



Impact of Declining Opioid Trends in California Workers Compensation

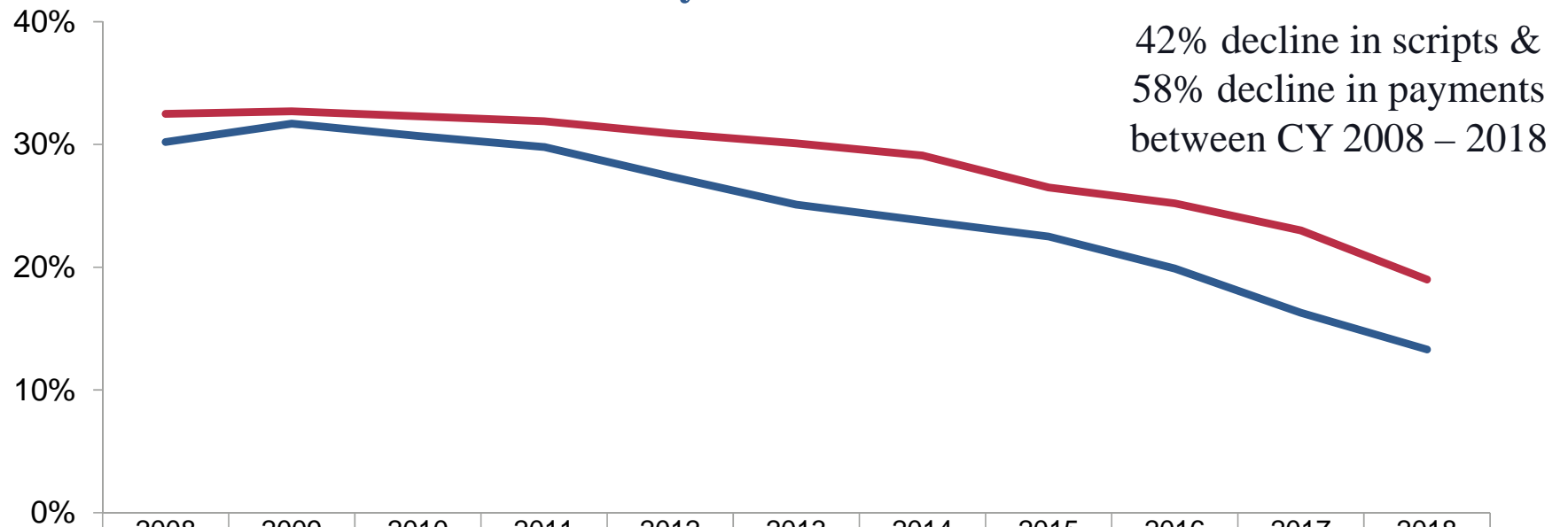
Kate Smith
Chief Actuarial Officer
State Compensation Insurance Fund

Alex Swedlow
President
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2019 CAS Annual Meeting
Honolulu, HI, USA
November 10-13, 2019

Opioids in Workers' Compensation: Background

Analgesic Opioid Prescriptions & Payments Lost-Time Claims by Service Year

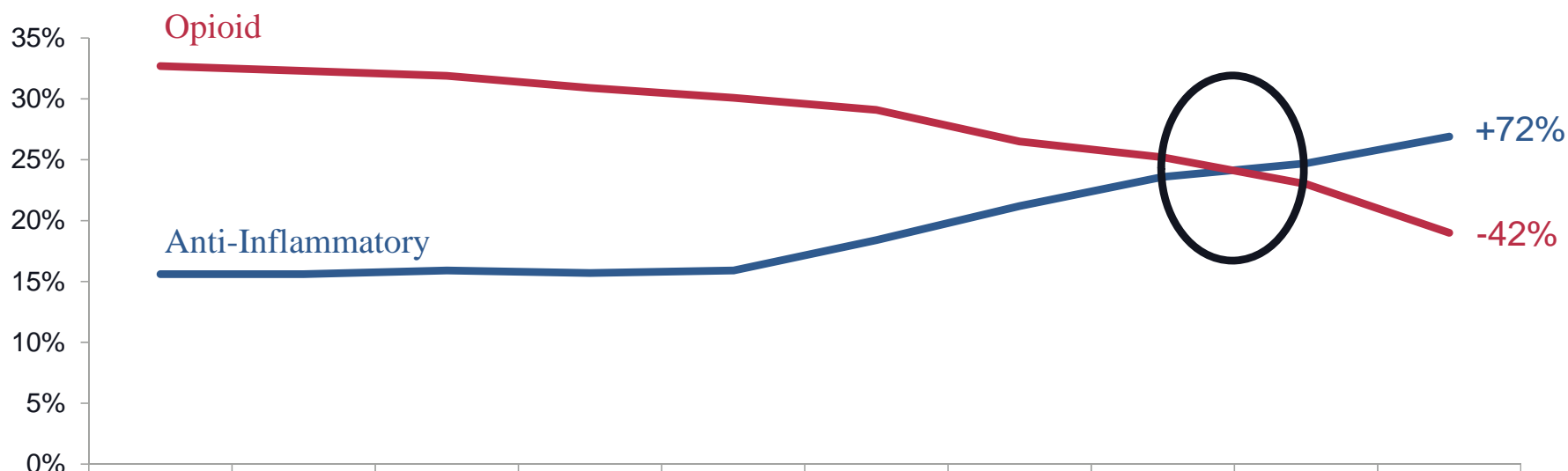


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Scripts	33%	33%	32%	32%	31%	30%	29%	27%	25%	23%	19%
Payments	30%	32%	31%	30%	27%	25%	24%	23%	20%	16%	13%

Data valued as of Dec 2018

Source: CWCI 2019

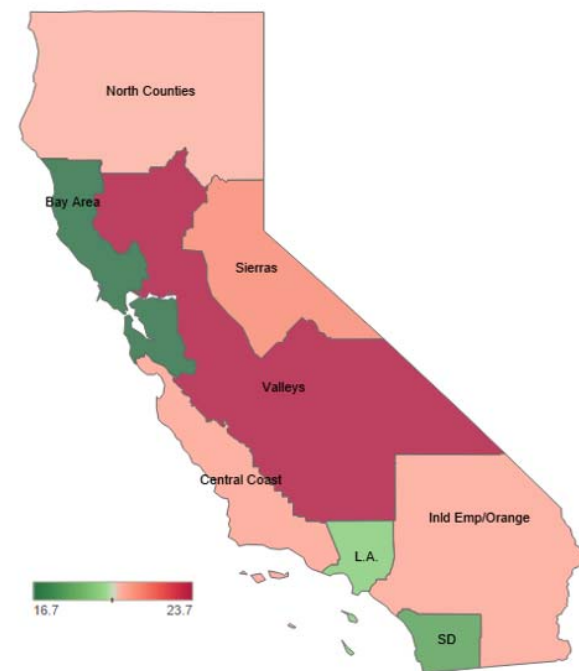
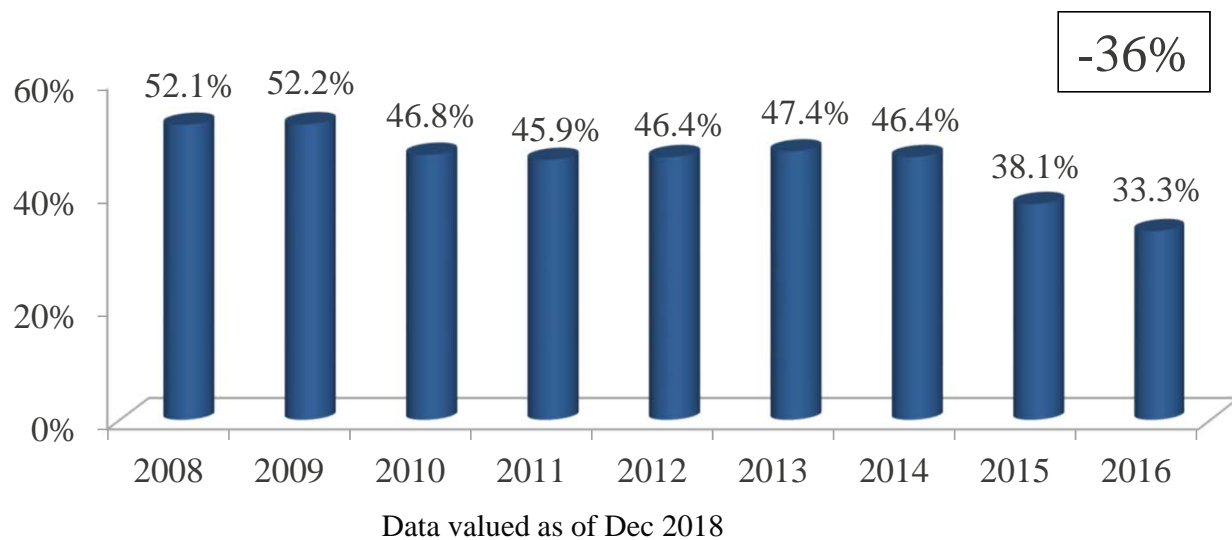
Distribution of Prescriptions by Therapeutic Group Lost Time Claims by Service Year



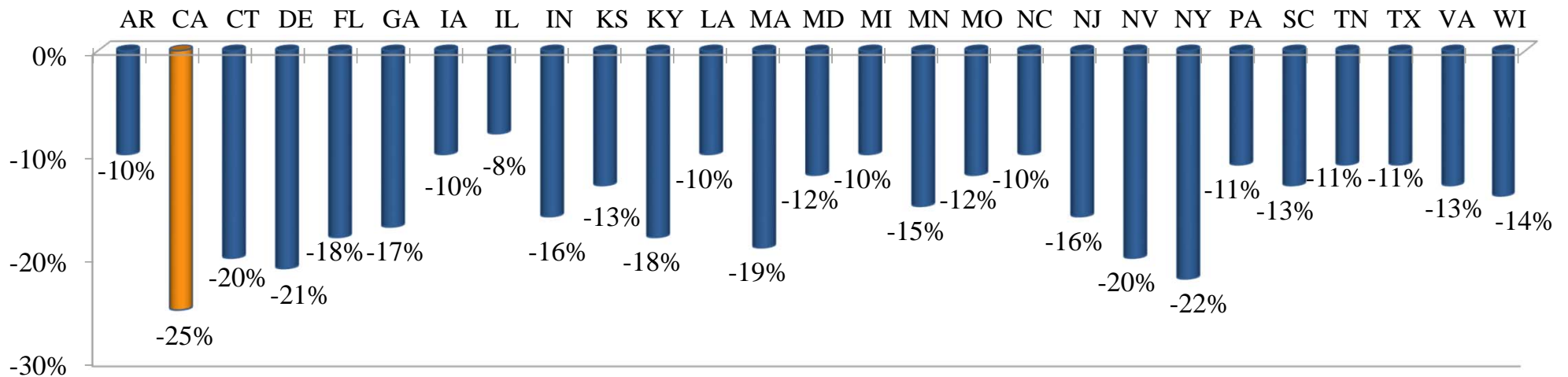
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
— Anti-Inflammatory	16%	16%	16%	16%	16%	18%	21%	24%	25%	27%
— Opioid	33%	32%	32%	31%	30%	29%	27%	25%	23%	19%

Claims with Opioid Prescriptions Lost-time Claims: AY 2008 – 2016 at 24 Months

Percent of Claims at 24Ms with
1+ Opioid Prescriptions

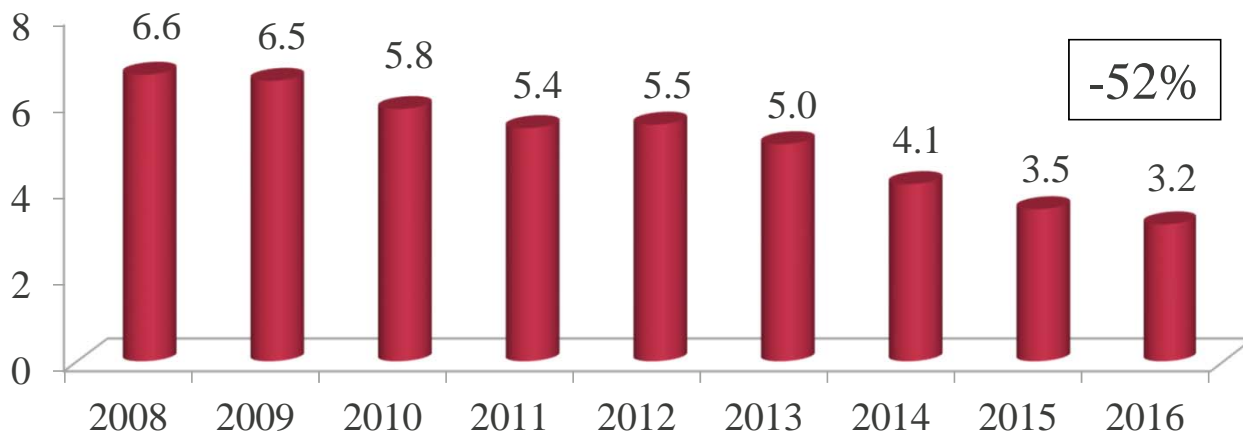


Percentage Change in Claims with Opioid Prescriptions Lost-time Claims: AY 2012/14 – AY 2016/18

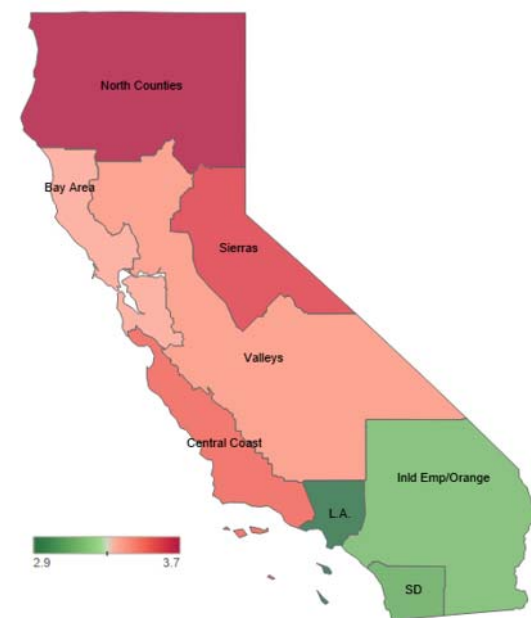


Claims with Opioid Prescriptions Lost-time Claims: AY 2008 – 2016 at 24 Months

Average Scripts per Claim

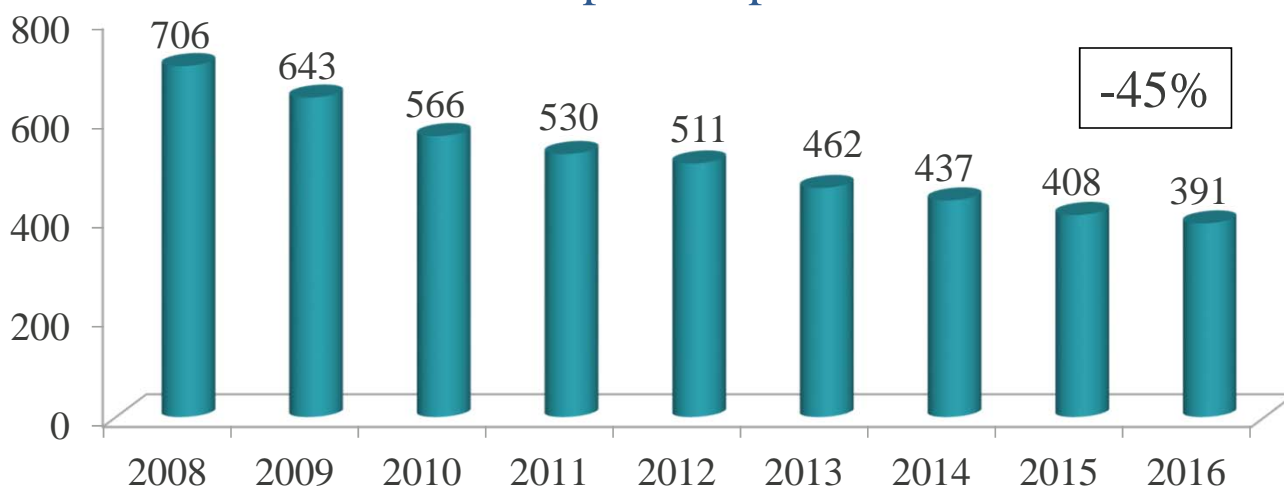


Data valued as of Dec 2018

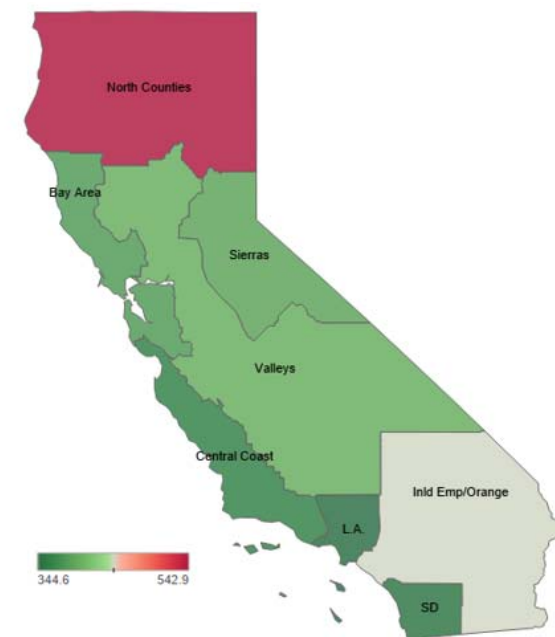


Claims with Opioid Prescriptions Lost-time Claims: AY 2008 – 2016 at 24 Months

Average Morphine Equivalents per Script

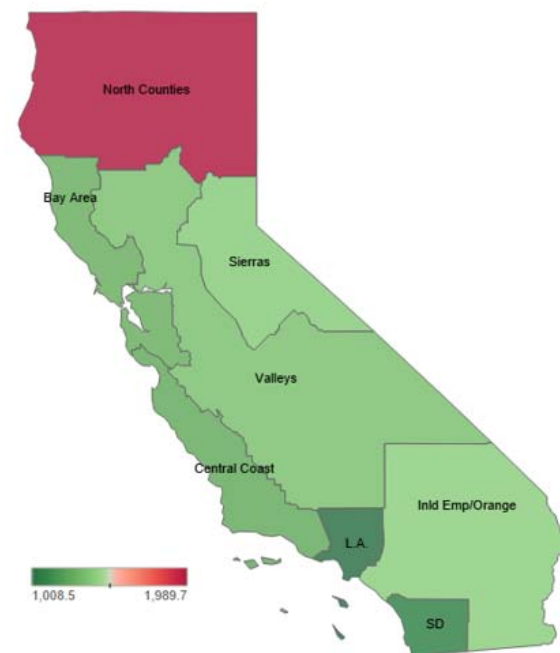
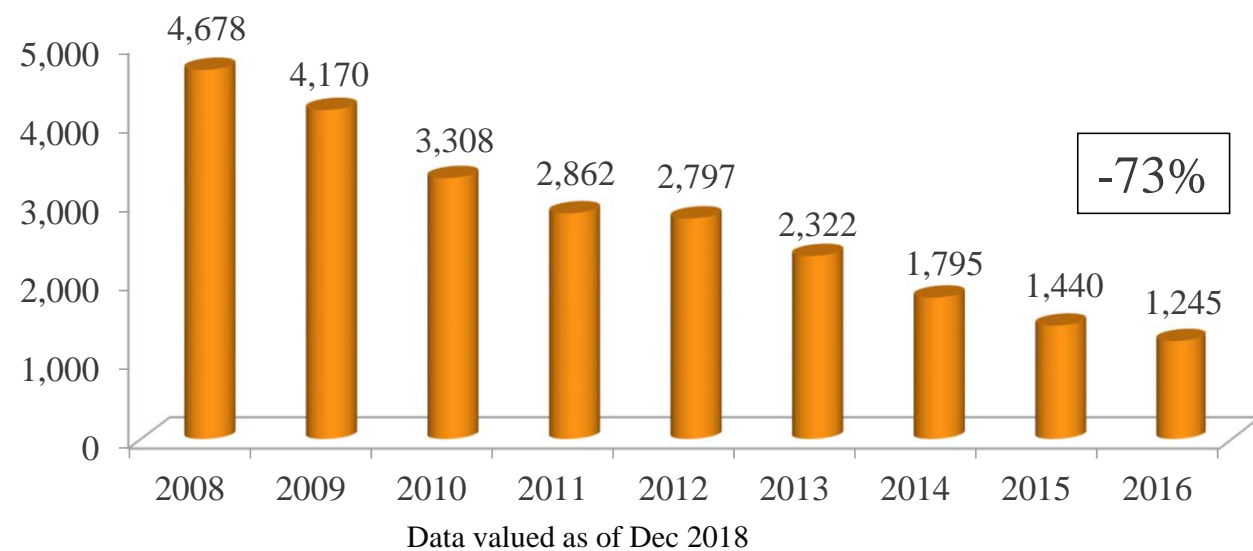


Data valued as of Dec 2018

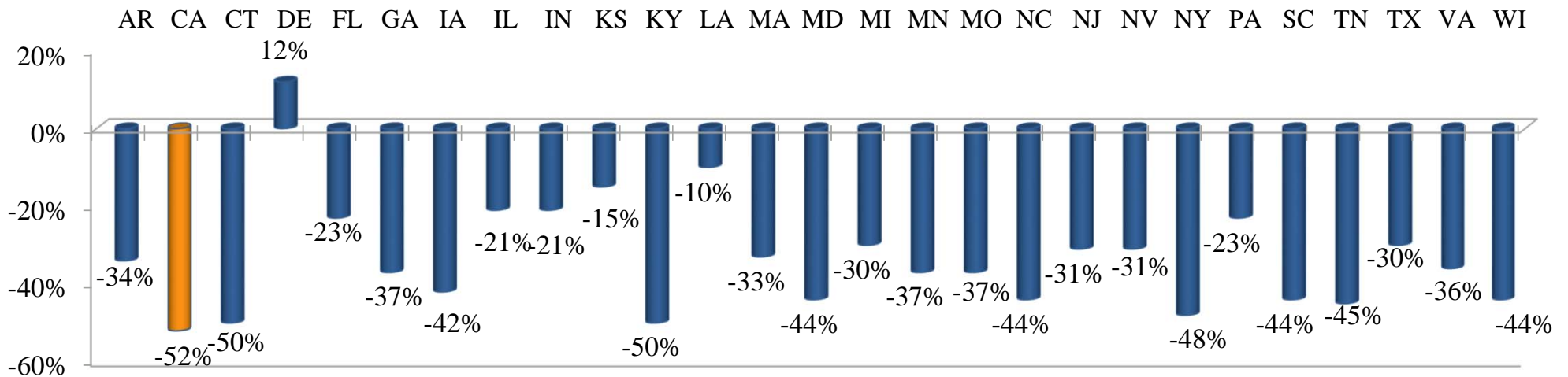


Claims with Opioid Prescriptions Lost-time Claims: AY 2008 – 2016 at 24 Months

Average Cumulative Morphine Equivalents per Claim

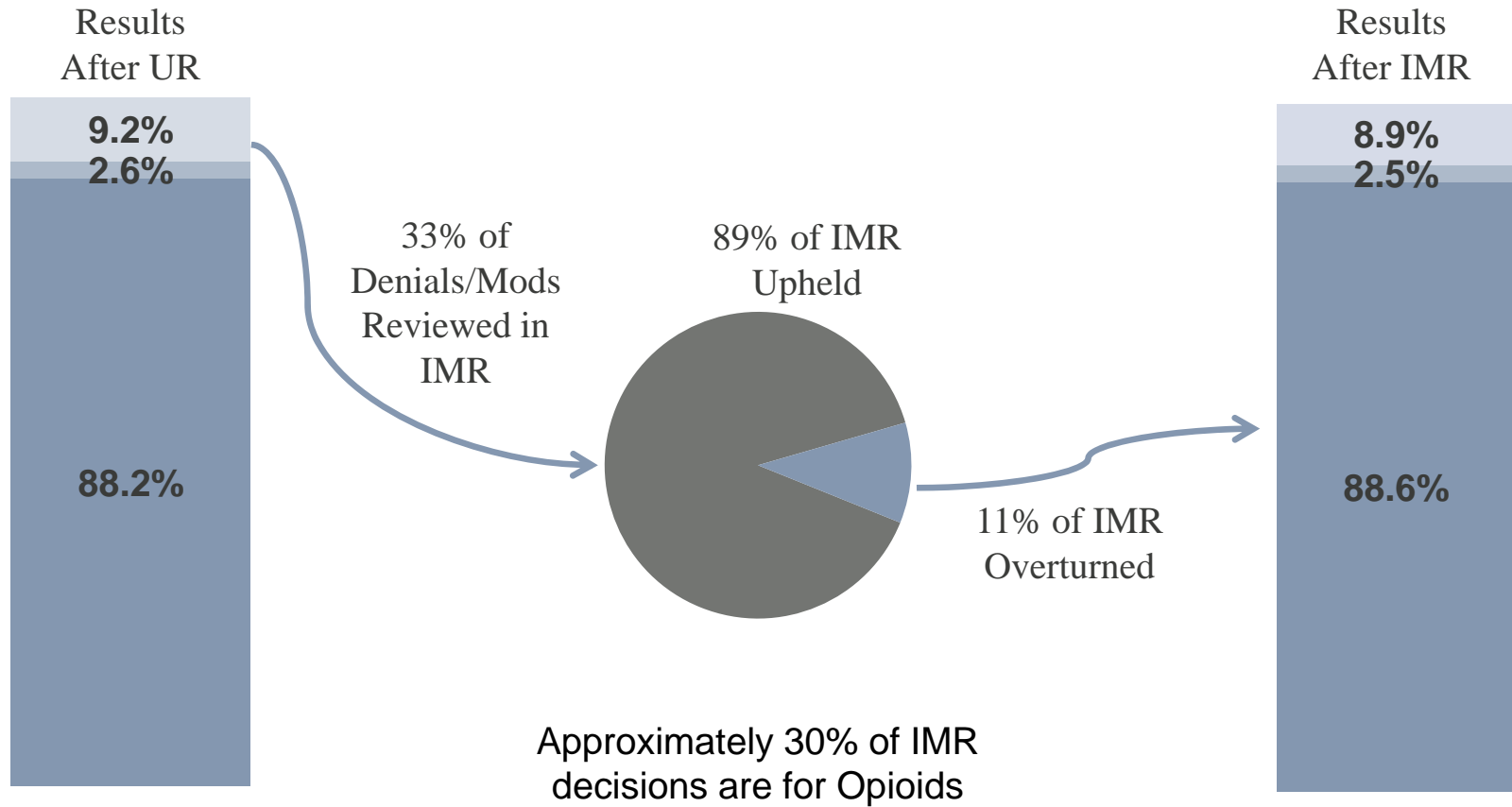


Percentage Change in Opioid Strength (MMEs) Lost-time Claims: AY 2012/14 – AY 2016/18



Source: WCRI 2019

Pharmaceuticals – Approval Rates



Pharmaceuticals – UR Denial/Modification Rates



Top Drug Groups	Denials	Modifications	Denials+Mods
Analgesics – Anti-Inflammatories	2.9%	0.4%	3.3%
Analgesics - Opioids	17.4%	8.2%	25.5%
Anticonvulsants	4.3%	2.2%	6.5%
Musculoskeletal Therapy Agents	20.9%	4.2%	25.1%
Antidepressants	3.3%	2.8%	6.1%
Dermatologicals	18.0%	0.7%	18.7%
Ulcer Drugs	7.6%	0.5%	8.1%
All Other Rx	9.8%	1.9%	11.7%

New CWCI State Fund Public Policy Study:

Impact of Declining Opioid Trend on Systemwide Costs

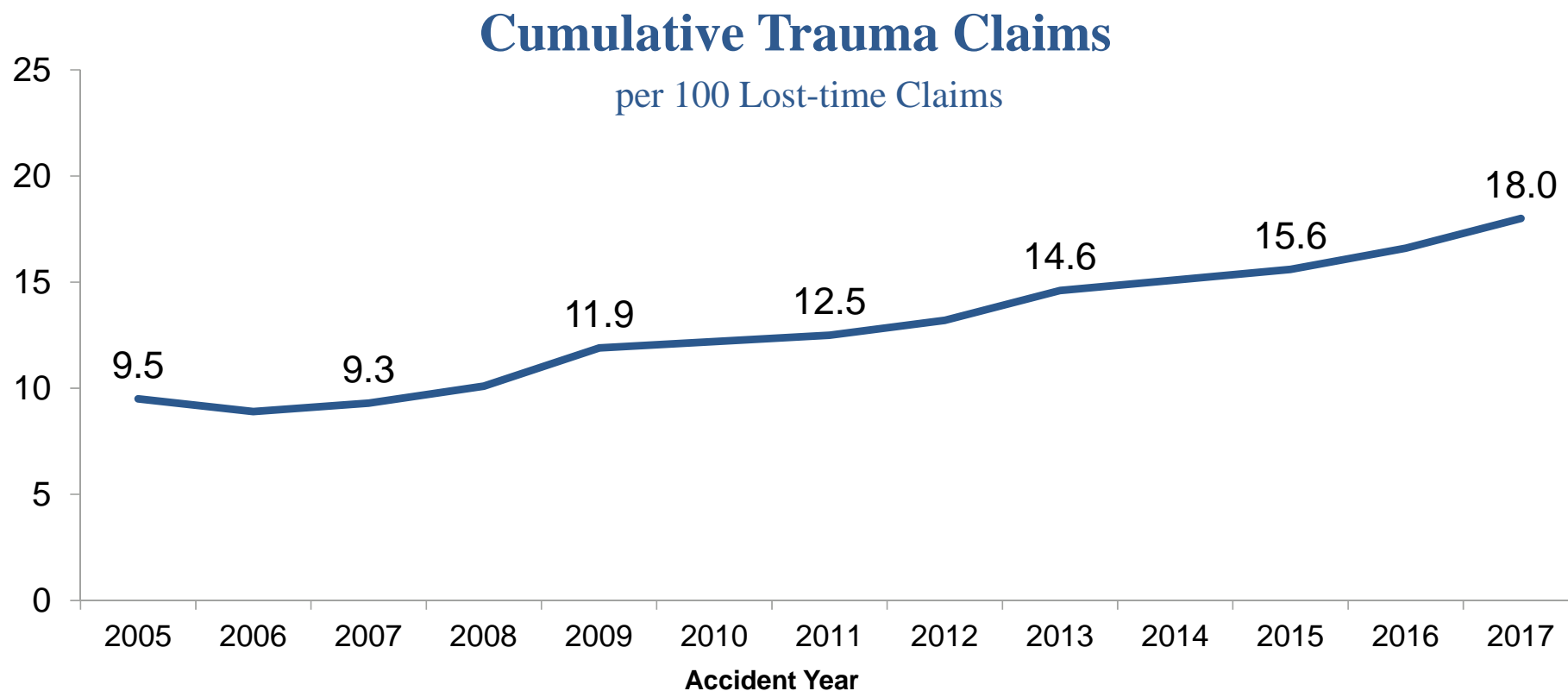
Study Questions

1. What are the trends in both the frequency and intensity of acute and chronic opioid use?
2. To what extent has decreased opioid use driven the decline in the overall medical cost trend?
3. What is the impact of declining opioid use on benefit payments, average TD days, and total costs?

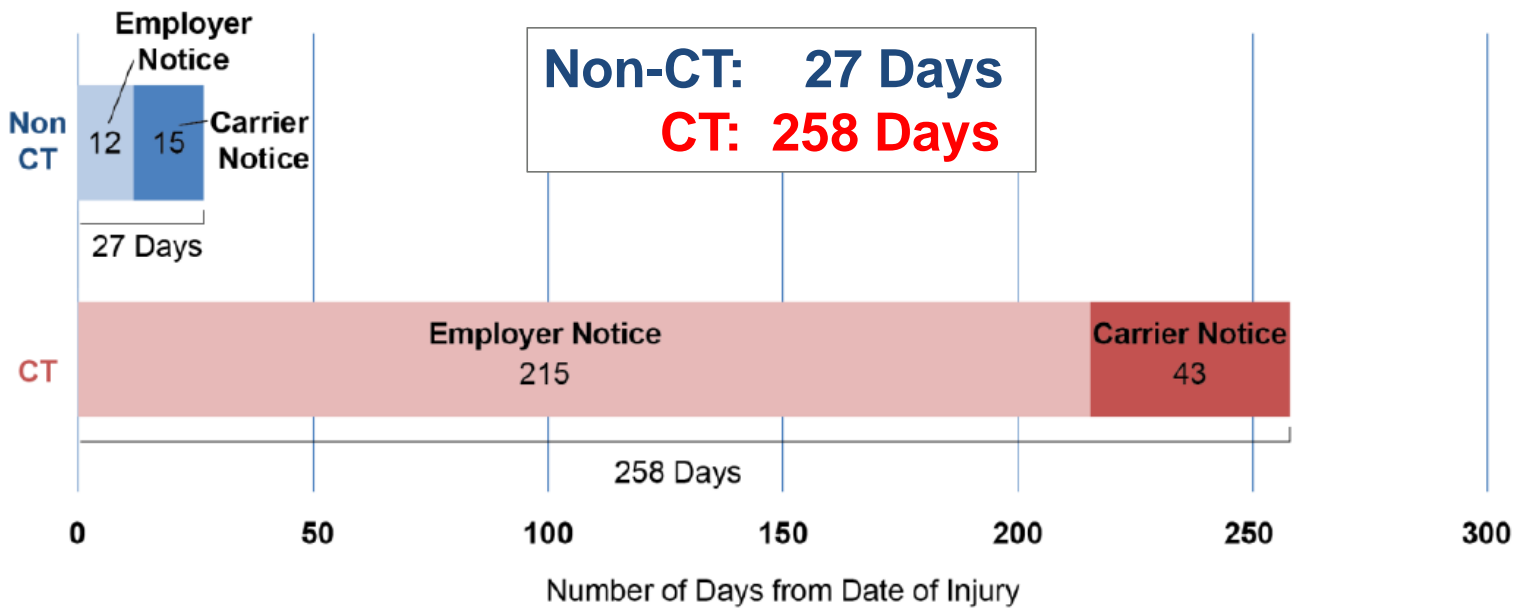
Data

- Data compiled from CWCI's Industry Research Information System (IRIS)
- California workers compensation insurance data on 273,106 claims for injuries with lost time from work,
- Dates of first medical treatment ranging from Jan 2008 through Dec 2017; payments through Dec 2018
- Claim payments and indicators of opioid use were tracked by year, for up to ten years, and by the number of months of claim development, relative to the date of first medical treatment
- Accident year vs. Year of 1st Treatment: the impact of cumulative trauma claims
- Chronic opioid use is defined as a claim with three or more prescriptions, each one filled at least three weeks apart, and all filled within four consecutive months; all other opioid use is defined as acute

California's Cumulative Trauma Claims



Notification – Average Days



Methods

Question 1: What are the trends in both the frequency and intensity of acute and chronic opioid use?

Utilization Measures:

- Percentage of lost-time claims with opioids
 - Chronic and Acute users
- Prescriptions per opioid user
- Morphine milligram equivalents (MMEs) per opioid prescription
- Morphine milligram equivalents (MMEs) per opioid user
- Claim closure rate

Methods

Question 2: To what extent has decreased opioid use driven the decline in the overall medical cost trend?

Explore the relationship between trends in opioid utilization and the broader California workers' compensation population:

- Age of the claim (from three to 120 months)
- Year of the first medical treatment of the claim (from 2008 to 2017)
- Cumulative claim payments (by claim age and year of first treatment)

Payment growth factors from one stage of development to the next (e.g., 12 months to 24 months) were used to project payments. These projections were developed separately for medical and indemnity payments for:

- Claims with acute opioid use
- Claims with chronic opioid use
- Claims without opioid use

Methods

Question 3: What is the impact of declining opioid use on benefit payments, average TD days, and total costs?

Regression analysis was used to isolate the impact of opioid use on claim outcomes

Models were developed for:

- Opioid use versus non-opioid use
- Chronic versus acute opioid use

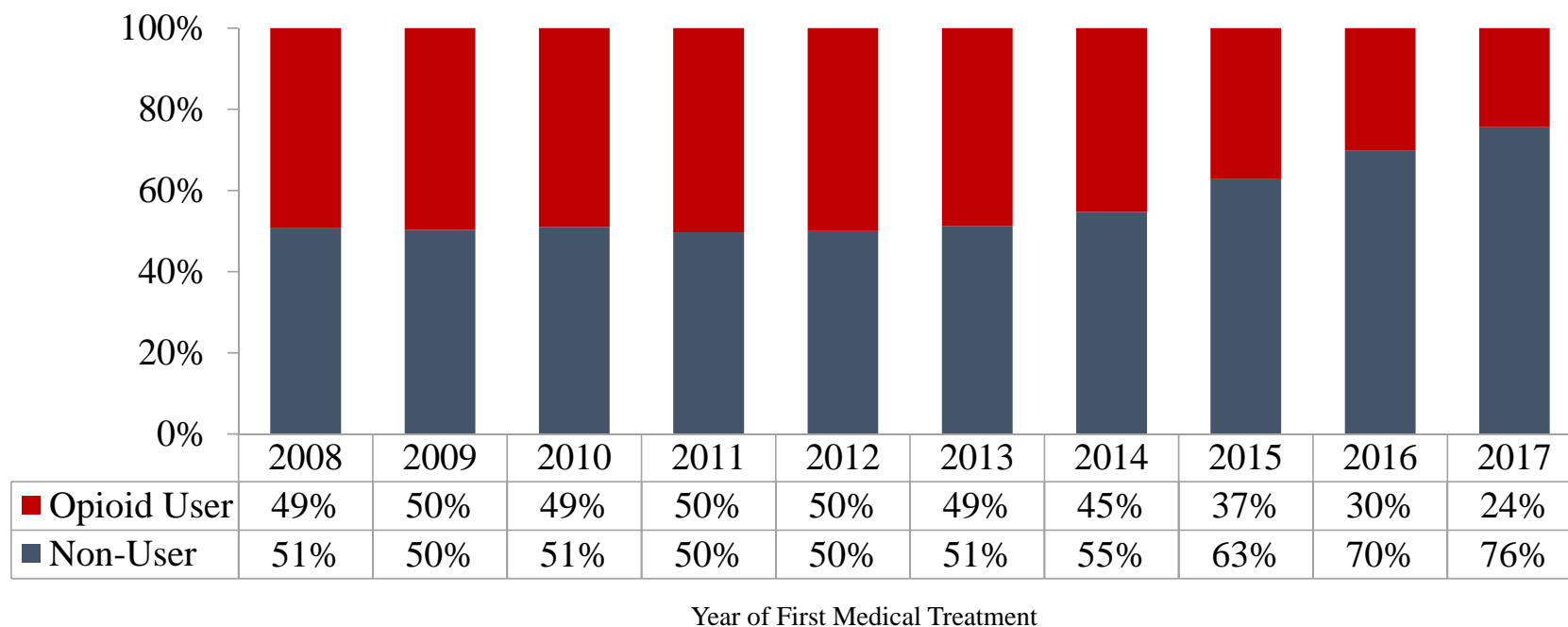
Controlled for five categories of risk factors:

- Worker/Job characteristics: Age/Gender, Region, Industry, Tenure, and Employer size
- Medical diagnosis: Primary Diagnosis and Comorbidities
- Injury characteristics: Nature of Injury, Cause of Injury, and Body Part
- Treatment characteristics: Inpatient Stays
- Administrative process-related factors: Attorney Involvement, Notification, Claim Type (TD or PD)

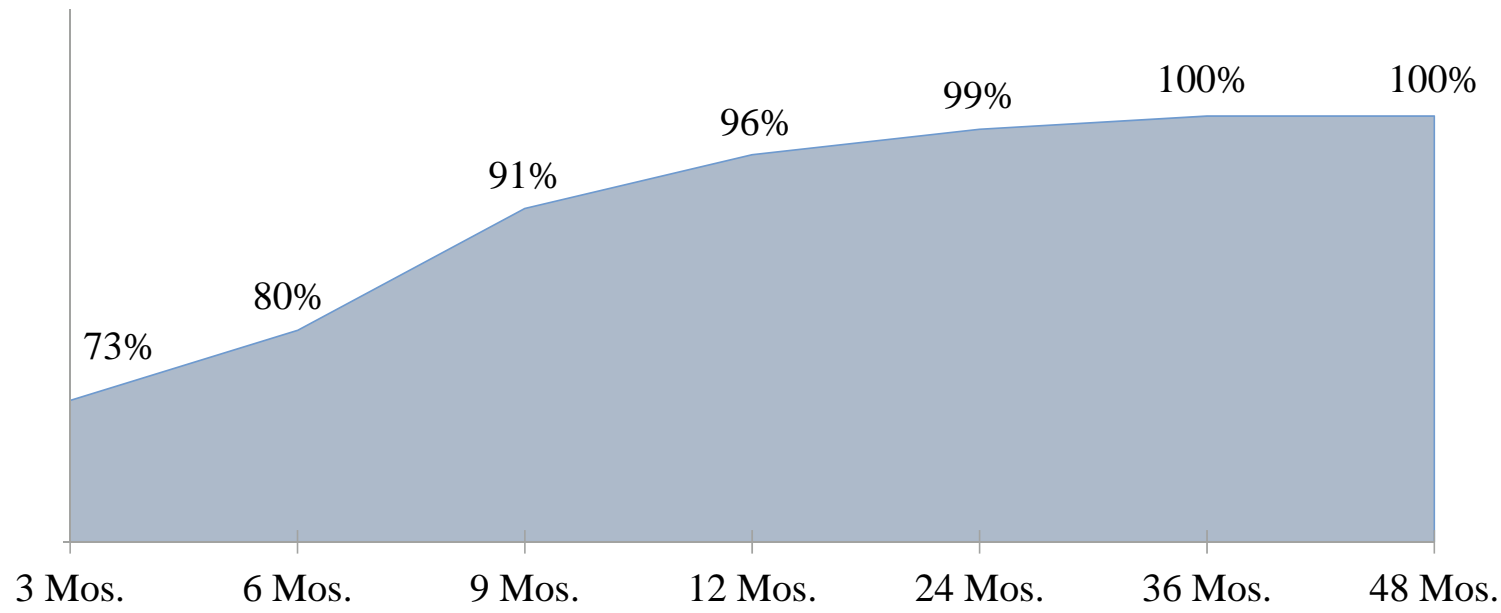
Study Question

1. What are the trends in both the frequency and intensity of acute and chronic opioid use?

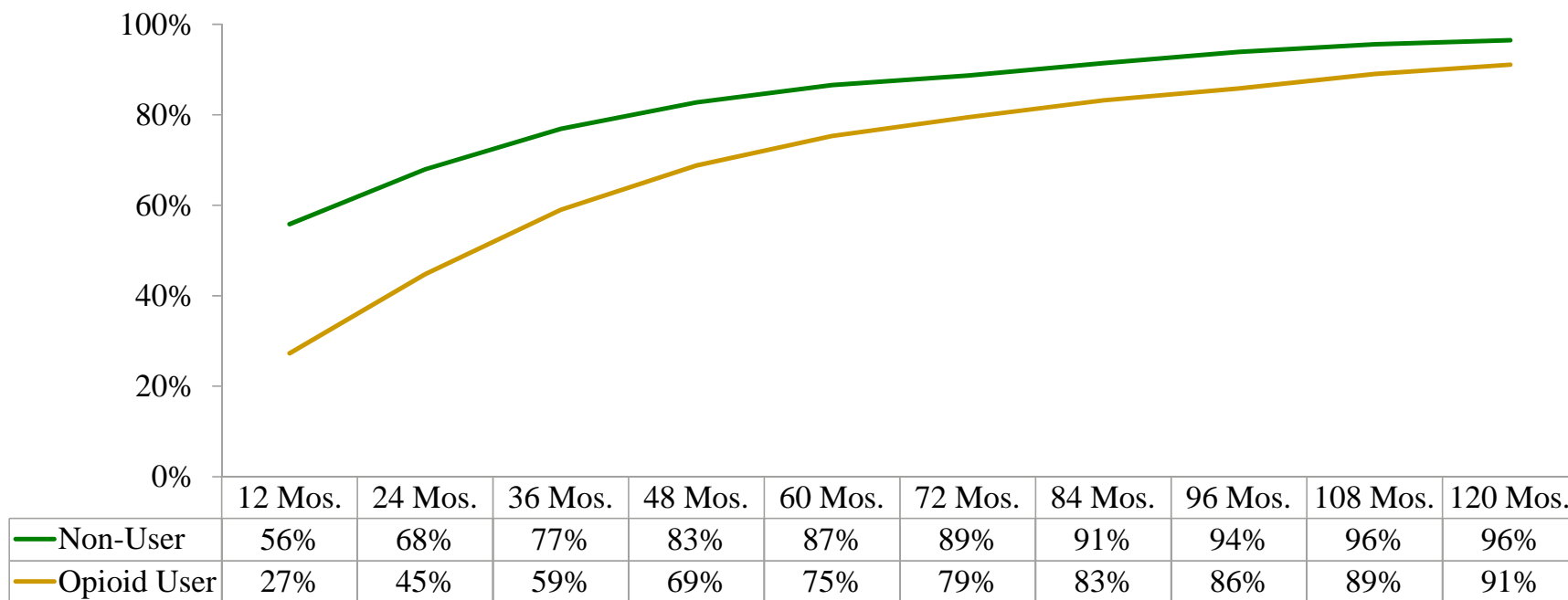
Percentage of Claims with and without Opioid Use Lost-time Claims at 12 Months from First Treatment



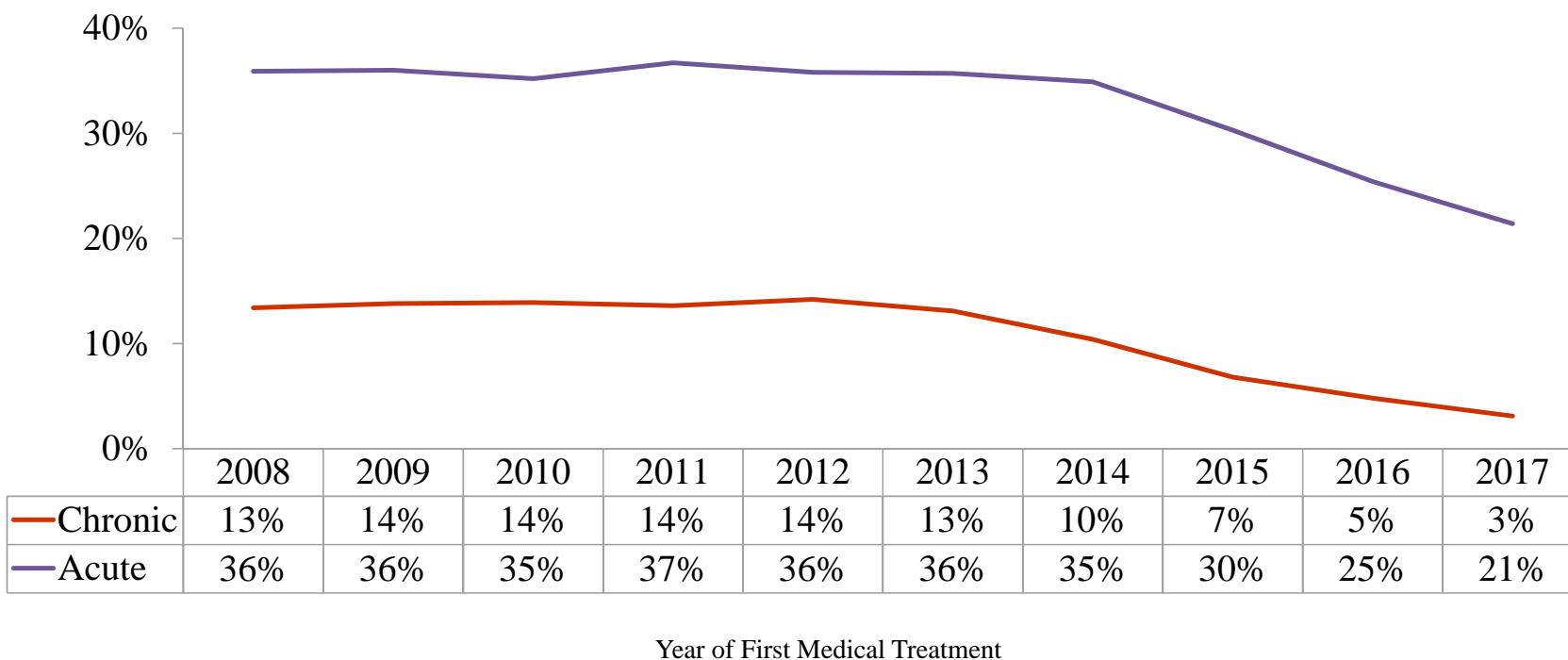
Time to Initiation of Opioid Use Lost-time Claims



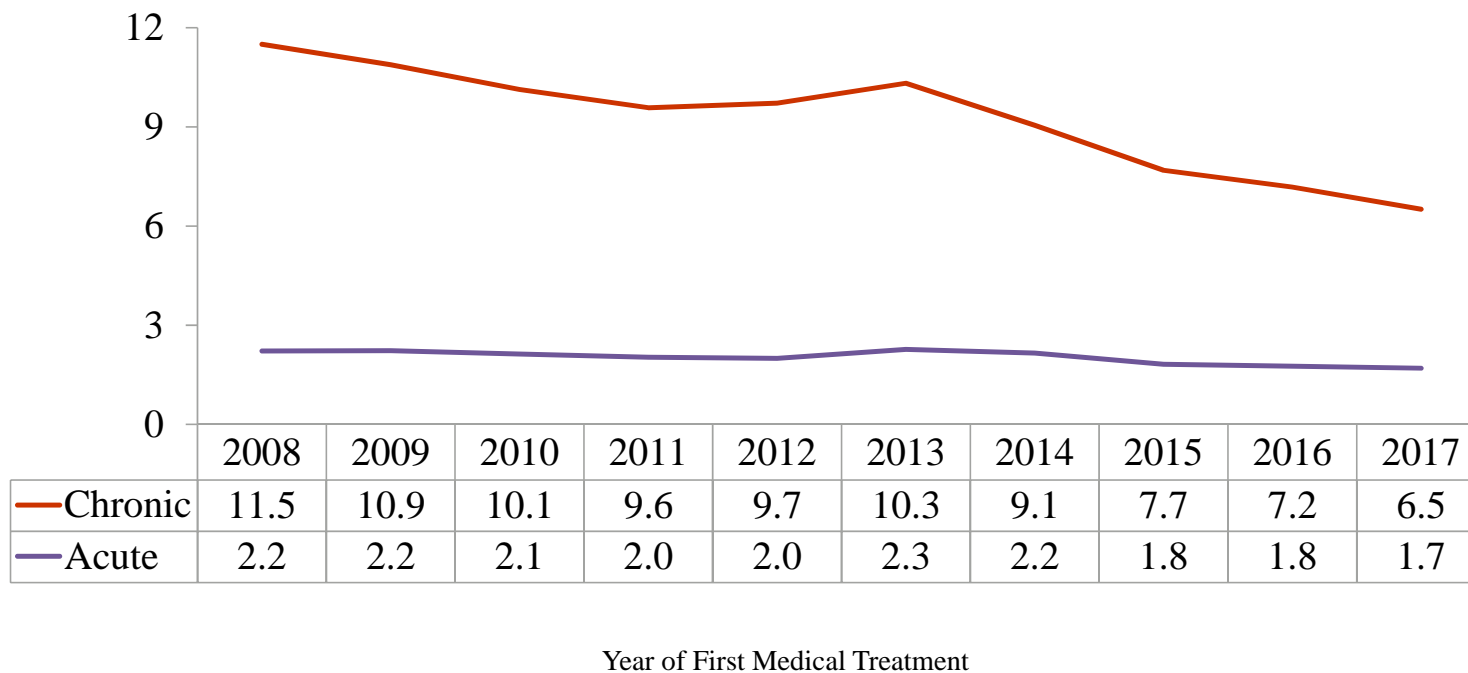
Claim Closure Rate - Opioid User vs Non-User By Months from First Treatment



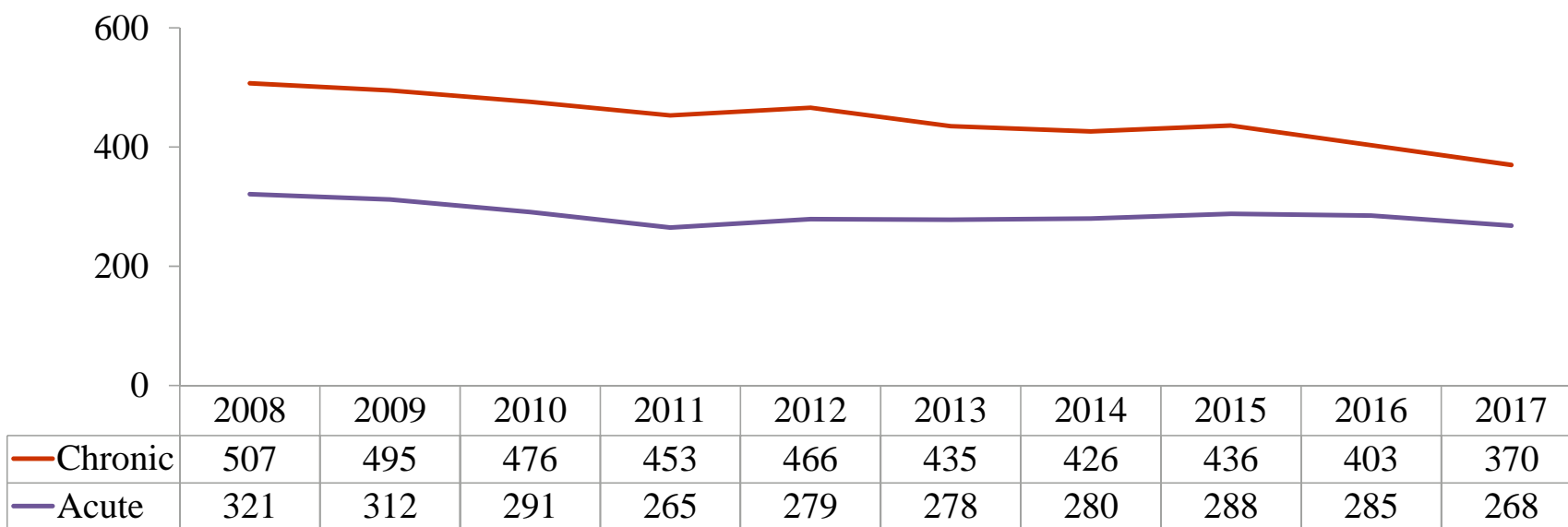
Percent of Claims - Chronic and Acute Opioid Use At 12 Months from First Treatment



Opioid Prescriptions per Claim - Chronic vs Acute At 12 Months by Year of First Treatment

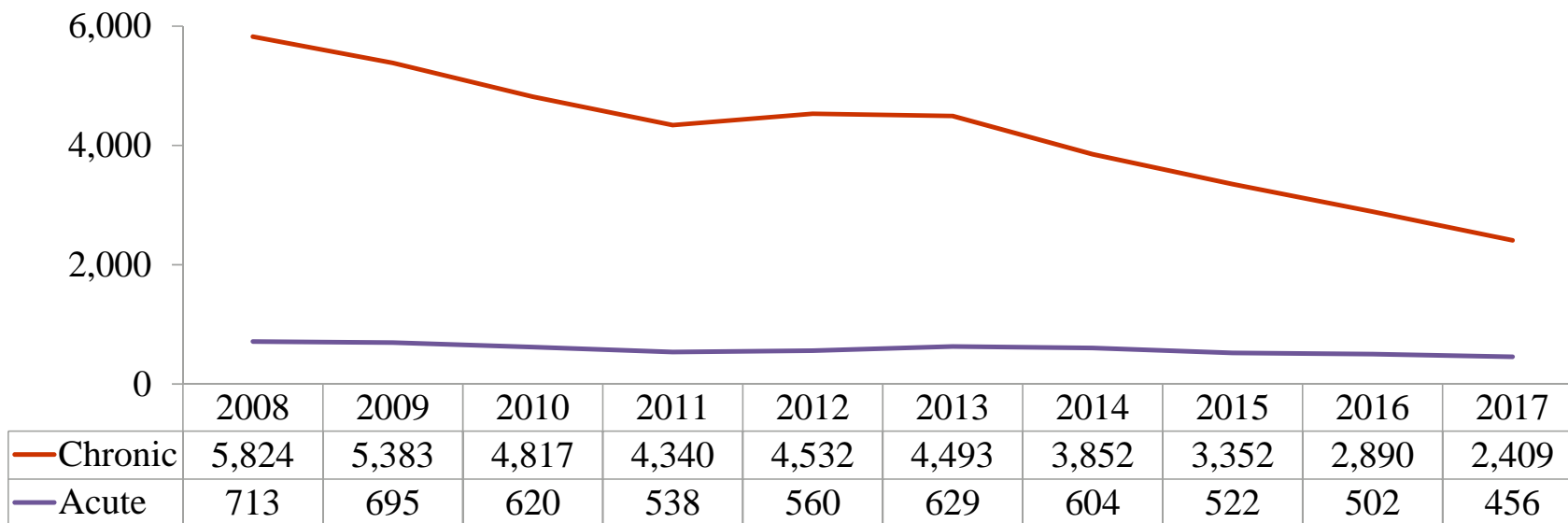


Average Strength (MMEs) Per Opioid Prescription - Chronic vs Acute At 12 Months by Year of First Treatment



Year of First Medical Treatment

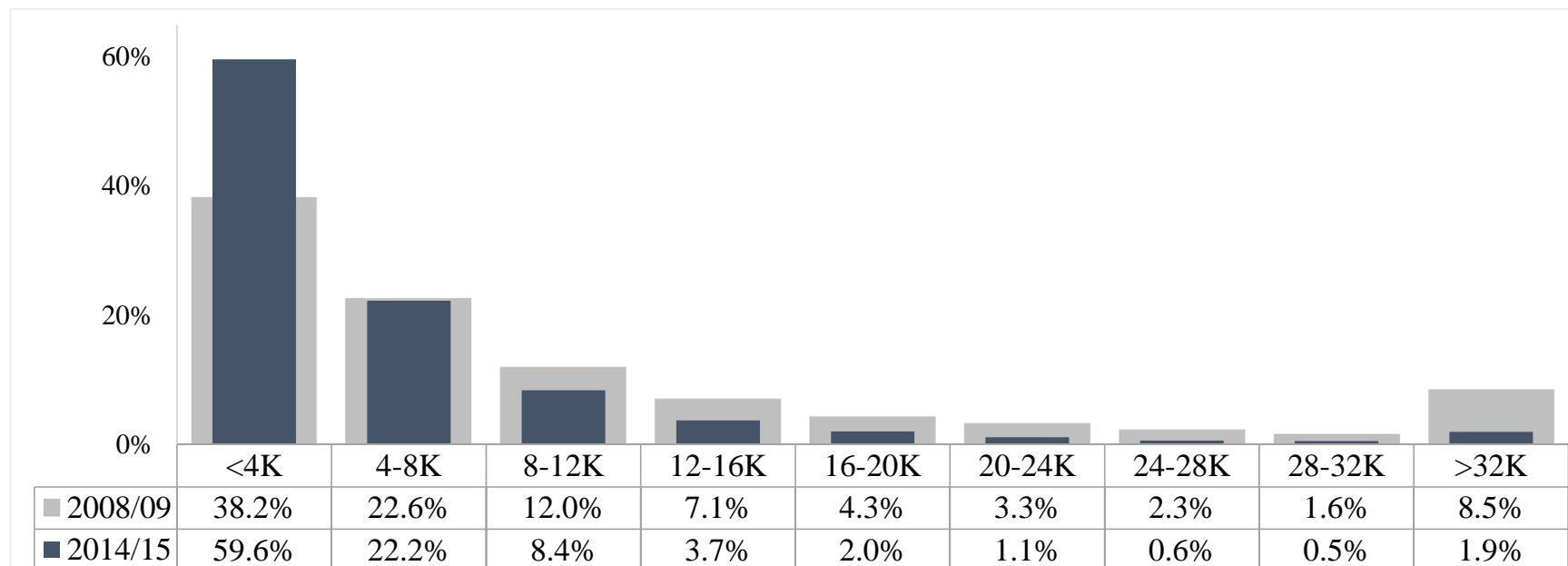
Cumulative MMEs Per Claim - Chronic vs Acute At 12 Months from First Treatment



Year of First Medical Treatment

Shift in the Distribution of Total Morphine Equivalents per Claim with Chronic Opioid Use

2008/09 versus 2014/15 at 36 Months of Development



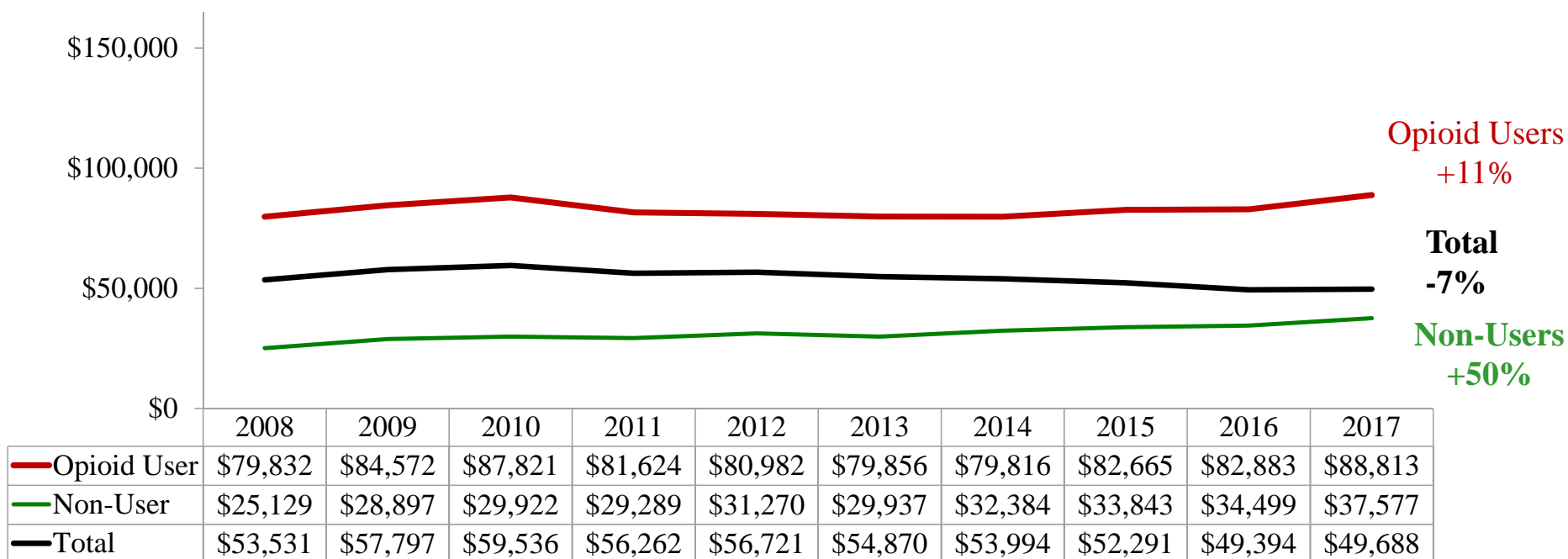
Study Question

2. To what extent has decreased opioid use driven the decline in the overall medical cost trend?

Impact of Declining Opioid Trend on Systemwide Costs



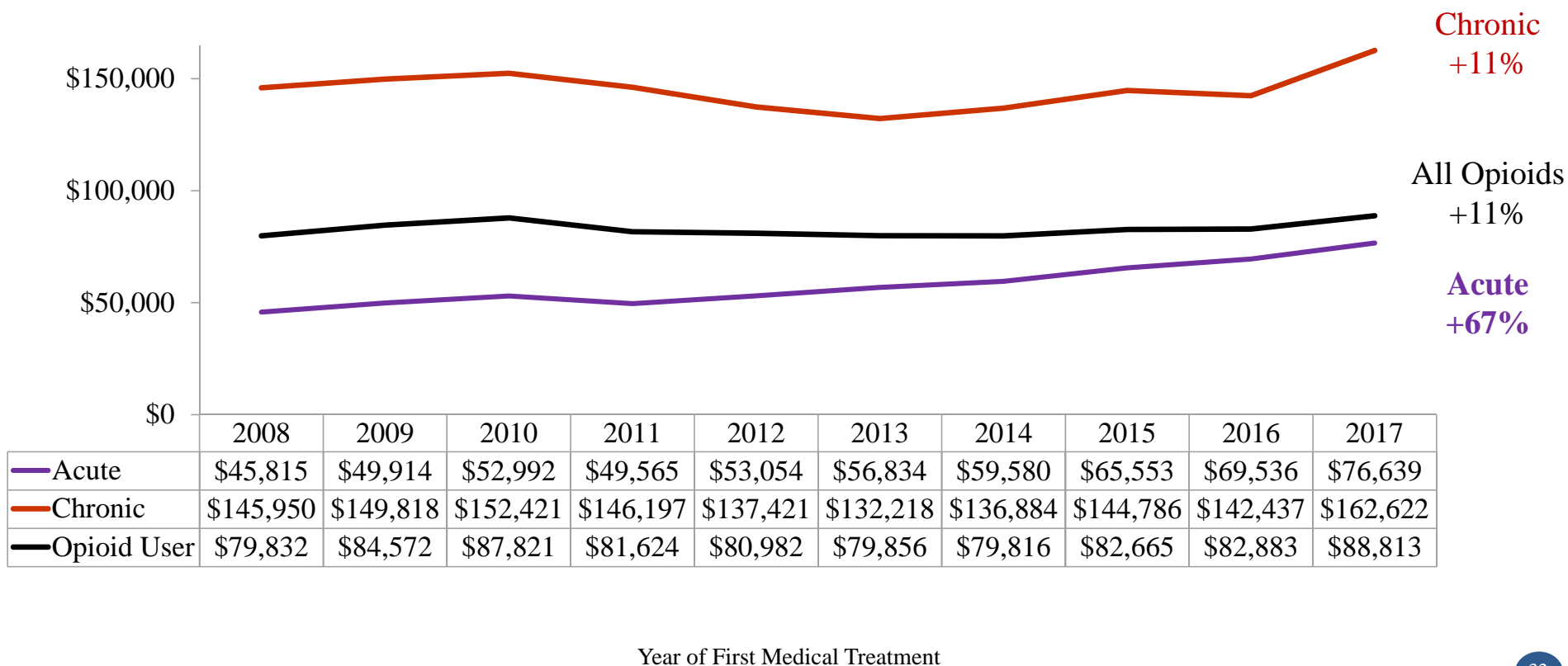
Average Total Benefit Payments Projected To 10 Years Opioid Users vs Non-Users



Impact of Declining Opioid Trend on Systemwide Costs



Average Total Benefit Payments Projected To 10 Years Acute vs Chronic



Study Question

3. What is the impact of declining opioid use on benefit payments, average TD days, and total costs?

Impact of Declining Opioid Trend on Systemwide Costs



Effect of Opioid Use vs Non-Use on Average Benefits Paid*

Claim Age	Regression Coefficient	Ratio of User Cost to Non-User Cost	Ratio of Non-User Cost to User Cost	Change Per Avoided Opioid User
	A	$B=e^A$	$C=1/B$	$D=C-1 \times 100$
12 Months	0.353	1.423	0.703	-29.7%
24 Months	0.410	1.507	0.664	-33.6%
36 Months	0.430	1.537	0.651	-34.9%
48 Months	0.441	1.554	0.643	-35.7%
60 Months	0.446	1.562	0.640	-36.0%
72 Months	0.452	1.571	0.636	-36.4%
84 Months	0.454	1.575	0.635	-36.5%
96 Months	0.457	1.580	0.633	-36.7%
108 Months	0.457	1.580	0.633	-36.7%
120 Months	0.462	1.587	0.630	-37.0%

*Est. with 2008/2009 claims

Estimated Systemwide Savings

A. Estimate savings per avoided Opioid User vs Non-User and Chronic vs Acute User

- Derived from gamma regression models which isolated the effects of opioid use from the effects of other independent variables (including case mix, demographics and litigation)

B. Baseline Benefits

- **Claim distribution by Opioid Status: 2008/2009**
- Claim frequency
- Average benefits

C. Percentage change from baseline due to shifts in distribution of Opioid Status: 2010 - 2017

Avoided Benefits =

Claim frequency

x Opioid use rate change from baseline

x Average benefits per user

x Percent saved per avoided user (from regression model)

10-Year Projected Claim Frequency and Baseline Benefits

Year	Lost time Claim Frequency	Baseline Benefits
	A	B=A x Avg Baseline Benefits
2008/09	177,723	\$9,889,551,898
2010	184,164	\$10,979,489,368
2011	191,318	\$10,912,102,928
2012	199,345	\$11,485,119,583
2013	209,518	\$12,012,676,879
2014	215,594	\$12,995,806,294
2015	219,586	\$14,146,916,501
2016	221,000	\$14,515,308,706
2017	222,928	\$16,313,611,683
2010-17		\$103,361,031,943

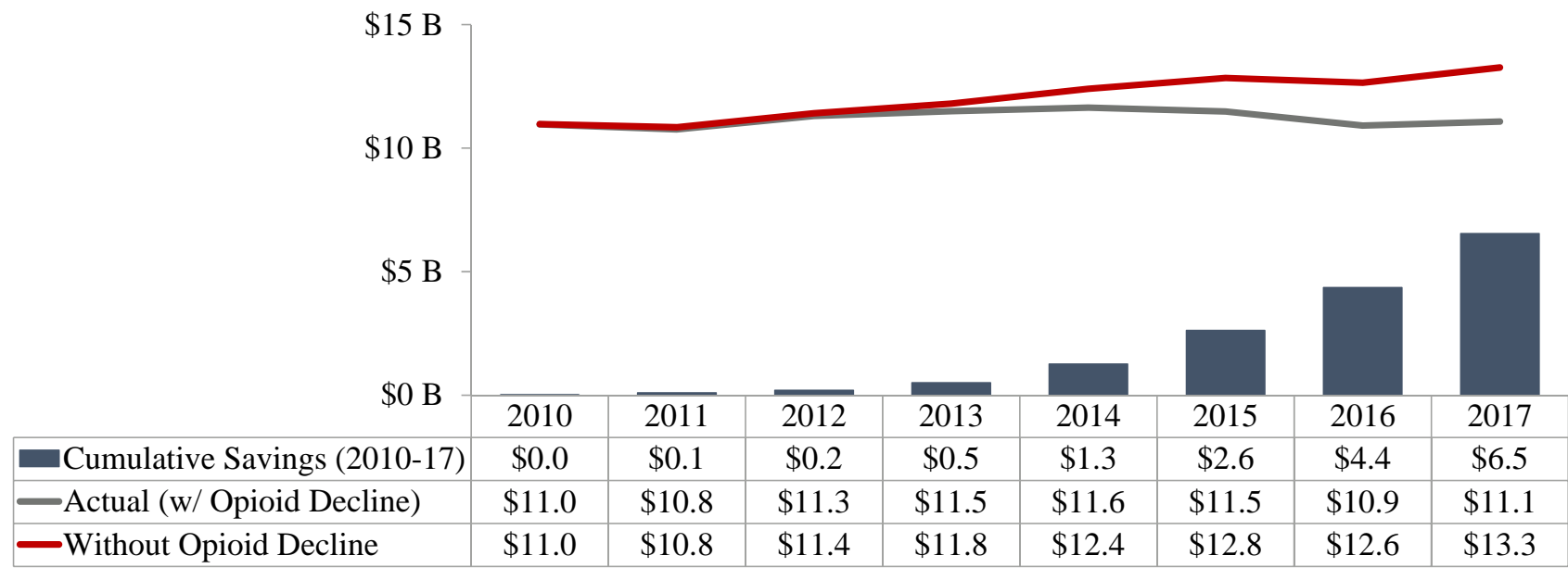
Impact of Declining Opioid Trend on Systemwide Costs



10-Year Projected Benefits - With and Without Estimated Opioid Decline

Year	Actual Benefits w/ Opioid Decline	Total Change from Baseline	Benefits Without Opioid Decline	Total Savings
	A = Claims x Avg Benefits	B	C = A / (B+1)	D = C - A
2010	\$10,964,294,710	-0.1%	\$10,974,146,115	\$9,851,405
2011	\$10,763,920,952	-0.7%	\$10,844,642,182	\$80,721,230
2012	\$11,307,043,657	-0.9%	\$11,410,809,623	\$103,765,966
2013	\$11,496,321,894	-2.6%	\$11,800,486,315	\$304,164,421
2014	\$11,640,754,887	-6.1%	\$12,401,670,211	\$760,915,323
2015	\$11,482,401,235	-10.6%	\$12,841,277,955	\$1,358,876,720
2016	\$10,915,988,364	-13.7%	\$12,648,753,937	\$1,732,765,572
2017	\$11,076,906,676	-16.5%	\$13,264,917,868	\$2,188,011,192
2010-17	\$89,647,632,375	-7.2%	\$96,186,704,205	\$6,539,071,830

Impact of Declining Opioid Use on Projected Benefit Payments (in billions): 2010-17



Impact of Declining Opioid Trend on Systemwide Costs

Average Paid Medical on Lost Time Claims - Opioid User

Year	3 Mos.	6 Mos.	9 Mos.	12 Mos.	24 Mos.	36 Mos.	48 Mos.	60 Mos.	72 Mos.	84 Mos.	96 Mos.	108 Mos.	120 Mos.
2008	\$3,931	\$7,083	\$9,442	\$11,602	\$19,537	\$26,798	\$32,444	\$36,685	\$39,886	\$42,450	\$44,270	\$45,558	\$46,466
2009	\$3,863	\$7,607	\$10,331	\$12,699	\$21,872	\$28,980	\$34,964	\$39,452	\$42,515	\$44,925	\$46,616	\$47,870	
2010	\$4,732	\$8,819	\$11,674	\$14,075	\$22,862	\$30,864	\$37,250	\$41,496	\$45,011	\$47,241	\$48,697		
2011	\$4,007	\$7,734	\$10,416	\$12,773	\$22,049	\$29,534	\$35,000	\$39,002	\$41,594	\$43,477			
2012	\$4,318	\$8,046	\$10,969	\$13,477	\$22,919	\$30,225	\$35,326	\$38,798	\$41,072				
2013	\$4,398	\$7,943	\$10,810	\$13,268	\$22,330	\$29,370	\$33,930	\$37,011					
2014	\$4,546	\$7,902	\$10,550	\$12,955	\$21,891	\$28,572	\$33,023						
2015	\$5,513	\$9,037	\$11,775	\$14,236	\$22,875	\$29,025							
2016	\$6,060	\$9,787	\$12,639	\$14,961	\$23,043								
2017	\$7,137	\$10,885	\$13,715	\$16,474									

Impact of Declining Opioid Trend on Systemwide Costs

Average Paid Medical on Lost Time Claims – Non-Opioid User

Year	3 Mos.	6 Mos.	9 Mos.	12 Mos.	24 Mos.	36 Mos.	48 Mos.	60 Mos.	72 Mos.	84 Mos.	96 Mos.	108 Mos.	120 Mos.
2008	\$2,499	\$4,019	\$4,926	\$5,570	\$7,771	\$9,580	\$10,710	\$11,529	\$12,174	\$12,552	\$12,789	\$12,982	\$13,092
2009	\$2,640	\$4,477	\$5,485	\$6,235	\$8,868	\$10,802	\$12,195	\$13,255	\$13,989	\$14,487	\$14,778	\$14,959	
2010	\$3,133	\$4,836	\$5,874	\$6,730	\$9,359	\$11,432	\$12,857	\$13,975	\$14,676	\$15,068	\$15,349		
2011	\$2,641	\$4,240	\$5,334	\$6,158	\$9,052	\$11,325	\$12,884	\$13,831	\$14,466	\$14,923			
2012	\$2,341	\$4,095	\$5,146	\$6,160	\$9,522	\$12,004	\$13,557	\$14,591	\$15,274				
2013	\$2,380	\$3,965	\$5,128	\$6,023	\$9,154	\$11,487	\$12,947	\$13,877					
2014	\$2,375	\$3,891	\$5,074	\$6,065	\$9,441	\$12,084	\$13,635						
2015	\$2,479	\$3,982	\$5,124	\$6,114	\$9,731	\$12,105							
2016	\$2,643	\$4,152	\$5,345	\$6,413	\$9,697								
2017	\$2,898	\$4,495	\$5,770	\$6,922									

Impact of Declining Opioid Trend on Systemwide Costs



Average Paid Medical on Lost Time Claims – Opioid & Non-Opioid Users

Year	3 Mos.	6 Mos.	9 Mos.	12 Mos.	24 Mos.	36 Mos.	48 Mos.	60 Mos.	72 Mos.	84 Mos.	96 Mos.	108 Mos.	120 Mos.
2008	\$3,122	\$5,441	\$7,102	\$8,542	\$13,802	\$18,520	\$22,046	\$24,668	\$26,640	\$28,171	\$29,238	\$30,003	\$30,529
2009	\$3,176	\$5,941	\$7,833	\$9,449	\$15,577	\$20,238	\$24,040	\$26,880	\$28,823	\$30,312	\$31,322	\$32,051	
2010	\$3,819	\$6,670	\$8,648	\$10,332	\$16,234	\$21,371	\$25,333	\$28,079	\$30,218	\$31,541	\$32,419		
2011	\$3,256	\$5,919	\$7,850	\$9,484	\$15,725	\$20,710	\$24,275	\$26,795	\$28,439	\$29,621			
2012	\$3,237	\$5,986	\$8,002	\$9,819	\$16,361	\$21,333	\$24,687	\$26,944	\$28,420				
2013	\$3,235	\$5,805	\$7,849	\$9,557	\$15,726	\$20,419	\$23,421	\$25,411					
2014	\$3,243	\$5,636	\$7,534	\$9,186	\$15,124	\$19,596	\$22,452						
2015	\$3,436	\$5,746	\$7,550	\$9,133	\$14,703	\$18,498							
2016	\$3,474	\$5,720	\$7,497	\$8,997	\$13,818								
2017	\$3,695	\$5,882	\$7,590	\$9,169									

Key Takeaways:

- The proportion of injured workers receiving opioids declined by 51 percent, from 49 to 24 percentage points over this period (at 12 months development)
- The prevalence of chronic opioid use (defined as receiving three or more opioid prescriptions within four consecutive months) declined by 77 percent, from 13 to 3 percentage points; and, acute use (all other opioid use) declined by 40 percent, from 36 to 21 points
- The declining trend in lost time claims with opioids offsets a 67 and 11 percent increase in the cost of claims with acute and chronic opioid use
- Systemwide savings reached 16.5% in 2017

Key Takeaways:

At 12 and 120 months of development:

- Claims without opioid use had 29.7 and 37.0 percent, respectively, lower benefit payments than those with opioid use
- Claims without opioid use had 25.2 and 30.2 percent, respectively, fewer TD days than those with opioid use
- Claims with acute use had 28.1 and 35.9 percent, respectively, lower benefit payments compared with those with chronic use
- Claims with acute use had 27.6 and 31.3 percent, respectively, fewer TD days compared with those with chronic use

The cumulative systemwide impact of declining opioid use for lost-time injuries between 2010 and 2017, projected to 10 years of development, was estimated at \$6.5 billion in savings in benefit payments



Thanks for listening!

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