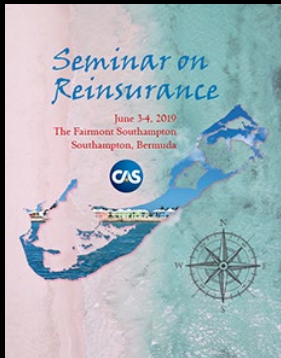


2019 Seminar on Reinsurance

C-31 Workers Compensation - Market Update Opioids and Emerging Medical Trends

Bill Van Dyke
June 3, 2019



Antitrust Notice

- **The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.**
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- **It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.**



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Anti-depressants

Marijuana

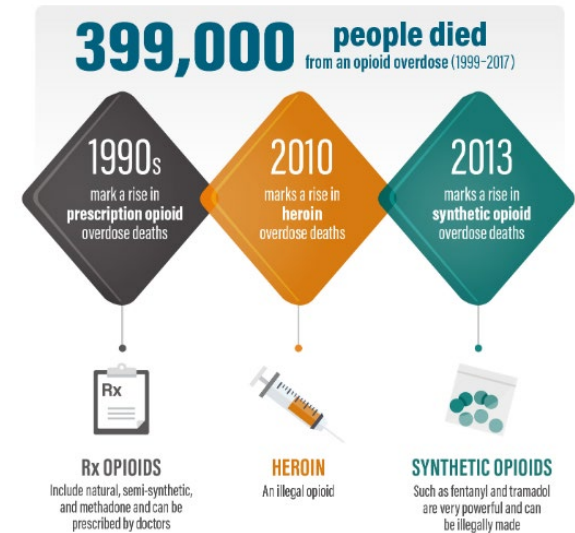
Pharmaceutical Trends

Emerging Medical Trends

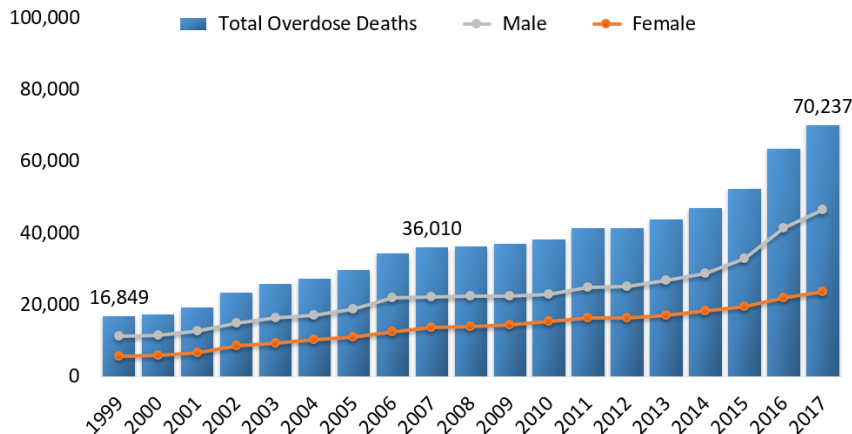
Opioids: The Epidemic

- 70,237 drug overdose deaths in 2017, over 702,500 since 1999
- 47,600 deaths in 2017 from opioids (heroin, synthetic, and prescription), nearly 400,000 since 1999
- 28,466 deaths in 2017 from synthetic opioids (including drugs such as tramadol and fentanyl) **917% increase since 2013**

A Multi-Layered Problem in Three Distinct Waves

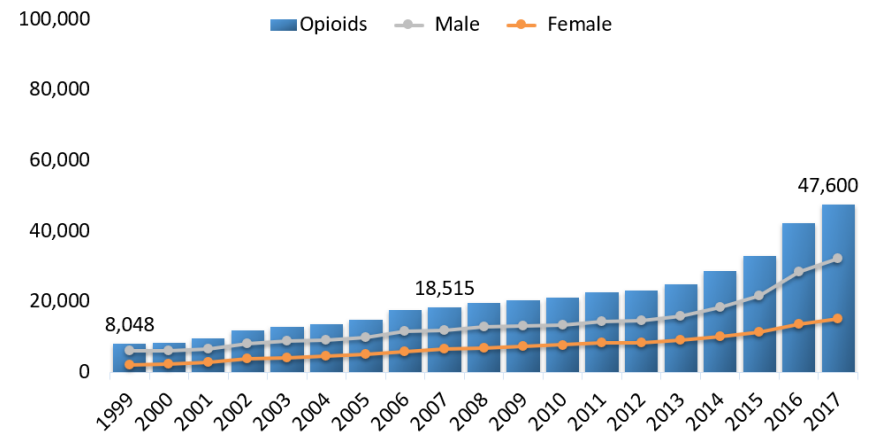


National Drug Overdose Deaths 1999-2017



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

National Drug Overdose Deaths Involving Any Opioid 1999-2017



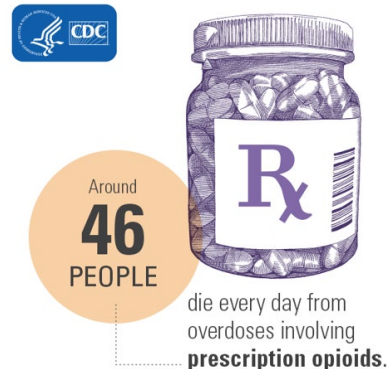
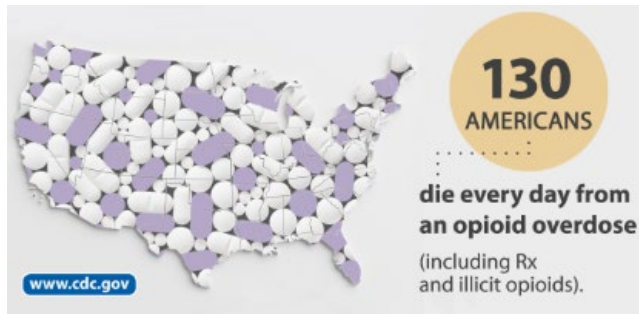
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Sources:

- <https://www.cdc.gov/drugoverdose/index.html>
- <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>

Opioids: The Prescription Epidemic

- Rise in prescription opioid overdose deaths began in 1990's
- In 2012, 259 million painkiller prescriptions written in U.S., enough to give every adult his or her own bottle of pills
- Nearly 50% who took opiate painkillers more than 30 days in first year of use continued to use them for 3 years or longer
- 5% of prescribers wrote 40% of opioid prescriptions filled by members with employer-sponsored drug coverage from 2011–2012



Sources:

<https://lab.express-scripts.com/lab/publications/~/media/d48ef3ee579848e7bf3f14af536d7548.ashx>
Business Insurance – Opioid Abuse & Workers Comp – How to Tackle a Growing Problem
<https://www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm>
<https://www.cdc.gov/drugoverdose/index.html>

Opioids: The Prescription Epidemic

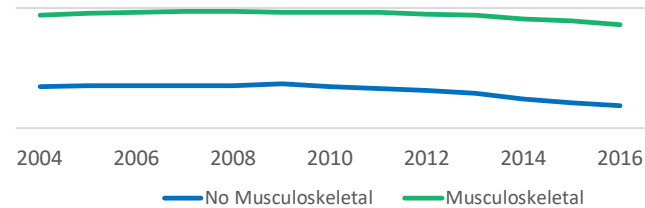
How has the opioid crisis affected people with employer coverage?

By Matthew Rae, Bradley Sawyer and Cynthia Cox
Kaiser Family Foundation

Peterson-Kaiser
Health System Tracker

- Patients with musculoskeletal diseases are 4 times more likely to be prescribed opioids

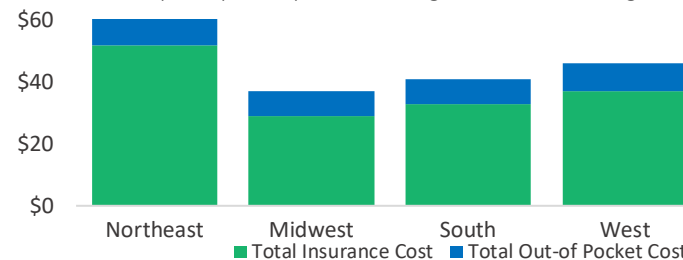
Percent of people with opioid prescription among enrollees in large employer plan



Source: Kaiser Family Founder analysis of Truven MarketScan data, 2016

- Opioid prescriptions more expensive in northeast

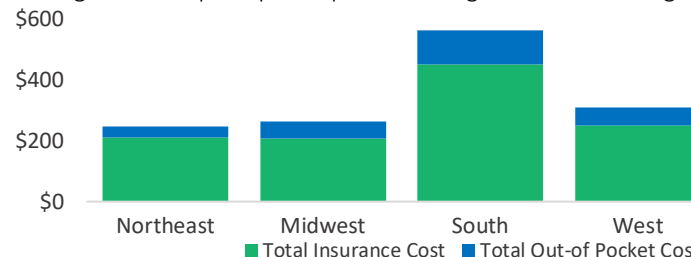
Total cost of opioid prescriptions among enrollees in a large employer plan



Source: Kaiser Family Founder analysis of Truven MarketScan data, 2016

- Opioid spending highest in the south

Average cost of opioid prescriptions among enrollees in a large employer plan



Source: Kaiser Family Founder analysis of Truven MarketScan data, 2016

Source:

<https://www.healthsystemtracker.org/chart-collection/how-has-spending-on-opioid-prescription-use-and-addiction-treatment-changed-over-time/>

Opioids: The Prescription Epidemic

How has the opioid crisis affected people with employer coverage?

By Matthew Rae, Bradley Sawyer and Cynthia Cox
Kaiser Family Foundation

Peterson-Kaiser
Health System Tracker

- Older people are more likely to have opioids prescribed

Percent of enrollees with large employer coverage and an opioid prescription, by age, 2016

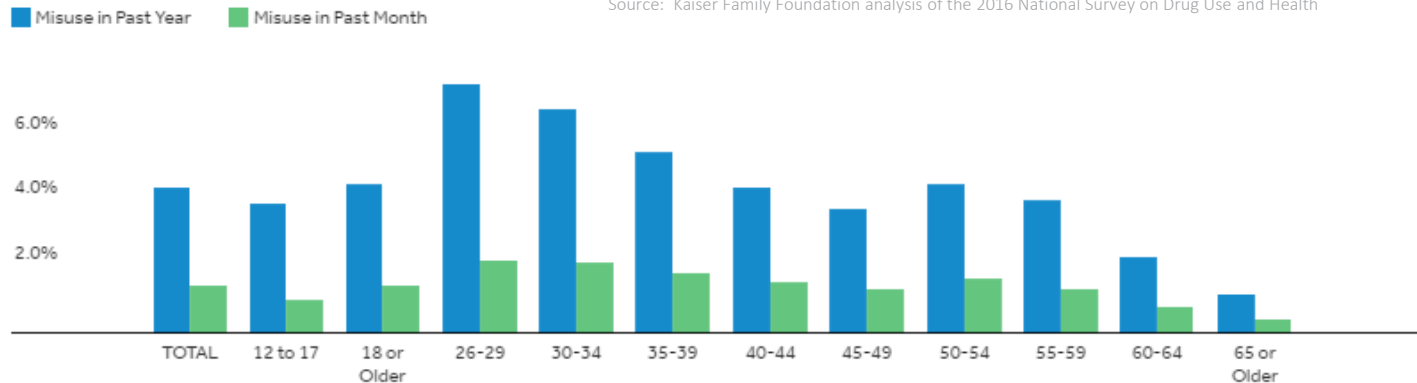
Source: Kaiser Family Foundation analysis of Truven MarketScan data, 2016



- Younger adults are more likely to have an opioids addiction

Percent misusing opioids in past year or month among enrollees in a large employer plan, by age, 2016

Source: Kaiser Family Foundation analysis of the 2016 National Survey on Drug Use and Health



Source:

<https://www.healthsystemtracker.org/chart-collection/how-has-spending-on-opioid-prescription-use-and-addiction-treatment-changed-over-time/>

Opioids: The Prescription Epidemic

How has the opioid crisis affected people with employer coverage?

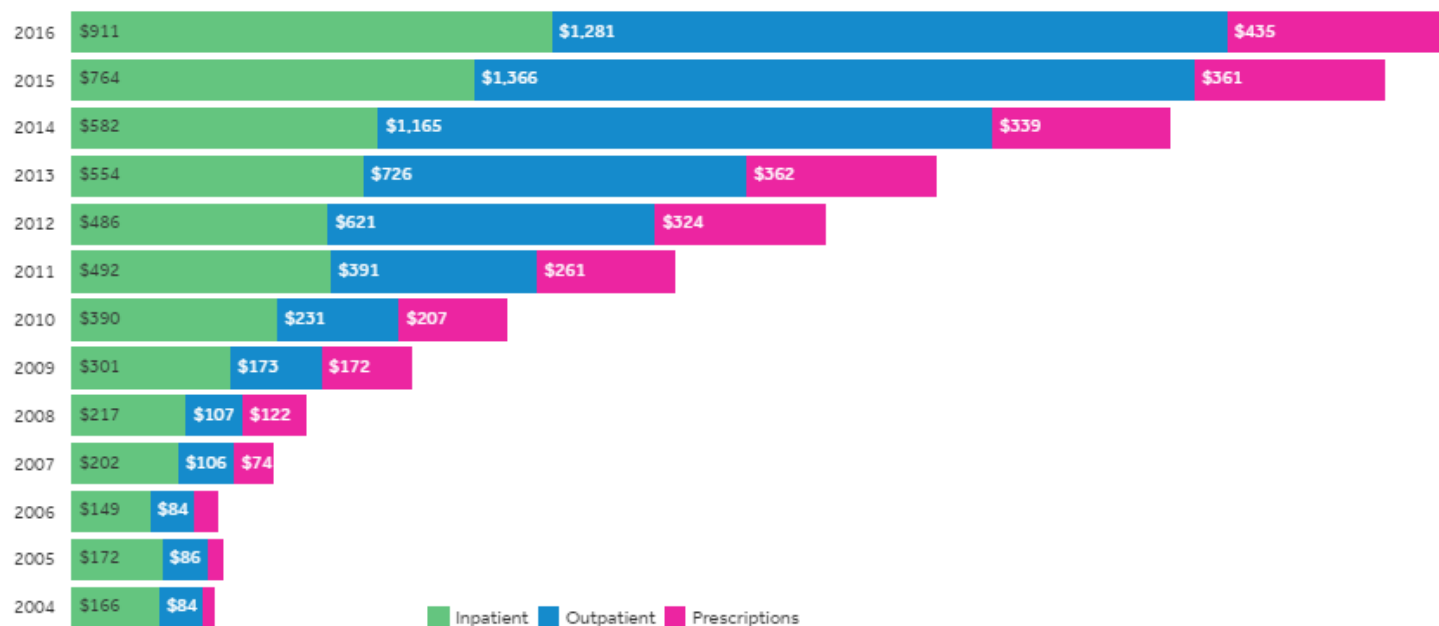
By Matthew Rae, Bradley Sawyer and Cynthia Cox
Kaiser Family Foundation

Peterson-Kaiser
Health System Tracker

- **Cost to treat opioid addiction has increased significantly**
 - 9.45 times from 2006 to 2016
 - 3.17 times from 2010 to 2016

Total amounts paid for opioid addiction and overdose treatment diagnoses for enrollees in large employer plans, in millions, 2004-2016

Source: Kaiser Family Foundation analysis of Truven MarketScan data, 2016



Source:

<https://www.healthsystemtracker.org/chart-collection/how-has-spending-on-opioid-prescription-use-and-addiction-treatment-changed-over-time/>

Opioids: Making a Difference

State and Federal efforts (prevention, intervention and treatment)

- **CDC 2016 opioid prescribing guidelines** led to 33 states adopting guidelines
20+ states now limit first-time prescribing length to 7 or less days
(KY & FL at 3 days)
- **2018 Patients and Communities Act**: prevention initiatives, grant program for treatment, lifts restrictions on who can prescribe addiction meds, expands first responder program to carry Narcan, modifies Medicare/Medicaid for prescribing limits/access to treatment, increases penalties for manufacturers/distributors related to overprescribing
- **2019 Bipartisan Legislation** introduced to limit prescriptions to 7 days
(Gillibrand/Gardner)

Sources:

<https://www.pharmacytimes.com/contributor/marilyn-bulloch-pharmd-bcps/2019/02/opioid-prescribing-limits-across-the-states>

<https://www.vox.com/policy-and-politics/2018/9/28/17913938/trump-opioid-epidemic-congress-support-act-bill-law>

Opioids: Making a Difference

Headlines

CNN

—● Southern California doctor sentenced in overdose deaths of 3 patients



By **Scott Glover**, CNN
Updated 5:24 PM ET, Fri February 5, 2016 | Video Source: CNN



<http://www.cnn.com/2016/02/05/health/california-overdose-doctor-murder-sentencing/>

- Dr. Tseng received a 30 year-to-life sentence for the 2nd-degree murder for recklessly prescribing drugs

**Boston
Globe**

—● **Insys defendants bribed doctors to prescribe painkillers to those that didn't need it**

By **Jonathan Saltzman** and **Maria Cramer** Globe Staff, Updated May 2, 2019, 2:33 p.m.



"Fiver former executives of Insys Therapuetics were convicted of racketeering conspiracy for bribing doctors to prescribe a highly addictive painkiller (Subsys) to patients who didn't need it and tricking insurers into paying for it.....Identified doctors (Whales) who already had a history of prescribing competing fentanyl products and persuaded them to switch to Subsys by paying them kick back via a sham speaking program."
Subsys: under the tongue fentanyl spray for cancer pain.

<https://www.bostonglobe.com/metro/2019/05/02/jury-returns-verdict-insys-trial/KeiTKLXZnnBZnOulLED17M/story.html>

Opioids: Making a Difference

Provider and Insurer Initiatives

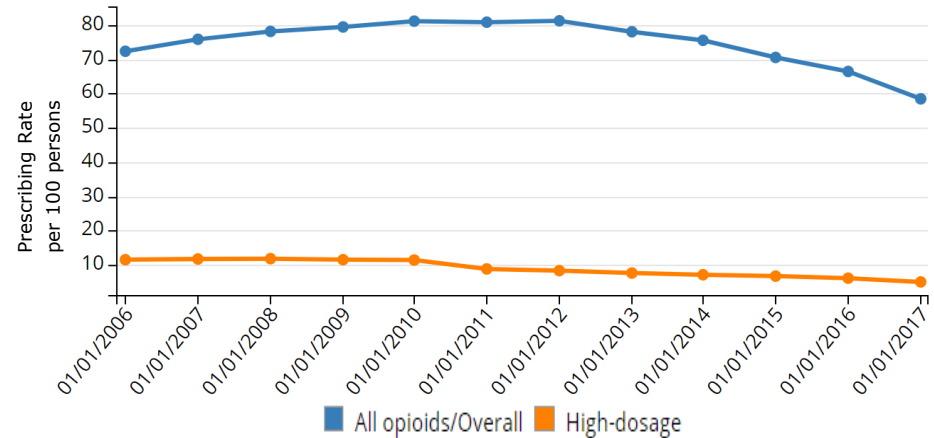
- CVS and Express Scripts limiting prescriptions to 7-day maximums
- Prescription Drug Monitoring Programs (PDMPs)
- Formularies for prescription drugs
- Pharmacy Benefits Management (PBM) efforts
- Peer-to-Peer contact between the insurer and treating physician
- Rising use of non-opioid alternatives
- Use of analytics in preventing opioid addiction
- Anomaly detection being used in the fight against fraud, waste and abuse
→ pill mills, nudging over-prescribers, etc.

Opioids: Making a Difference

Healthcare providers are prescribing fewer opioids

- The Opioid prescribing rate peaked around 2010-2012 and has declined
- CDC has observed:
 - 28% reduction since 2012
 - 19% reduction since 2006

Trends in Annual Opioid Prescribing Rates by Overall and High-Dosage Prescriptions



Source: IQVIA® Transactional Data Warehouse



Nationwide U.S. Opioid Prescribing Trends

Abigail Zuger, MD reviewing Zhu W et al. N Engl J Med 2019 Mar 14

“Researchers probed data from a large commercial insurer’s claims database....Fifty percent fewer enrollees received new opioid prescriptions in December 2017 than in July 2012 (0.8% vs. 1.6%); almost 60% fewer prescriptions were written for >3-day supply, and 70% fewer were written for >1-week supply. Prescriptions for doses higher than 50 morphine milligram equivalents (MME) daily fell by about 60%.”

Sources:

<https://www.cdc.gov/drugoverdose/data/prescribing.html>

<https://www.jwatch.org/na48663/2019/03/14/nationwide-us-opioid-prescribing-trends>

Opioids: Making a Difference

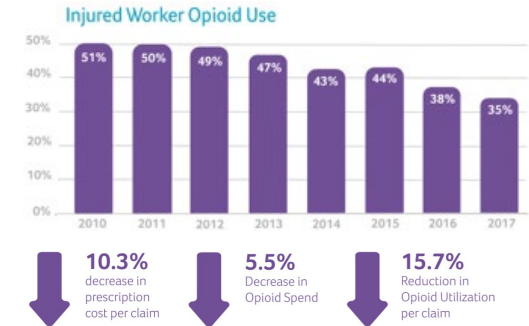
Organizations Impacting Opioid Trends

CIRMA & Coventry

Comprehensive managed care program

- Nurse collaboration
- Prior authorizations
- Elimination of compound drugs and long-acting opioids
- Discussing best practices with prescribers
- Address claims with high morphine equivalence doses
- Generic drugs over brand drugs

https://www.coventrywcs.com/content/dam/pdf_assets/misc/CIRMA%20Case%20Study%20051018.pdf



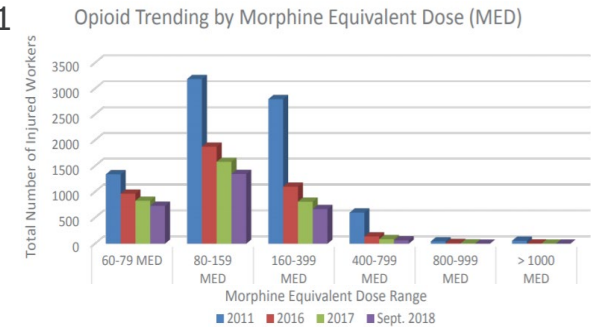
Ohio Bureau of Workers' Compensation

Implemented formulary for prescription drugs in 2011

From June 2011 to June 2018 the BWC has experienced:

- 64% decline in prescriptions for opioids
- 65% decline in number of opioid-dependent injured workers to 2,813 from 8,029
- 84% reduction in skeletal muscle relaxant prescriptions

<https://www.bwc.ohio.gov/downloads/blankpdf/AnnualReport.pdf>



OPTUM®

IMPACTING THE OPIOID EPIDEMIC

Aggressive formulary management, clinical interventions, communications with prescribers, regulatory actions, provider and injured person education and overall public awareness, Optum has been able to achieve:

Opioid Spend: all claims

↓ 18.8%

Opioid spend: opioid claims

↓ 7.1%

<http://workcompauto.optum.com/docs/default-source/Drug-Trend-Report-Files/optum-work-comp-auto-no-fault-2018-industry-trends-report.pdf?sfvrsn=>

Percentage of Claims using Opioids

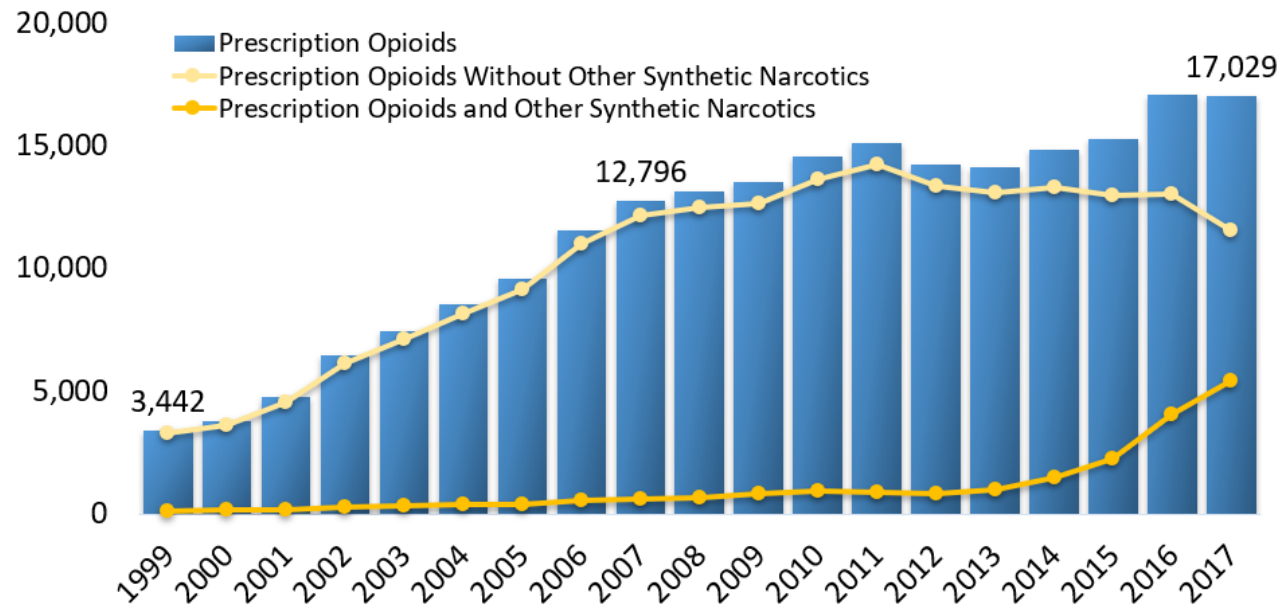


Opioids: Making a Difference

There is still more to do!

- Amount of opioids prescribed per person is still three times higher than in 1999

National Drug Overdose Deaths Involving Prescription Opioids 1999-2017



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Sources:

<https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>

Anti-Depressants: Depressing?

We are aware of Opioids, what about anti-depressants?

The Dark Side of Antidepressants

BY
Chris Kresser

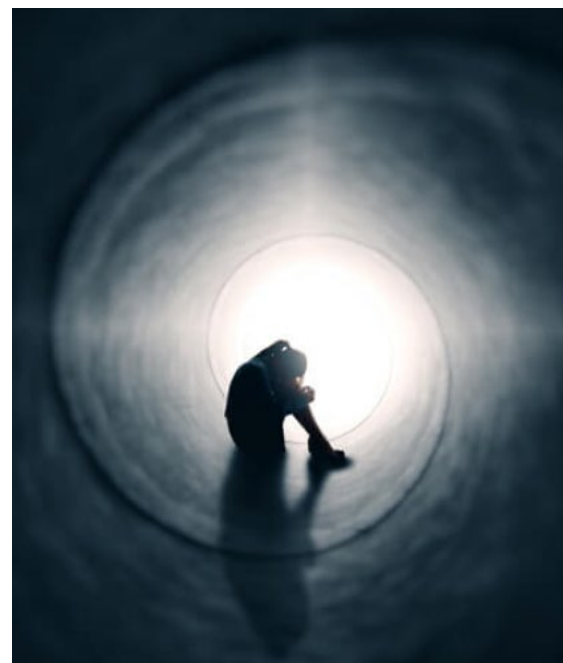
LAST UPDATED ON
February 10, 2019

“Antidepressants have serious and potentially fatal adverse effects, cause potentially permanent brain damage, increase the risk of suicide and violent behavior..., and increase the frequency and chronicity of depression.”

<https://chriskresser.com/the-dark-side-of-antidepressants/>

According to Chris Kressler:

- False impression anti-depressants are safe as harm from side effects only after months and years of use
- Likelihood additional meds needed to control side effects
- Produce long-term & irreversible chemical and structural changes to both body and brain
- Worsen chronicity and severity of depressive features
- Chronic use promotes drug dependency instead of empowering patients to make life changes
- Burden on healthcare system



Source:
<https://chriskresser.com/the-dark-side-of-antidepressants/>

Anti-Depressants: Impact on Workers' Compensation



Anti-depressant Prescriptions Associated with Increased Total Workers' Compensation Claims Cost, Delayed Return to Work

April 22, 2019

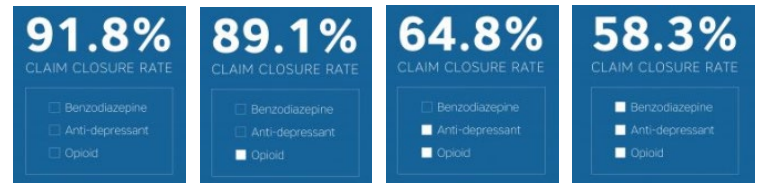
"A new study in the *Journal of Occupational and Environmental Medicine* finds that concurrent treatment of chronic pain, depression, and/or anxiety and occupational injuries is associated with large increases in total workers' compensation claim cost and delayed return to work.

The study, titled *Association of Opioid, Anti-depressant, and Benzodiazepines with Workers' Compensation Cost: A Cohort Study*, was authored by Dr. Dan Hunt, medical director at AF Group, and Ryan Artuso, senior data scientist in Predictive Modeling for AF Group, in partnership with researchers from the Johns Hopkins University School of Medicine.

Researchers from AF Group and the Johns Hopkins University School of Medicine **analyzed 22,383 work-related indemnity claims from 2008-2013** in the State of Michigan from AF Group brands. This analysis evaluated the impact of benzodiazepines and antidepressants in combination with opioids on workers' compensation claim cost and closure rates."

Sources:

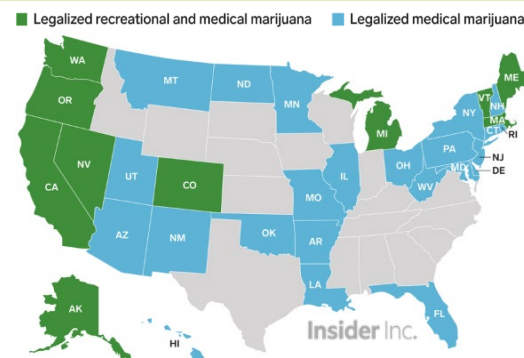
https://journals.lww.com/joem/Fulltext/2019/05000/Association_of_Opioid_Anti_Depressant_and.16.aspx
<http://www.afgroup.com/news/anti-depressant-prescriptions-associated-with-increased-total-workers-compensation-claims-cost-delayed-return-to-work>



Marijuana

Legalization Trends

- Legalization of marijuana continues to expand:
 - Medical in 33 states plus DC vs. 29 states a year ago
 - Recreational in 10 states plus DC vs. 9 states a year ago
- Although still illegal under federal law (Control Substance Act), federal legislation has progressed:
 - Current Federal budget includes Rohrabacher-Blumenauer (Farr) Amendment. Prohibits Justice Department from spending federal funds to interfere with state medical marijuana laws
 - March 2019 House Financial Services Committee advanced the Secure and Fair Enforcement (SAFE) Banking Act, HR 1595, which allows legal marijuana businesses access to banks and financial institutions
- Legalization has spawned more research leading to additional medical uses in alternative forms with limited impairment. Currently 14 states allow non-psychoactive forms of marijuana in certain situations



Sources:

https://www.ncci.com/Articles/Pages/II_Insights_MarijuanaFocusupdate.aspx
<https://www.businessinsider.com/legal-marijuana-states-2018-1>

The Washington Post

A powerful new form of medical marijuana, without the high

By David Kohn
December 31, 2016

Marijuana

Impact on Workers' Compensation

- Risk of potential increase in work related injuries
 - To what extent are employers/WC insurers able to deny WC claims
 - Tests for impairment are not yet well established
 - WC cases currently adjudicated on a case by case basis
- Medical marijuana may become reimbursable under WC
 - WC reimbursement has occurred in CT, MN, NM and NY via judicial or WC Boards/Commissions decisions (NM fee schedule includes max amount-2016)
 - FL and ND passed laws prohibiting reimbursement under WC for medical marijuana
 - LA law (2018) does not prohibit nor require reimbursement under WC (KY and OK considering similar law)
 - 2019 legislation proposed in HI, KS, ME, MD, NJ, NY and VT to authorize reimbursement under WC
- Medical marijuana used as an alternative to pain management
 - Net impact on WC could be positive or negative depending on cost, utilization and savings from not performing other treatments (opioids etc.)

Court sides with injured worker after marijuana-positive drug test

By Dale Denwalt and Chris Casteel The Oklahoman Nov 30, 2018

Sources:

https://www.ncci.com/Articles/Pages/II_Insights_MarijuanaFocusupdate.aspx
<https://www.medicalnewstoday.com/articles/322051.php>

Pharmaceutical Trends

How do healthcare prices and uses in the U.S. compare to other countries?

By Rabah Kamal and Cynthia Cox
Kaiser Family Foundation

Peterson-Kaiser
Health System Tracker

- U.S. prescription drug prices significantly higher than United Kingdom

	Switzerland	United Kingdom	United States	
Humira Rheumatoid Arthritis	\$822	\$1,362	\$2,669	US 2.0x UK
Xarelto blood clots	\$102	\$126	\$292	US 2.3x UK
Harvoni Heatitits C	\$16,861	\$22,554	\$32,114	US 1.4x UK
Truvada HIV/AIDs	\$906	\$689	\$1,301	US 1.9x UK
Tecfidera Multiple sclerosis	\$1,855	\$663	\$5,089	US 7.7x UK
Avastin cancer	\$1,752	\$470	\$3,930	US 8.4x UK
OxyContin Pain	\$95	\$72	\$265	US 3.7x UK

Source:

<https://www.healthsystemtracker.org/chart-collection/how-do-healthcare-prices-and-use-in-the-u-s-compare-to-other-countries/>

Pharmaceutical Trends

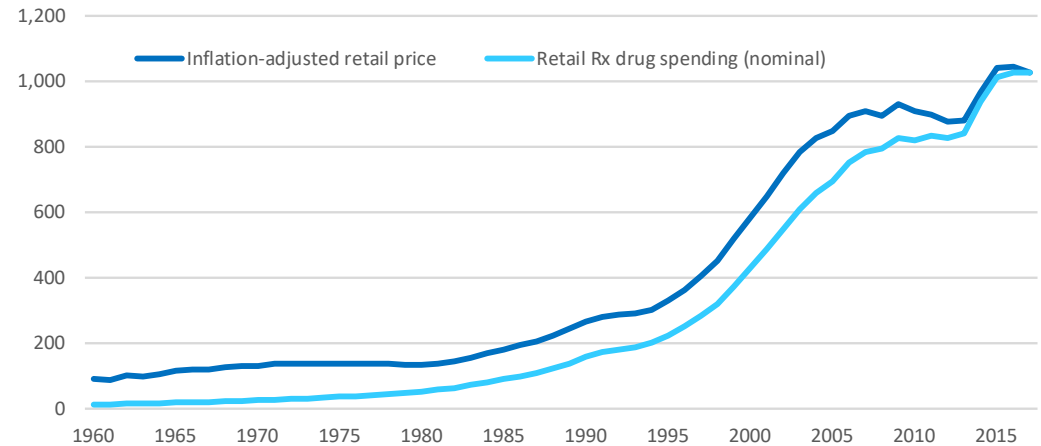
What are the recent and forecasted trends in prescription drug spending?

By Rabah Kamal, Cynthia Cox and Daniel McDermott
Kaiser Family Foundation

Peterson-Kaiser
Health System Tracker

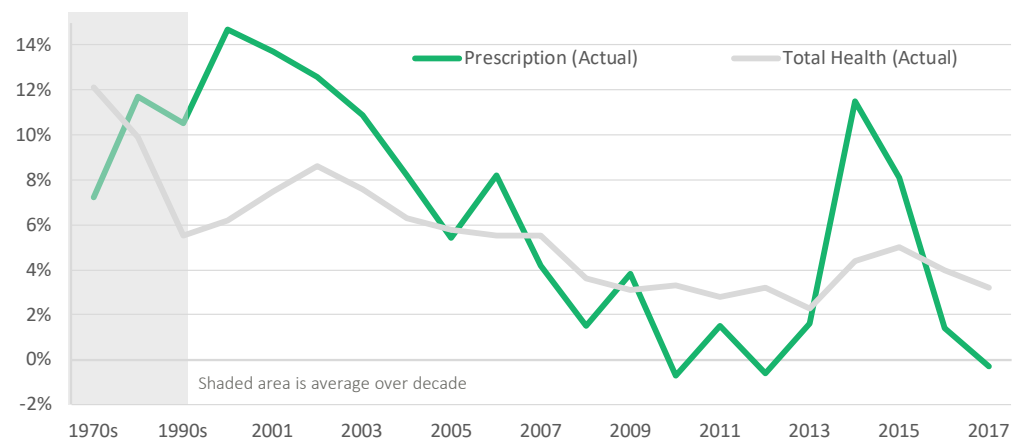
- Prescription spending has out paced inflation
- Prescription spending has increased:
 - 2.4 times from 2000 to 2017
 - 6.5 times from 1990 to 2017
 - 19.7 times from 1980 to 2017

Nominal and inflation-adjusted per capita spending on retail prescription drugs, 1960-2017



- Increases in prescription spending has generally been lower since start of recession:
 - 1.2 times from 2009 to 2017

Annual change in per capita prescription drug spending, 1970 - 2017



Sources:

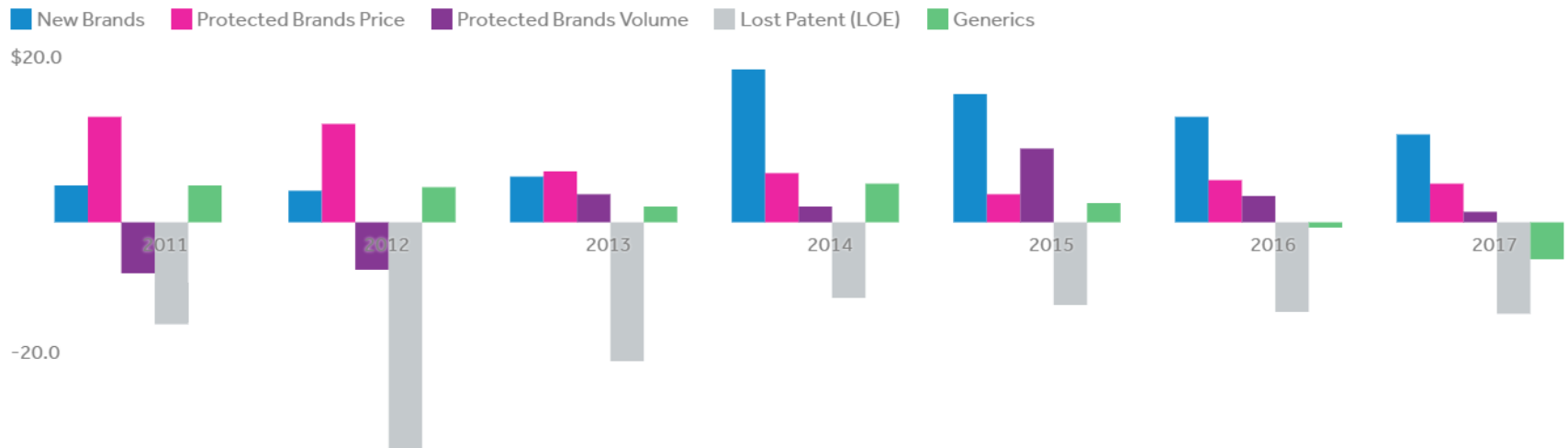
Kaiser Family Foundation Analysis of National Health Expenditures Account
<https://www.healthsystemtracker.org/chart-collection/recent-forecasted-trends-prescription-drug-spending>

Pharmaceutical Trends

What are the recent and forecasted trends in prescription drug spending?

By Rabah Kamal, Cynthia Cox and Daniel McDermott
Kaiser Family Foundation

Contribution to growth in drug spending, by spending growth drivers, in \$US billions, 2011 -2017



New brands are protected branded products on the market less than 24 months during the year reported. Protected brands are products which are no longer “new” and have yet to reach patent expiry. Loss of Exclusivity (LOE) are brands which were once protected and have since lost patent protection. Generics include both unbranded and branded generics. All segments exclude hepatitis C treatments. Hepatitis C spending growth is reported separately from the other segments in the chart as unusually there are declines in spending in both the new and protected segments for these drugs

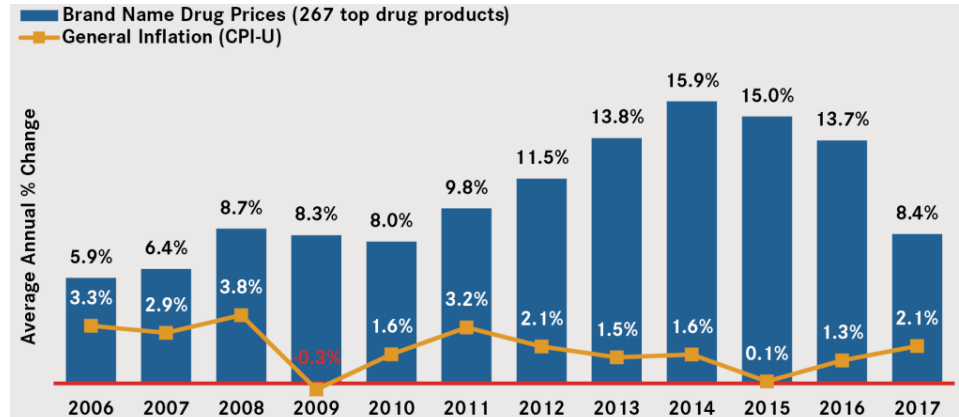
Source: IQVIA, Medicine Used and Spending in the U.S., April 2018; IQVIA Institute of Human Data Science

Source:

<https://www.healthsystemtracker.org/chart-collection/recent-forecasted-trends-prescription-drug-spending>

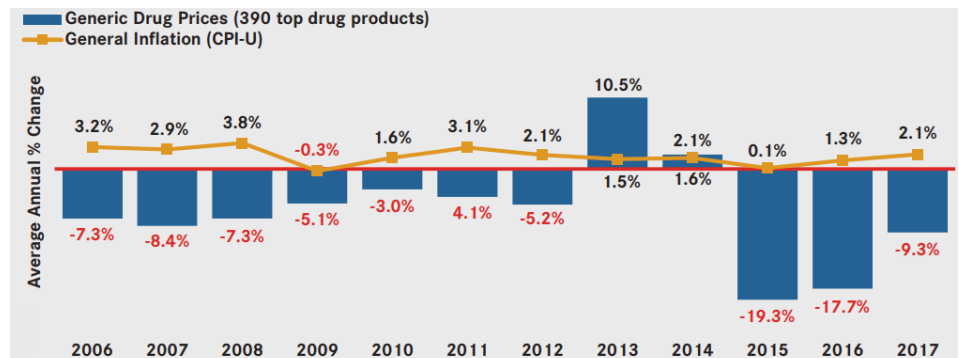
Pharmaceutical Trends

- Generic prescription drugs have experienced price reductions while brand-name drug prices have grown well beyond general inflation
 - Brand Name: +11.2% annual change (2008-2017)
 - Generic: -6.2% annual change (2008-2017)
- Generic prescription drugs are now 18 times cheaper than brand-names (AARP)
- Generics represent about 90% of all prescriptions in U.S.



Note: Calculations of the average annual brand name drug price change include the 267 drug products most widely used by older Americans (see Appendix A).

Prepared by the AARP Public Policy Institute and the PRIME Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases and MediSpan Price Rx Pro®.



Note: Calculations of the average annual generic drug price change include the 390 drug products most widely used by older Americans (see Appendix A).

Prepared by the AARP Public Policy Institute and the PRIME Institute, University of Minnesota, based on data from Truven Health MarketScan® Research Databases.

Sources:

<https://www.aarp.org/content/dam/aarp/ppi/2018/09/trends-in-retail-prices-of-brand-name-prescription-drugs-year-end-update.pdf>

<https://www.aarp.org/content/dam/aarp/ppi/2019/04/trends-in-retail-prices-of-generic-prescription-drugs-widely-used-by-older-americans.pdf>

<https://www.aarp.org/politics-society/advocacy/info-2019/drug-price-report-generics.html>

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Pharmaceutical Trends

Generic Drug Price Fixing?

The New York Times

Rapid Price Increases for Some Generic Drugs Catch Users by Surprise

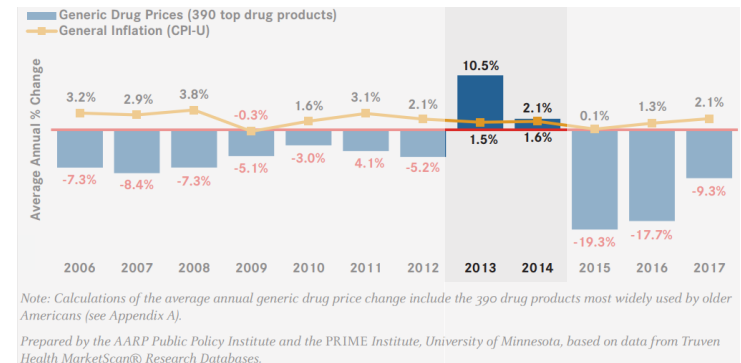
By Elisabeth Rosenthal July 8, 2014

- Investigation by CT's antitrust and fraud unit
- Coalition of 19 States filed first suit in December 2016
 - Industry generally denied wrong doing
 - 2 former executives of Heritage Pharmaceuticals reached settlements
- On May 9, 2019 the Coalition (now 44 states), led by CT and current Attorney General William Tong, filed another suit against 20 other pharmaceutical manufacturers
 - Conspiring to fix prices on more than 100 generic drugs. Some prices increased more than 2000%
- Fallout may pressure drug manufacturers to moderate prices and may nudge new pricing regulations. Such influences may help to moderate workers' compensation pharmaceutical costs

Sources:

<https://www.nytimes.com/2014/07/09/health/some-generic-drug-prices-are-soaring.html>
<https://ctmirror.org/2019/05/12/tong-ups-stakes-and-profile-of-drug-price-fixing-investigation/>

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Attorney General William Tong interviewed on "60 Minutes."

Pharmaceutical Trends



OPTUM TOTAL CARE MANAGEMENT SHAPING INDUSTRY TRENDS FOR WORKERS' COMPENSATION

A 2018 review of the prevailing industry influences impacting claim outcomes

AVERAGE PRESCRIPTION COST REACHES 10-YEAR LOW

The impact of the Optum pharmacy care services helped lead to good news for our payers as we saw an 8.3% decrease in average cost per claim. This is the highest decrease in average prescription cost we have reported in over 10 years.

Average prescription cost per claim

↓ **8.3%**

Average wholesale price

↑ **4.1%**

Lowest drug inflation in 10 years

Change in utilization

↓ **7.3%**

Evidence of decreasing trend in utilization of pharmaceuticals

Change in product and claim mix

↓ **5.1%**

Increased use of generics and lower cost medicine alternatives

- Our pharmacy results were derived from paid workers' compensation transactions covering 2017 and 2018
- More than 850,000 claims and about nine million prescriptions were analyzed
- The data includes in-network prescriptions captured through the application of our network enforcement solutions for our workers' compensation

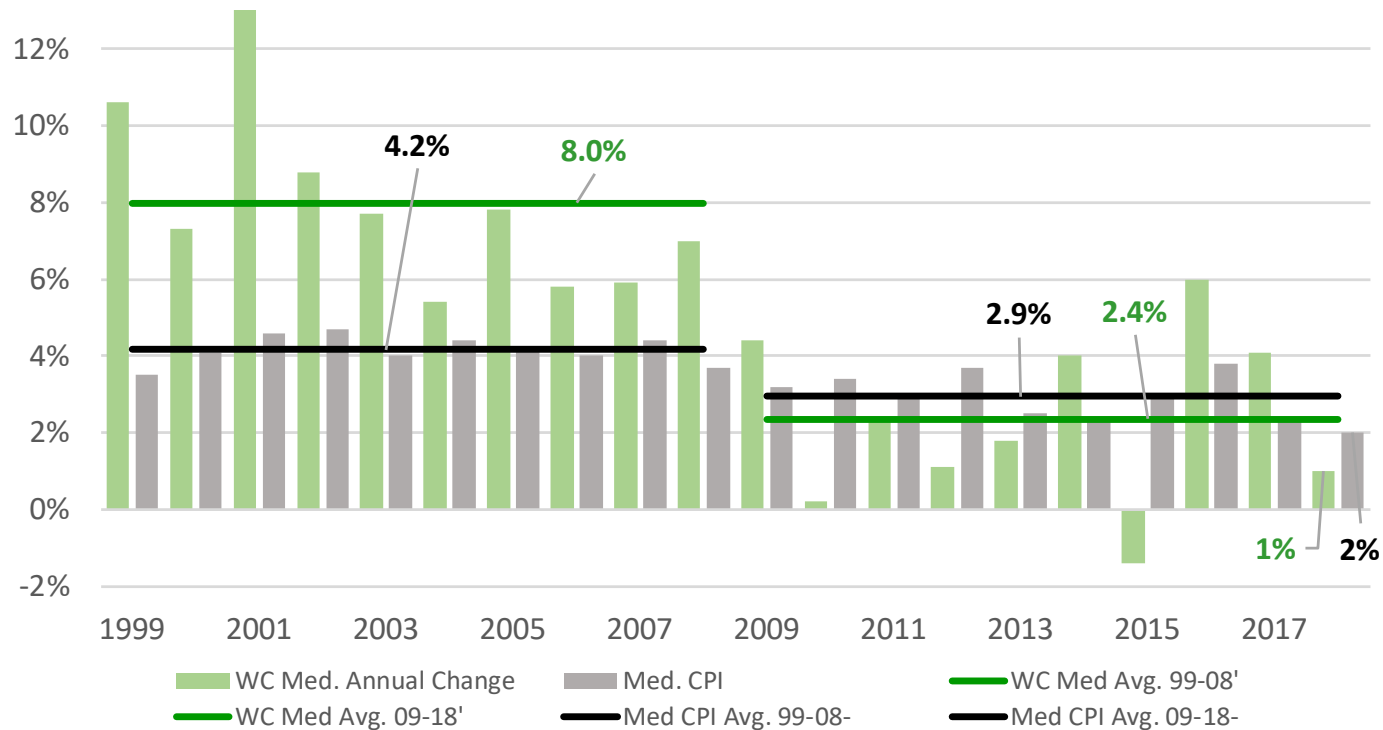
Source:

<http://workcompauto.optum.com/docs/default-source/Drug-Trend-Report-Files/optum-work-comp-auto-no-fault-2018-industry-trends-report.pdf?sfvrsn=2>

Pharmaceutical Trends

Medical Lost-Time Claim Severity vs. Medical CPI (1999-2018)

Medical lost-Time Claim Severity from 2019 and prior NCCI State of the Line Reports
 Medical CPI from Bureau of Labor Statistics



- In 6 of last 9 years WC medical lost-time (MLT) severity has been lower than medical CPI
- Most recent 10-yr avg. MLT severity of 2.4% is 20% lower than medical CPI avg. of 2.9%
- In preceding 10-yrs, avg. MLT severity was nearly 2 times higher than avg. medical CPI

Sources:

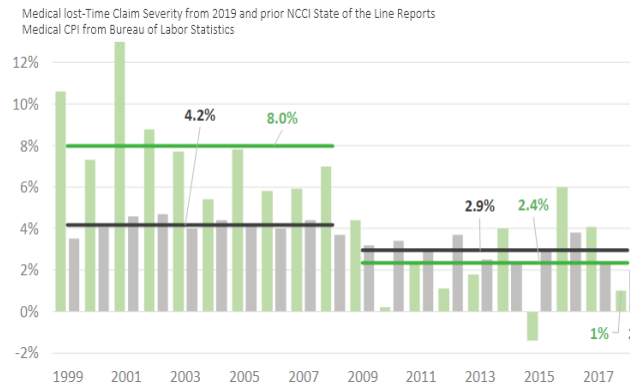
<https://www.ncci.com/Articles/Documents/AIS2019-SOTL-Presentation.pdf>

Workers' Compensation Emerging Medical Trends

Where is WC medical severity going?

- Provider/insurer continuation of initiatives to reduced opioid utilization/addiction and manage other prescriptions drugs
- Rising awareness of anti-depressants
- Federal/state initiatives on opioids and other pharmaceuticals, including price regulation
- Legalization and utilization of marijuana
- Potential impact from **\$15 minimum wage** (nudge effect on medical wage hierarchy)
- Leveraging technology**
 - Telemedicine (interim virtual touchpoints with health providers)
 - PDA applications (improve recovery and claim management)
 - Artificial intelligence (incident triage) and cognitive behavioral therapy
 - Wearables (recovery assistance, reduce severity of injury, faster return to work)

Medical Lost-Time Claim Severity vs. Medical CPI (1999-2018)



Woebot Automated Conversational Agent

HERE'S WHAT I CAN DO!

Woebot is built using a combination of natural language processing (NLP), therapeutic expertise, excellent writing, and sense of humor to create the experience of a therapeutic conversation

Clarix Reflex
Wearable sensor



Post knee surgery assistance device

Makusafe
Wearable sensor



Noise & temperature alert
Reduce risk and severity

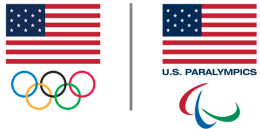
Cyberdyne
Exoskeleton



Assist with physical rehabilitation

Sources:

- <https://clarixreflex.com/>
- <https://makusafe.com/>
- <https://www.woebot.io/>
- <https://www.cyberdyne.jp/english/>



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