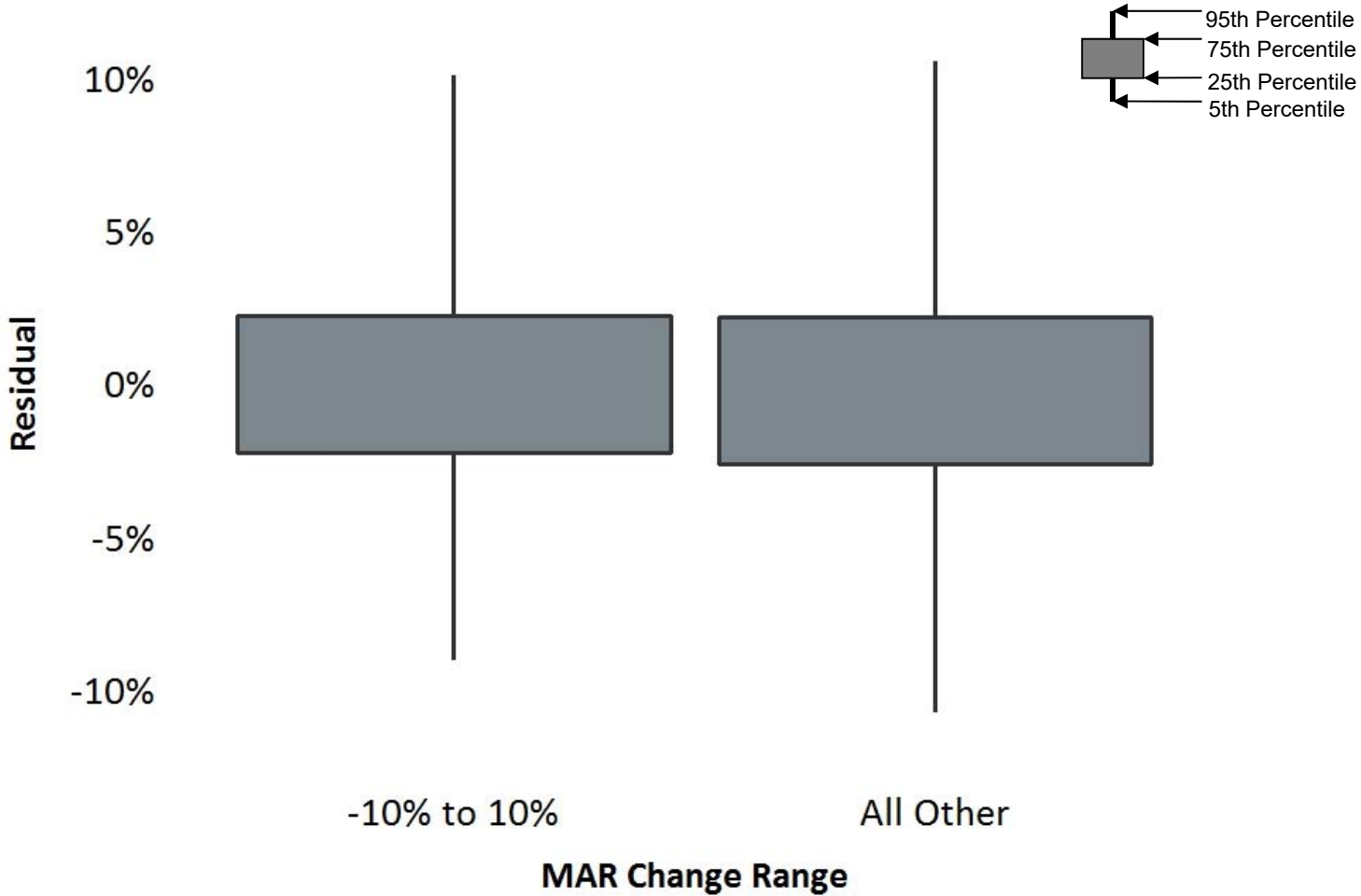
NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# Univariate Regression Residuals



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

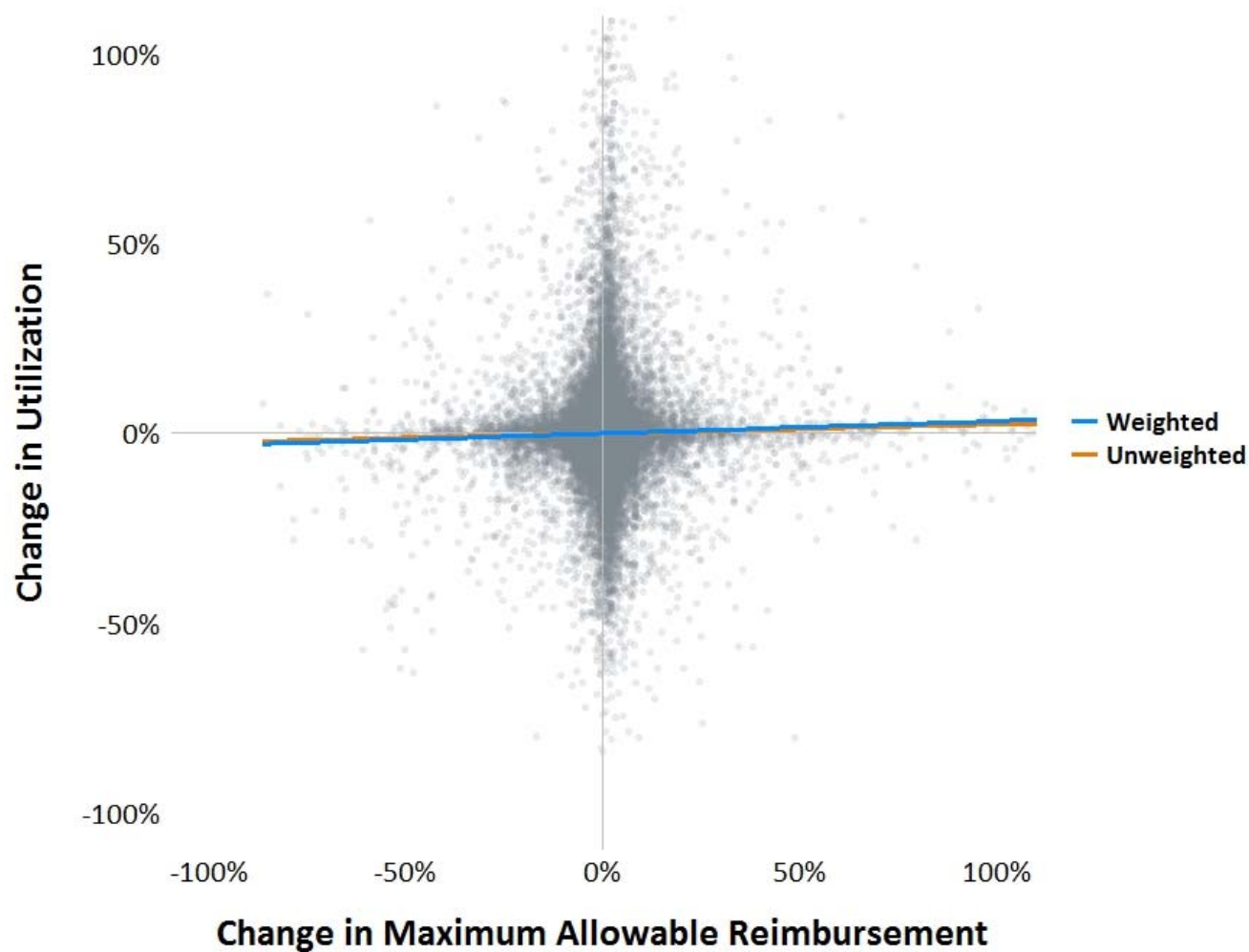
# Univariate Regression Residuals Distribution



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

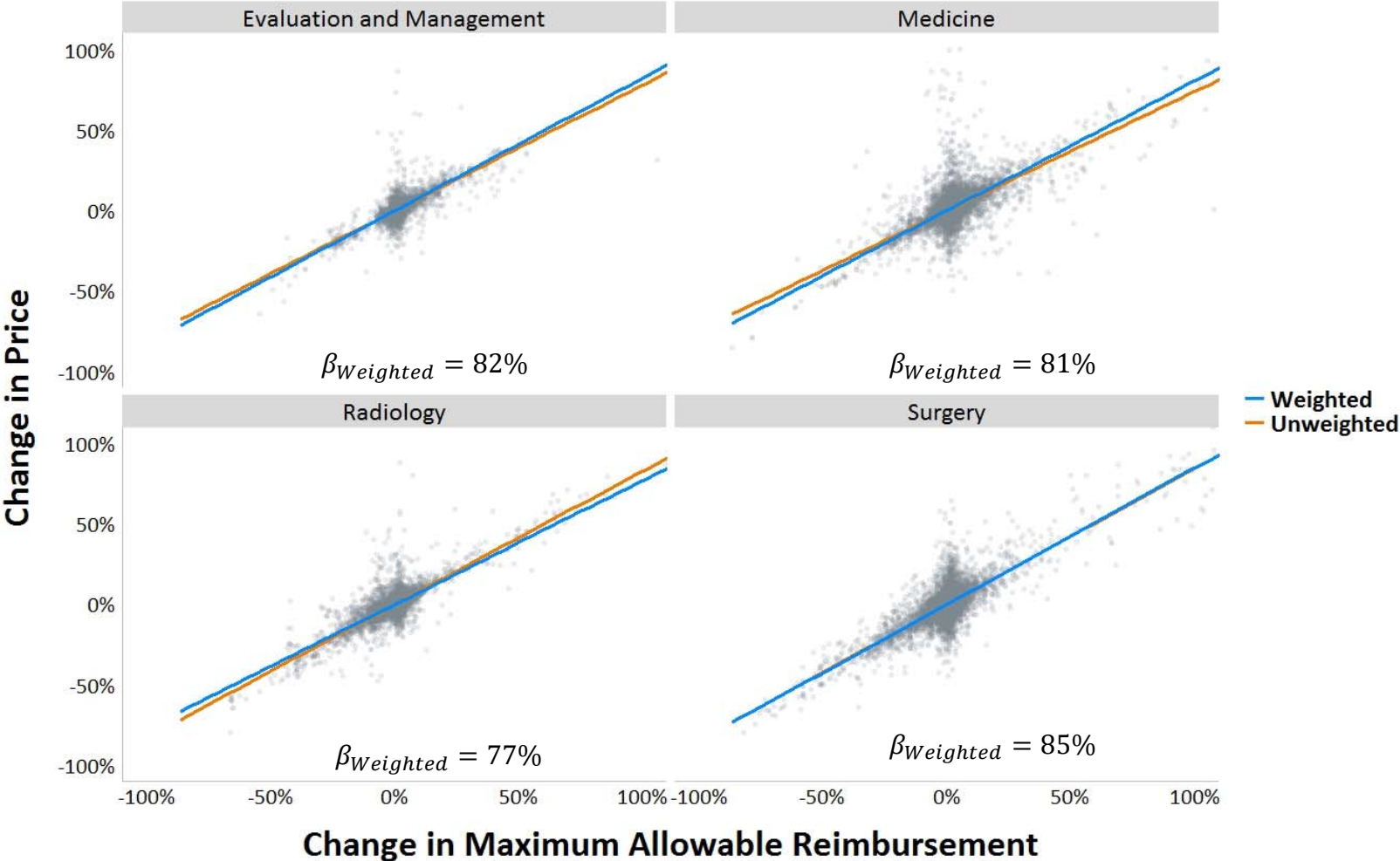


# There is No Apparent Utilization Effect in Response to MAR Changes



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

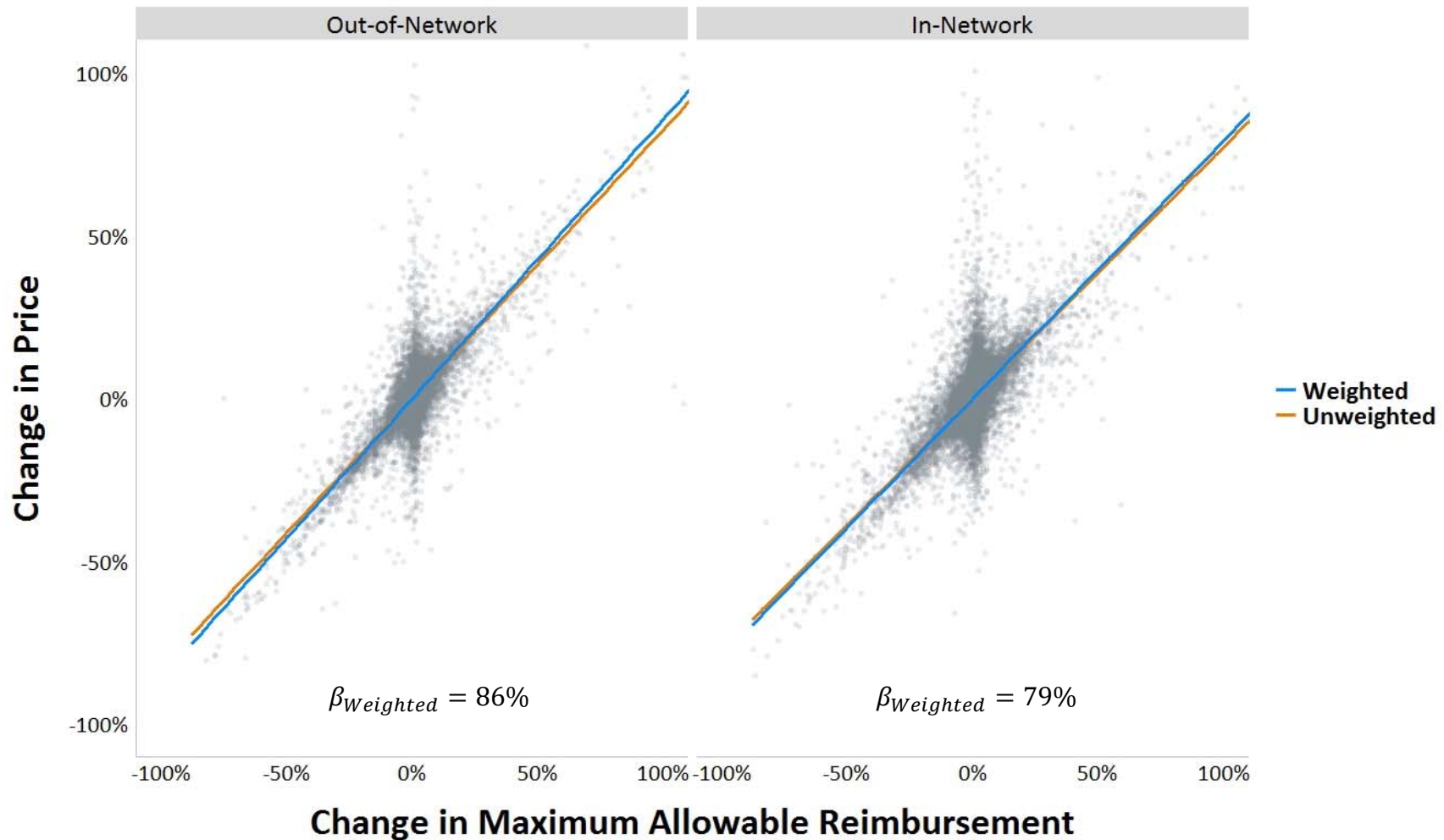
# All Medical Categories Have a Response Coefficient Around 80%



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

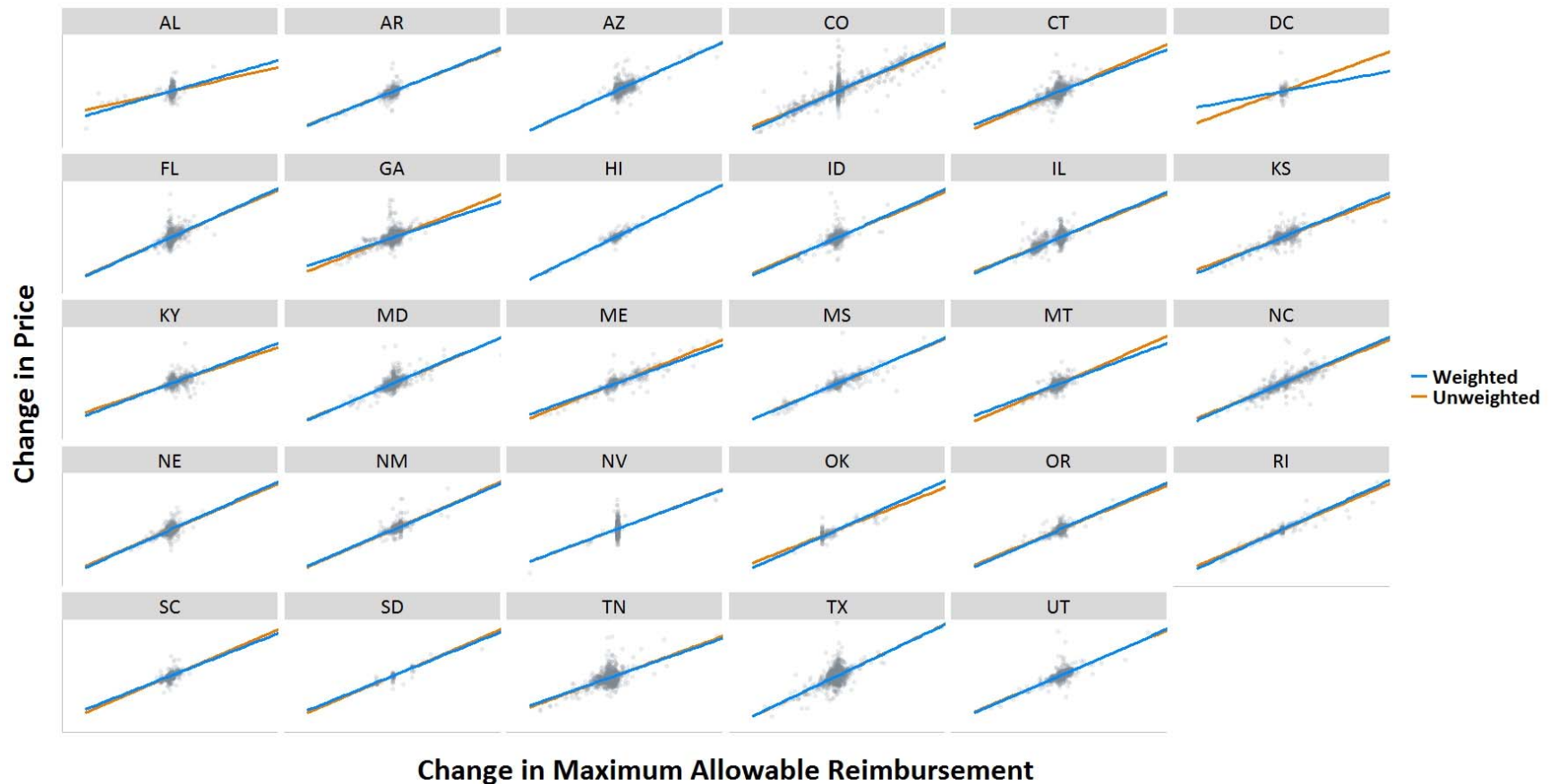


# Out-of-network Services are Somewhat More Responsive to MAR changes



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# An Estimated Price Response of 80% to MAR Changes is Reasonable For All States



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016



# An Estimated Price Response of 80% to MAR Changes is Reasonable For All States

State	Estimated Regression Coefficient	Pr(> t )	95 <sup>th</sup> Confidence Interval		Average Price Departure
			Lower Estimate	Upper Estimate	
AL	55%	4.45E-05	48%	62%	-22%
AR	77%	2.20E-16	69%	84%	-12%
AZ	87%	2.20E-16	85%	90%	-15%
CO	86%	2.20E-16	84%	87%	-10%
CT	75%	2.20E-16	72%	77%	-15%
DC	36%	0.106568	-29%	101%	-10%
FL	88%	2.20E-16	84%	92%	-7%
GA	64%	2.20E-16	61%	66%	-17%
HI	94%	2.20E-16	89%	99%	-6%
ID	85%	2.20E-16	81%	90%	-11%
IL	81%	2.20E-16	80%	82%	-9%
KS	80%	2.20E-16	77%	83%	-13%
KY	72%	2.20E-16	69%	75%	-12%
MD	82%	2.20E-16	79%	85%	-8%
ME	69%	2.20E-16	66%	71%	-11%
MS	81%	2.20E-16	77%	85%	-13%
MT	72%	2.20E-16	66%	78%	-8%
NC	83%	2.20E-16	82%	85%	-11%
NE	85%	2.20E-16	81%	90%	-10%
NM	83%	2.20E-16	76%	89%	-10%
NV	71%	2.20E-16	63%	79%	-26%
OK	87%	2.20E-16	84%	89%	-17%
OR	84%	2.20E-16	79%	89%	-3%
RI	88%	2.20E-16	84%	92%	-8%
SC	76%	5.52E-15	63%	88%	-15%
SD	78%	7.32E-09	73%	83%	-10%
TN	67%	2.20E-16	65%	69%	-11%
TX	91%	2.20E-16	89%	93%	-10%
UT	83%	2.20E-16	79%	88%	-9%
All States	81%	2.20E-16	81%	82%	

NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# An Estimated Price Response of 80% to MAR Changes is Reasonable For All States

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CO	86%	2.20E-16	84%	87%	-10%
CT	75%	2.20E-16	72%	77%	-15%
DC	36%	0.106568	-29%	101%	-10%
FL	88%	2.20E-16	84%	92%	-7%
GA	64%	2.20E-16	61%	66%	-17%
HI	94%	2.20E-16	89%	99%	-6%
ID	85%	2.20E-16	81%	90%	-11%
IL	81%	2.20E-16	80%	82%	-9%
KS	80%	2.20E-16	77%	83%	-13%
KY	72%	2.20E-16	69%	75%	-12%
MD	82%	2.20E-16	79%	85%	-8%
ME	69%	2.20E-16	66%	71%	-11%
MS	81%	2.20E-16	77%	85%	-13%
MT	72%	2.20E-16	66%	78%	-8%
NC	83%	2.20E-16	82%	85%	-11%
NE	85%	2.20E-16	81%	90%	-10%
NM	83%	2.20E-16	76%	89%	-10%
NV	71%	2.20E-16	69%	70%	-26%
OK	87%	2.20E-16	84%	89%	-17%
OR	84%	2.20E-16	79%	89%	-3%
RI	88%	2.20E-16	84%	92%	-8%
SC	76%	5.52E-15	63%	88%	-15%
SD	78%	7.32E-09	73%	83%	-10%
TN	67%	2.20E-16	65%	69%	-11%
TX	91%	2.20E-16	89%	93%	-10%
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NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# Multivariate Log-Log Autoregressive Model

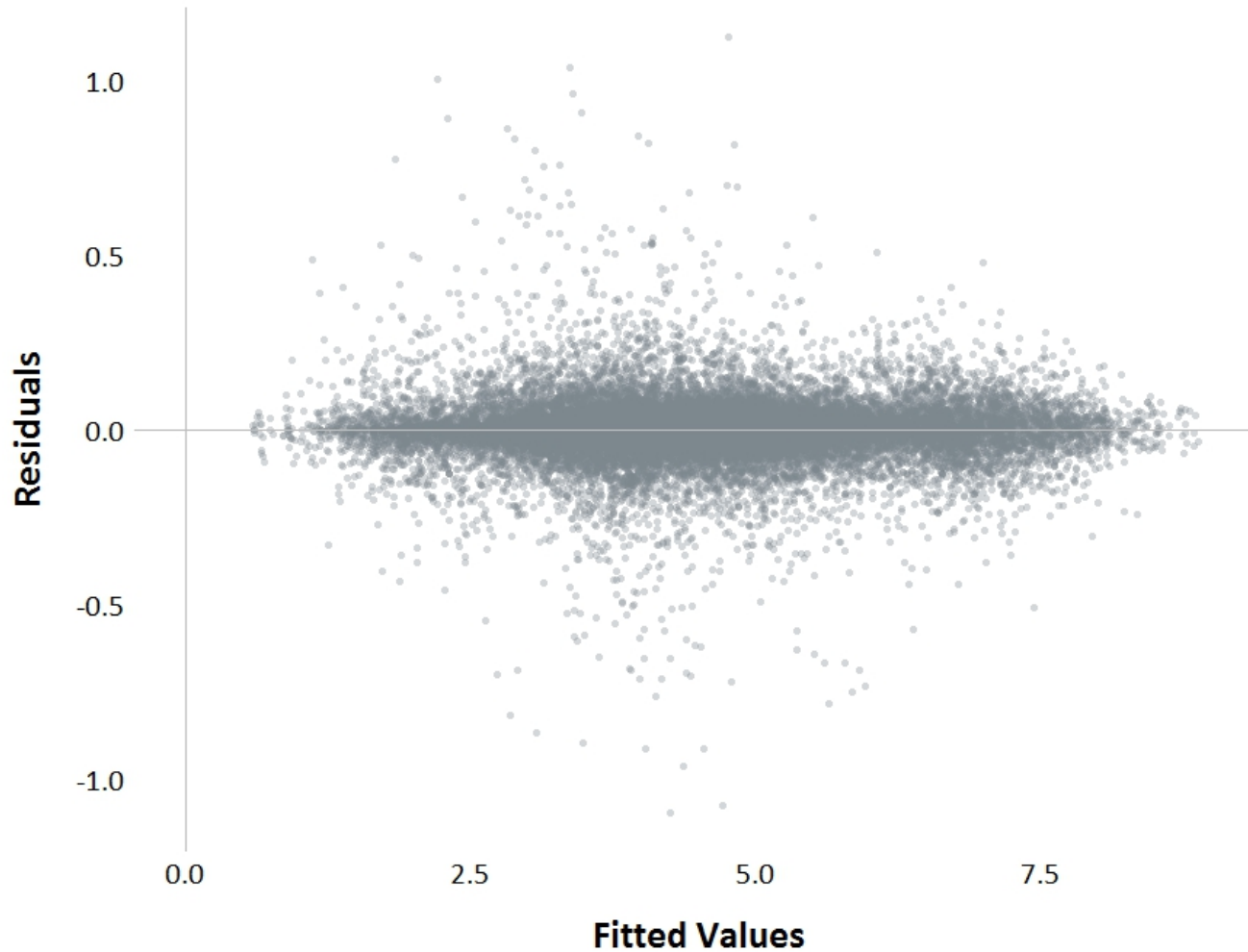
- To estimate the coefficients of our model, we use an ordinary least squares (OLS) regression:

$$\begin{aligned} & \log(P_{i,s,t}) \\ &= \beta_1 \log(1 + \% \Delta M_{i,s,t}) + \beta_2 \log(P_{i,s,t-1}) + \beta_3 \log(1 + \% \Delta M_{i,s,t-1}) \\ &+ \beta_4 \log(P_{i,s,t-2}) + \epsilon_{i,s,t} \end{aligned}$$

- $P_{i,s,t}$  denotes the average PPT for procedure code  $i$  during calendar year  $t$  within state  $s$
- $\% \Delta M_{i,s,t}$  denotes the percentage change in average MAR applying to procedure code  $i$  within state  $s$  from calendar year  $t - 1$  to calendar year  $t$
- $\epsilon_{i,s,t}$  is the random error term for each observation

# Multivariate Log-Log Autoregressive Model

## Residuals



NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# Model Results

Variable	Fitted Coefficient	Standard Error	P-Value
$\log(1 + \% \Delta M_{i,s,t})$	0.797	0.028	0.0000
$\log(P_{i,s,t-1})$	0.978	0.004	0.0000
$\log(1 + \% \Delta M_{i,s,t-1})$	0.049	0.011	0.0000
$\log(P_{i,s,t-2})$	0.021	0.004	0.0000
<b>Model adj. <math>R^2</math></b>	0.9997		
<b>Model p-value</b>	0.0000		

NCCI analysis based on Medical Data Call, for services provided between 2011 and 2016

# Approximation to Linear Regression Model

$$P_{i,s,t} \approx \exp(\beta_1 \log(1 + \% \Delta M_{i,s,t}) + \beta_2 \log(P_{i,s,t-1}))$$

$$\begin{aligned} &= (1 + \% \Delta M_{i,s,t})^{\beta_1} \times P_{i,s,t-1}^{\beta_2} \\ &\approx (1 + \beta_1 \times \% \Delta M_{i,s,t}) \times P_{i,s,t-1}^{\beta_2} \end{aligned}$$

$$\approx (1 + 0.8 \times \% \Delta M_{i,s,t}) \times P_{i,s,t-1} \Rightarrow$$

$$\% \Delta P_{(i,s,t)} \approx 0.8 \times \% \Delta M_{i,s,t}$$

# Example At The Procedure Level

Procedure Code	97110	97530	99213
(1) Year 2016 PPT	\$41.98	\$44.45	\$90.12
(2) % Change in MAR Between 2016 and 2017	+3.2%	0.0%	+7.3%
(3) Year 2017 PPT	\$42.40	\$43.02	\$92.46
(4) % Change in MAR Between 2017 and 2018	+2.3%	+5.5%	+2.4%
(5) Predicted Year 2018 PPT (based on (1) to (4))	\$43.21	\$44.90	\$94.47
(6) Implied Price Realization Factor = $[(5) / (3) - 1] / (4)$	84%	80%	90%

NCCI analysis based on Medical Data Call, for services provided between 2016 and 2017

# Sensitivity

(1) Weighted average change in physician MARs	+2.5%	+2.5%
(2) Price realization factor	70%	90%
(3) Impact on physician payments = (1) x (2)	+1.8%	+2.3%
(4) Share of WC medical costs attributable to physicians	40%	40%
(5) Medical share of total WC losses	58%	58%
(6) Impact on overall WC system costs = (3) x (4) x (5)	+0.4%	+0.5%



# Further Refinements?

- Possible to include:
  - More variables (network, relativity to Medicare)
  - More time lag (3 years?, more?)
- Practical Problems:
  - Limited data (only 6 years)
  - Limited timeframe

# Conclusion

- This study examines the effect of changes in fee schedules on physician payments and the study finds that in response to fee schedule changes, prices paid for physician services change by approximately 80%
- The results are fairly consistent across all the various scenarios tested within each methodology examined