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Quarterly DATA REPORT
FOURTH QUARTER 2019

Overdose Fatalities at Worksites and Opioid Use in the Construction Industry

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Foreword

Construction workers are among the segments of the U.S. population opioids have hit hardest. Recent state-level studies of opioid overdose deaths show that construction workers are six to seven times more likely to die of an overdose than workers in other professions. The impact of opioids to our field led us to make it the focus of this Quarterly Data Report.

Section 1 examines a small subset of construction workers who died of an overdose: those who died on a worksite. These are figures for which we have national data, but there is not equivalent national data yet about how many of the 130 Americans who die each day from an opioid overdose work in construction.

This report also reveals other gaps in our understanding of the impact of opioids on construction workers. For example, Section 2 contains the surprising finding that the percentage of construction workers who used prescribed opioids, on average, is slightly lower than workers in all industries combined. Our assumption before conducting this analysis was the reverse, given that construction has one of the highest injury rates of all industries, particularly musculoskeletal disorders that often result in chronic pain and long-term pain management. One possible explanation for this counter-intuitive finding: construction workers are less likely to have health insurance than workers in other major industry sectors, and so they may be less likely to receive a prescription for opioids than workers in other sectors.

While the impact of opioids on the construction industry and its workers is becoming clearer, there remains much we need to learn to understand and respond to the damage they are causing. We look forward to receiving your feedback on this important report and working collectively to minimize the impact opioids are having on workers, their families, the industry, and society overall.

Chris Trahan Cain
Executive Director
CPWR

KEY FINDINGS

- Unintentional overdose fatalities in the construction industry jumped from 7 deaths in 2011 to 65 deaths in 2018, a nine-fold increase in eight years.
- Between 2011 and 2017, one in four (25.3%) construction workers with work-related injuries used prescribed opioid pain relievers, compared to approximately one in ten (8.9%) of their counterparts who were not injured.
- Older construction workers were more likely to use prescribed opioid pain relievers, while younger construction workers were more likely to use illicit drugs.
- Uninsured construction workers were less likely to use prescribed opioid pain relievers, but more likely to use illicit drugs than their insured counterparts.

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Fourth Quarter 2019

Introduction

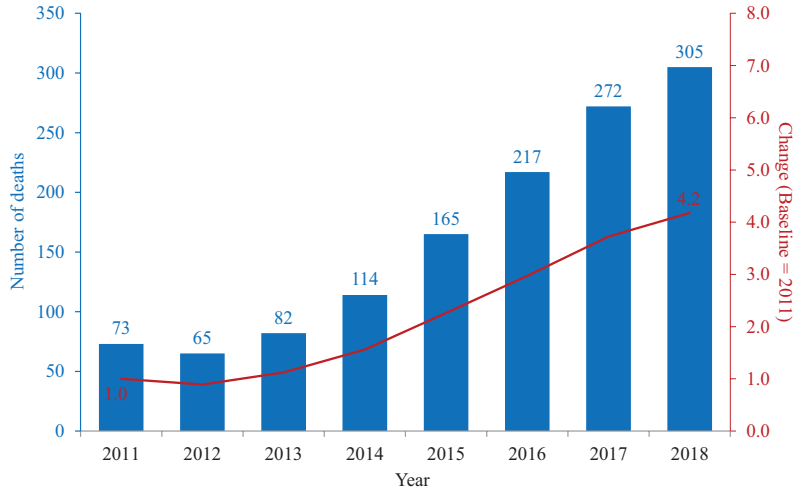
Overdose deaths and opioid use have risen to epidemic levels in the United States. Researchers have found that the risk of overdose fatality and opioid use was higher in construction than in other industries (Dissell, 2017; MDPH, 2018 Tiesman et al., 2019; MDPH, 2019; Thumula et al., 2017; Asfaw et al., 2019). In response to this emerging issue, North America's Building Trades Unions (NABTU) established a Task Force in January 2018. CPWR has supported this effort by compiling existing and developing new resources for the construction industry (CPWR, 2019). NIOSH has also joined the efforts to address this hazard, and developed a variety of online resources to support workers and employers battling the crisis (NIOSH, 2019a, 2019b). To better understand this increasing epidemic in construction and provide insight for safety and health interventions, this Quarterly Data Report examines the trends of overdose fatalities at workplaces, prevalence of prescribed opioid use and drug abuse, and the association of work-related injuries with prescription opioid use in construction. The data used for this report were obtained from three large, nationally representative datasets, including the Census of Fatal Occupational Injuries (CFOI), Medical Expenditure Panel Survey (MEPS), and the National Survey of Drug Use and Health (NSDUH). Due to the complex measures used in this report, users should review the accompanying notes and text with the charts, as well as the definitions included.

Fourth Quarter 2019

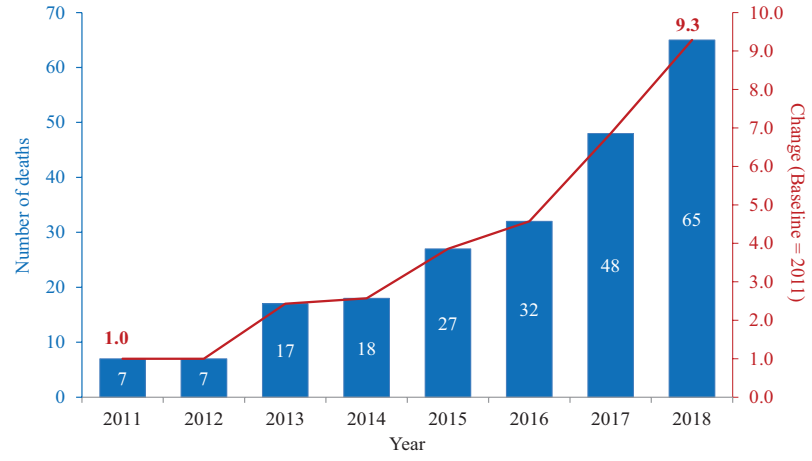
SECTION 1: Overdose Fatalities at Workplaces (CFOI)

Unintentional overdose fatalities[1] at workplaces in all industries increased more than 4 times from 73 deaths in 2011 to 305 deaths in 2018 (chart 1). In 2018, 65 construction workers died at work due to unintentional overdose, about 9 times such deaths in 2011 (7 deaths), and more than double the growth change in all industries (chart 2).

1. Number of unintentional overdose fatalities, all industries, 2011-2018



2. Number of unintentional overdose fatalities, construction industry, 2011-2018

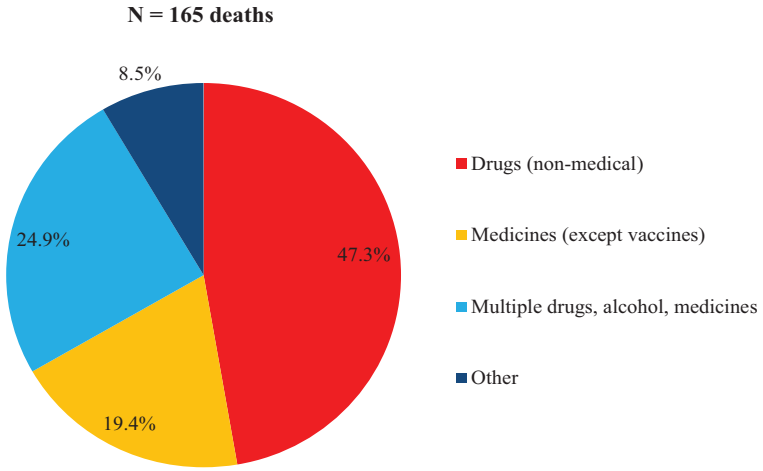


[1] "Unintentional overdose fatalities" were defined using BLS OIICS codes for event or exposure including unintentional overdose non-medical and accidental overdose from medication and medical injection.
Source: Fatal injury data in 2011-2017 were generated by the CPWR Data Center with restricted access to the BLS CFOI micro data. Fatal injury data in 2018 were obtained from the following BLS website: https://www.bls.gov/iif/. Chart 2 includes fatalities in the private construction sector only. The views expressed here do not necessarily reflect the views of the BLS.

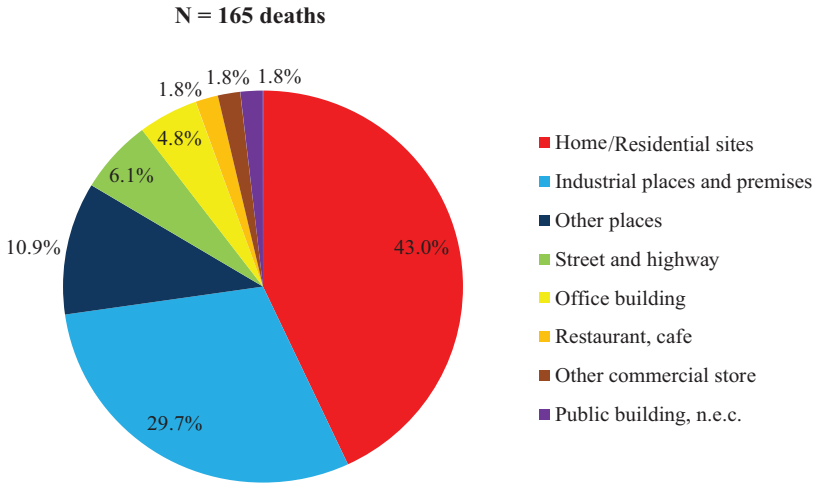
Section 1: Overdose Fatalities at Workplaces (CFOI) Fourth Quarter 2019

Nearly half of the *overdose fatalities*[2] were caused by non-medical drugs (47.3%), and the rest were from multiple drugs, alcohol, and medicines (24.9%), medical drugs (19.4%), and other substances (chart 3). By type of worksite, the majority of construction worker overdose fatalities at workplaces occurred at *home*[3] or residential sites (43.0%) followed by industrial places and premises (29.7%; chart 4).

3. Types of overdose fatalities in construction, sum of 2011-2017



4. Distribution of overdose fatalities in construction, by location, sum of 2011-2017

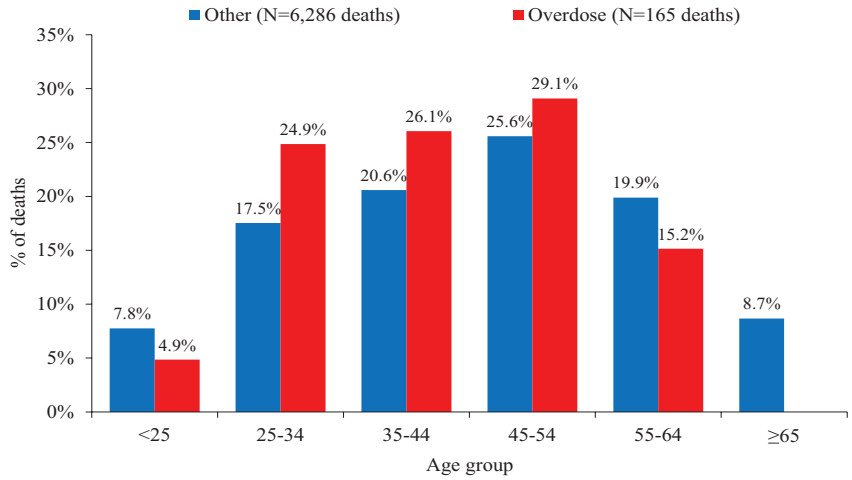


[2]"Overdose fatalities include intentional (small in number) and unintentional overdose deaths.
[3]"Home" – A major location category at workplaces including apartment, farm house, residential construction site, and home unspecified or not elsewhere classified at worksites.
Source: Fatal injury data were generated by the CPWR Data Center with restricted access to the BLS CFOI micro data. The views expressed here do not necessarily reflect the views of the BLS.

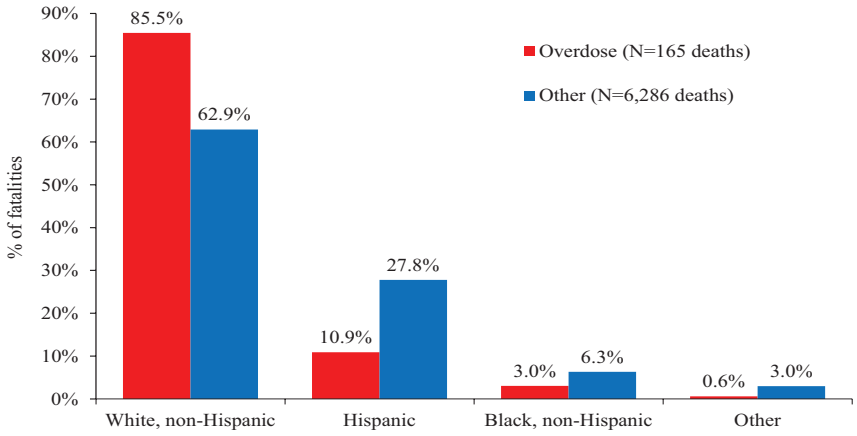
In construction, younger and older workers had a higher risk of non-overdose fatalities, but overdose fatalities were more likely to be found among workers aged 25-54 years. No overdose deaths were reported among workers over 65 years of age in this study period (chart 5).

Although white, non-Hispanic construction workers accounted for 62.9% of the fatalities by other causes, 85.5% of overdose fatalities occurred among this worker group (chart 6). About 10.9% of overdose fatalities were found among Hispanic workers, which was much lower than their share of fatalities by other causes (27.8%).

5. Distribution of fatalities in construction, by age group, overdose versus other causes, sum of 2011-2017



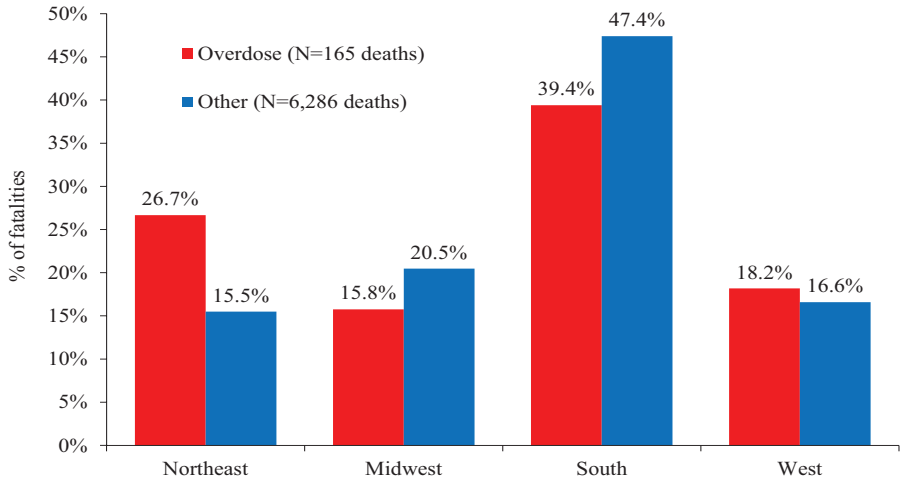
6. Distribution of fatalities in construction, by race and ethnicity, overdose versus other causes, sum of 2011-2017



Source: Fatal injury data were generated by the CPWR Data Center with restricted access to the BLS CFOI micro data. The views expressed here do not necessarily reflect the views of the BLS.

Overdose fatalities differed by region. While the South had the highest proportion of fatalities by both overdoses and other causes, overdose fatalities were disproportionally high in the Northeast region (chart 7).[4] About 16% (15.5%) of fatalities by other causes occurred in the Northeast, but 26.7% of overdose fatalities were in this region.

7. Distribution of fatalities in construction, by region, overdose versus other causes, sum of 2011-2017

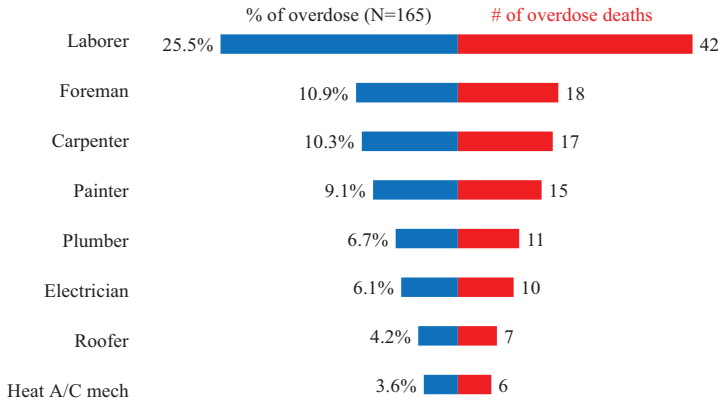


[4] The Northeast region includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

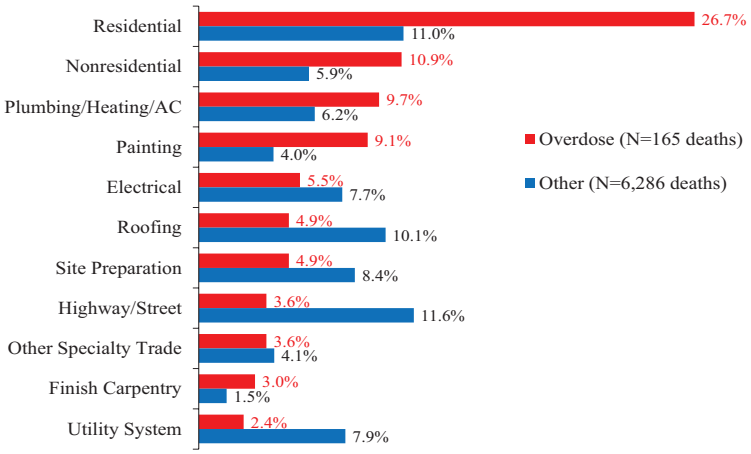
Source: Fatal injury data were generated by the CPWR Data Center with restricted access to the BLS CFOI micro data. The views expressed here do not necessarily reflect the views of the BLS.

By occupation, 42 overdose fatalities in construction occurred among construction laborers – the largest occupation in construction, accounting for one in four (25.5%) overdose fatalities in this industry. Other occupations with the highest numbers were foremen (10.9%), carpenters (10.3%), and painters (9.1%; chart 8). By industry subsector, 26.7% of overdose fatalities occurred in residential construction, the highest among all construction subsectors (chart 9).

8. Number and percentage of overdose fatalities in construction, selected occupations, sum of 2011-2017



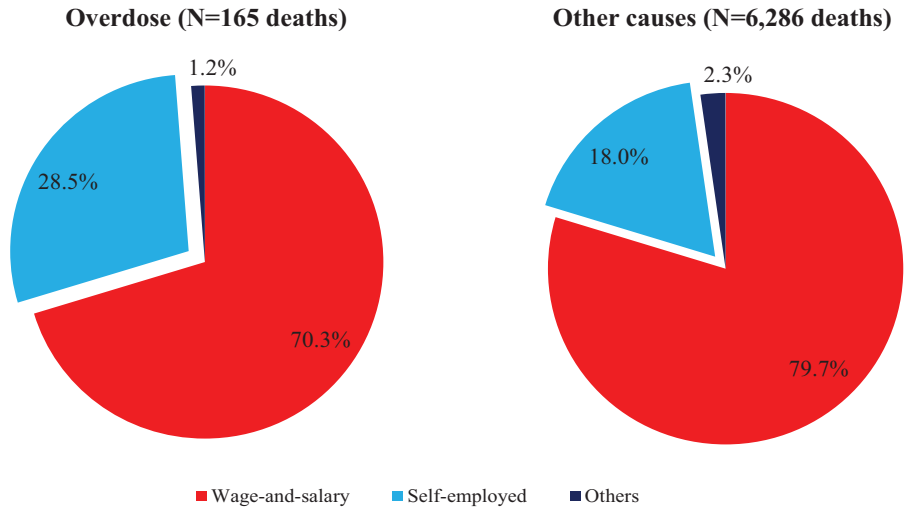
9. Distribution of fatalities in construction, selected subsectors, overdose versus other causes, sum of 2011-2017



Source: Fatal injury data were generated by the CPWR Data Center with restricted access to the BLS CFOI micro data. The views expressed here do not necessarily reflect the views of the BLS

Additionally, 28.5% of overdose fatalities were among construction workers who were self-employed, which was disproportionally high given that they only accounted for 18.0% of fatalities by other causes (chart 10).

10. Distribution of fatalities in construction, by employee status, overdose versus other causes, sum of 2011-2017



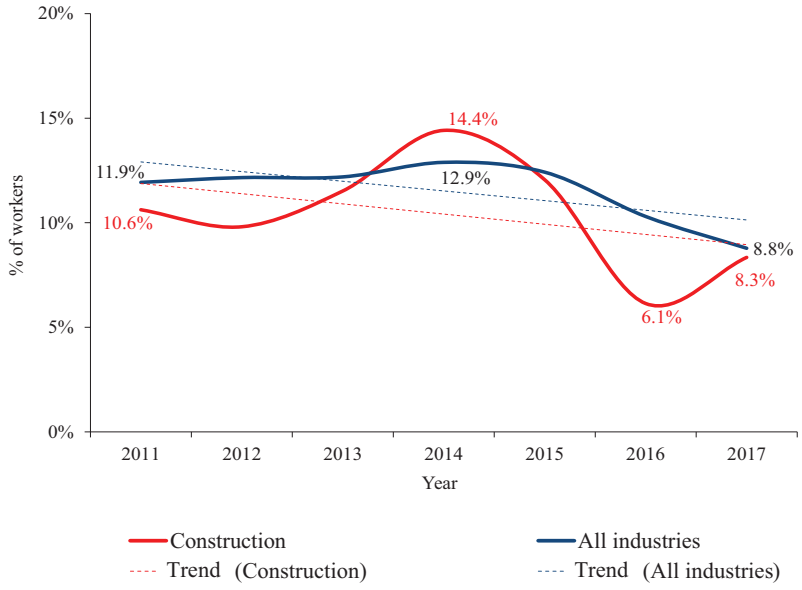
Note: "Others" include work for family business, volunteer, and type of employment not reported.
Source: Fatal injury data were generated by the CPWR Data Center with restricted access to the BLS CFOI micro data. The views expressed here do not necessarily reflect the views of the BLS.

Fourth Quarter 2019

SECTION 2: Prescribed Opioid Use[5] (MEPS)

From 2011 through 2017, the percentage of opioid analgesic use among *U.S. workers*[6] reached the highest level of 12.9% in 2014, and then decreased to 8.8% in 2017. The percentage of opioid analgesic use among *construction workers*[7] fluctuated year to year, ranging from the highest 14.4% in 2014, to the lowest 6.1% in 2016 (chart 11). (The relatively small survey sample in construction could have contributed to the large variations across the years.)

11. Prescribed opioid use, construction versus all industries, 2011-2017

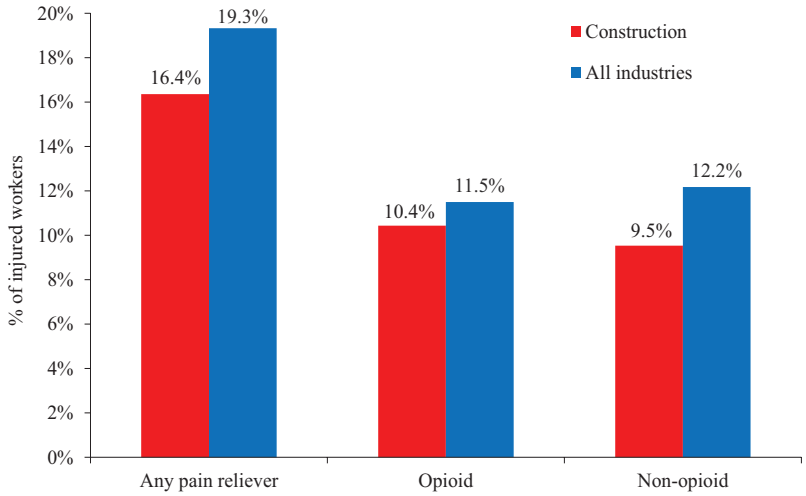


[5]Outpatient prescribed opioid analgesics purchased (1 or more prescription fills during year) by respondents including narcotic analgesics and narcotic analgesic combinations. A list of drug names in the opioid analgesic category is attached as Appendix I.
[6]Respondents who were 16 years or older and reported they were employed at least in one of the three rounds in the survey year.
[7]Respondents who reported working in the construction industry at least in one of the three rounds in the survey year, regardless of occupations.
Source: 2011-2017 Medical Expenditure Panel Survey. Calculations by the CPWR Data Center.

Section 2: Prescribed Opioid Use (MEPS) Fourth Quarter 2019

On average, about 10.4% of construction workers used prescribed opioid analgesics between 2011 and 2017, slightly lower than all industries combined (chart 12). In addition, less than 10% of construction workers used *non-opioid analgesics*.[8] Together, about 16.4% of construction workers used any prescribed pain reliever (opioid or non-opioid) compared to 19.3% of workers in all industries during this time period.

12. Prescribed pain reliever use, construction versus all industries, average of 2011-2017

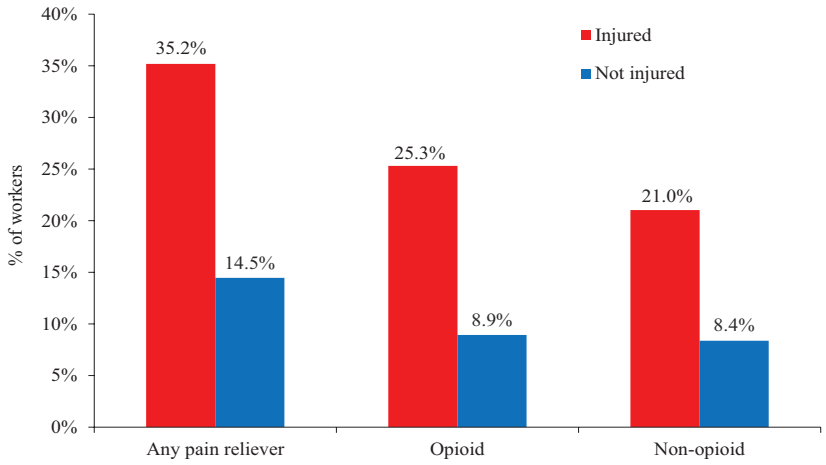


[8]Outpatient prescribed non-opioid analgesics purchased by respondents, including non-steroidal anti-inflammatory agents, salicylates, topical non-steroidal anti-inflammatories, miscellaneous analgesics skeletal muscle relaxants, topical anesthetics, and analgesic combinations. A list of drug names in this category is attached as Appendix II.
Source: 2011-2017 Medical Expenditure Panel Survey. Calculations by the CPWR Data Center.

Section 2: Prescribed Opioid Use (MEPS) Fourth Quarter 2019

Construction workers suffering *work-related injuries*[9] were more likely to use pain relievers than those without injuries (chart 13). About 25% of construction workers with work-related injuries used prescribed opioids, more than double (8.9%) use among their non-injured counterparts. Injured construction workers were also more likely to use non-opioid analgesics than those without injury. Overall, more than one-third (35.2%) of injured construction workers used opioid or non-opioid pain relievers, about 2.4 times more than construction workers without work-related injuries (14.5%).

13. Prescribed pain reliever use among construction workers, by work-related injury, average of 2011-2017

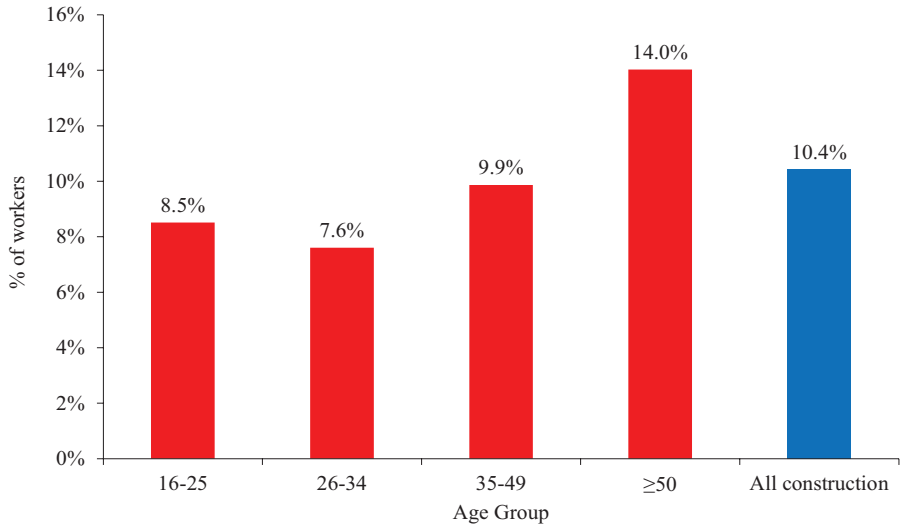


[9] Medical condition resulted from an injury, and the injury occurred at work.
Source: 2011-2017 Medical Expenditure Panel Survey. Calculations by the CPWR Data Center.

Section 2: Prescribed Opioid Use (MEPS) Fourth Quarter 2019

Prescribed opioid use was higher among older construction workers than younger workers. About 14% of workers 50 years and older used prescribed opioids, nearly double the 7.6% for those aged 26-34 years (chart 14). High prevalence of musculoskeletal disorders and chronic conditions among older construction workers (CPWR, 2019) could contribute to the high prevalence of prescribed opioid use.

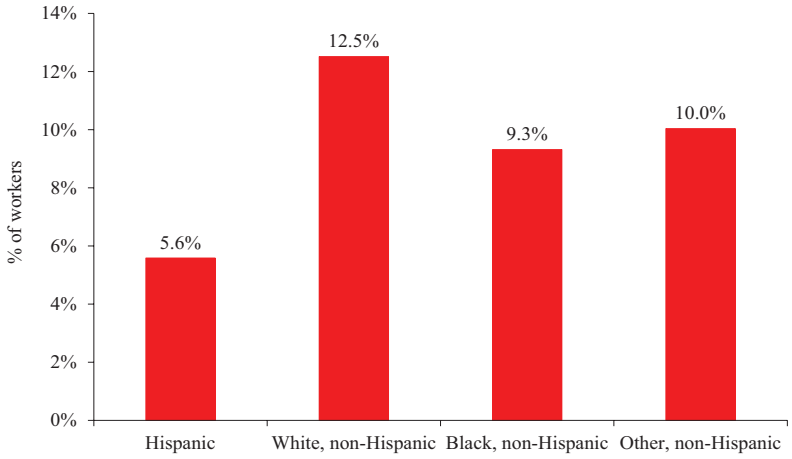
14. Prescribed opioid use among construction workers, by age group, average of 2011-2017



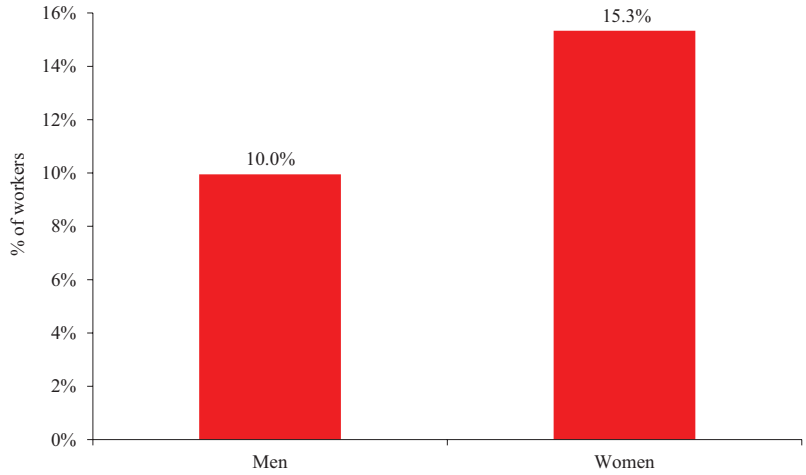
Source: 2011-2017 Medical Expenditure Panel Survey. Calculations by the CPWR Data Center.

Regarding race and ethnicity, 12.5% of white, non-Hispanic construction workers used prescription opioids, about 2.2 times the percentage (5.6%) among Hispanic construction workers (chart 15). Several factors could contribute to this, including differences in age and health insurance coverage between these populations (CPWR, 2018). Additionally, women construction workers were 53% more likely to use prescribed opioids (15.3%) than their male counterparts (10%; chart 16). However, less than 10% of construction workers are women (CPWR, 2018).

15. Prescribed opioid use among construction workers, by race/ethnicity, average of 2011-2017



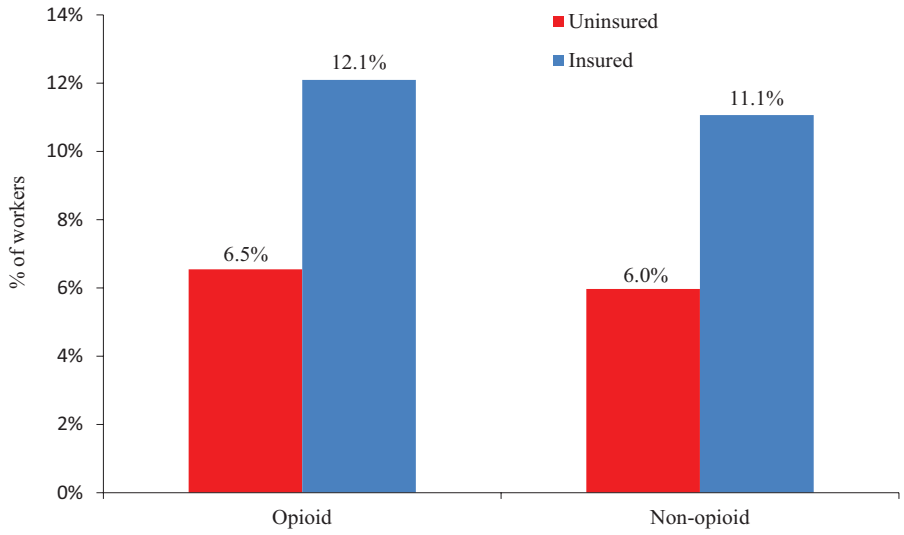
16. Prescribed opioid use among construction workers, by gender, average of 2011-2017



Source: 2011-2017 Medical Expenditure Panel Survey. Calculations by the CPWR Data Center.

Prescribed opioid analgesic use varied by health insurance status. Construction workers who lacked health insurance coverage were much less likely to use prescribed analgesics than those with health insurance. Only 6.5% of uninsured construction workers used prescription opioids, about half that of their insured counterparts (chart 17). Construction workers are more likely to lack health insurance coverage than most major industries (CPWR, 2018).

17. Prescribed pain reliever use among construction workers, by health insurance coverage, average of 2011-2017



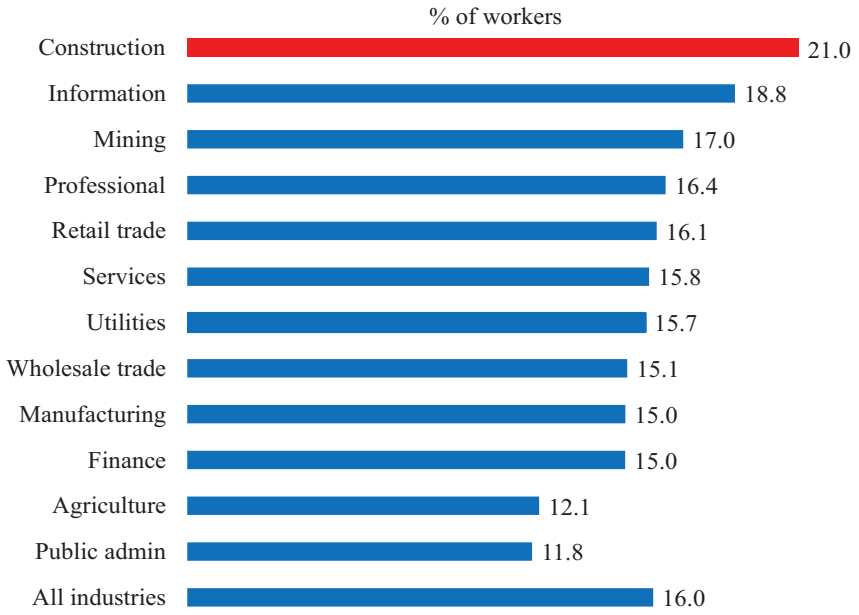
Source: 2011-2017 Medical Expenditure Panel Survey. Calculations by the CPWR Data Center.

Fourth Quarter 2019

SECTION 3: Self-Reported Illicit Drug Use (NSDUH)

Unlike the prescribed opioid use described in Section 2, self-reported illicit drug use has different patterns and trends. Between 2011 and 2014,[10] about 21% of construction workers reported *illicit opioid use in their lifetime*,[11] the highest among the major industry sectors, and more than 30% higher than all industries on average (16%; chart 18).

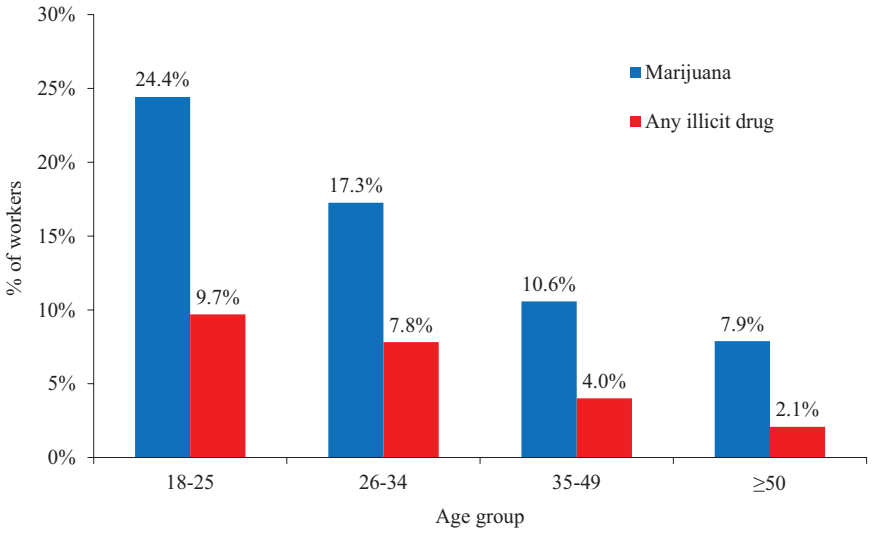
18. Illicit opioid use during lifetime, by major industry, average of 2011-2014



[10]Starting in 2015, the NSDUH stopped collecting industry and occupation information.
[11]Based on respondents' answers to multiple "yes/no" questions about the lifetime use or non-use of specific drugs within that category (see the opioid drug list in Appendix III).
Source: 2011-2014 National Survey on Drug Use and Health. Calculations by the CPWR Data Center.

In general, younger construction workers were more likely to use illicit drugs than older workers. Almost one in four workers aged 18-25 years used marijuana (measured seperately from other illicit drugs) in the prior month when the survey was conducted, triple of those aged 50 years and older (7.9%; chart 19). Moreover, nearly one in ten (9.7%) construction workers 25 years and younger used *any illicit drugs,*[12] 24% higher than those aged 26-34 years, more than double of those aged 35-49 years, and nearly five times of those aged 50 years and older.

19. Percentage of drug use in prior month among construction workers, by age group, average of 2011-2014

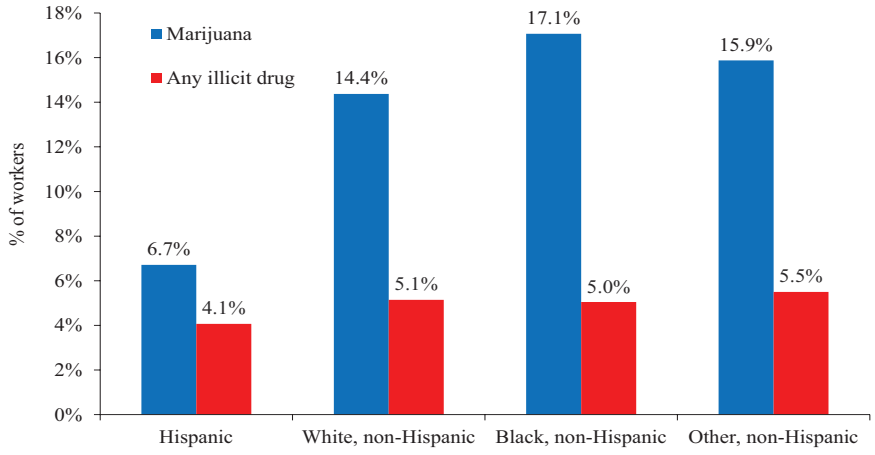


[12]Any illicit drug use in the prior month refers to the respondents who used cocaine, hallucinogens, heroin, inhalants, sedatives, tranquilizers, stimulants, and analgesics (excluding marijuana) within the past 30 days when the survey was conducted. Marijuana was measured seperately from other illicit drugs. The full drug list can be found in this document online: https://www.samhsa.gov/data/report/2014-nsduh-mrb-questionnaire.

Source: 2011-2014 National Survey on Drug Use and Health. Calculations by the CPWR Data Center.

Similar to prescribed opioid use findings, Hispanic construction workers had a lower percentage of prior month marijuana use and illicit drug use than workers in other racial or ethnic categories, at 6.7% and 4.1%, respectively (chart 20). In addition, black, non-Hispanic workers had the highest percentage of marijuana use (17.1%).

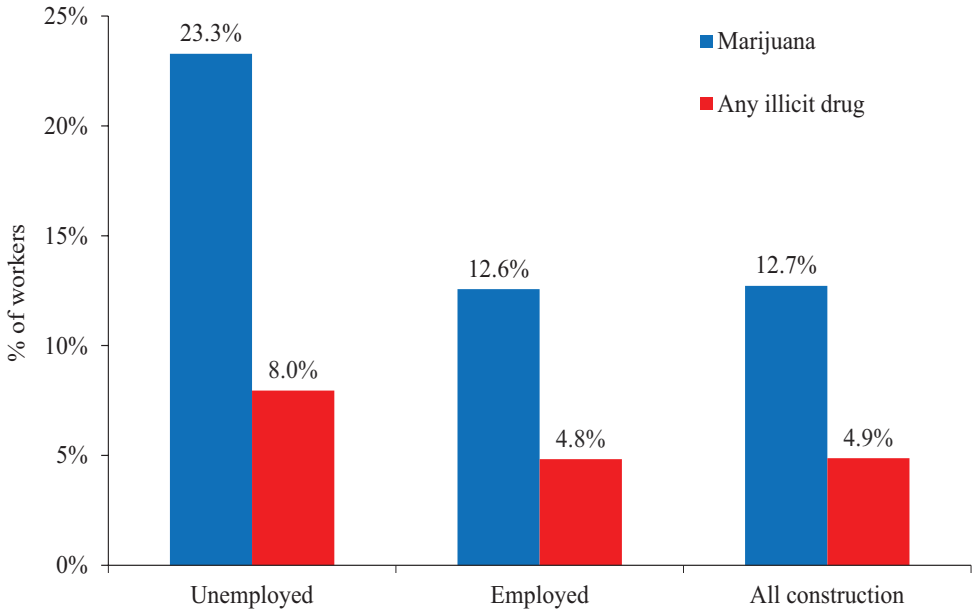
20. Percentage of drug use in prior month among construction workers, by race/ethnicity, average of 2011-2014



Source: 2011-2014 National Survey on Drug Use and Health. Calculations by the CPWR Data Center.

Drug use was associated with employment status. About 23.3% of *unemployed*[13] construction workers used marijuana and 8% used illicit drugs in the prior month (chart 21); both figures are nearly double the percentages among *employed*[14] construction workers. Overall, 12.7% of construction workers used marijuana and 4.9% used illicit drugs in the prior month when the survey was conducted.

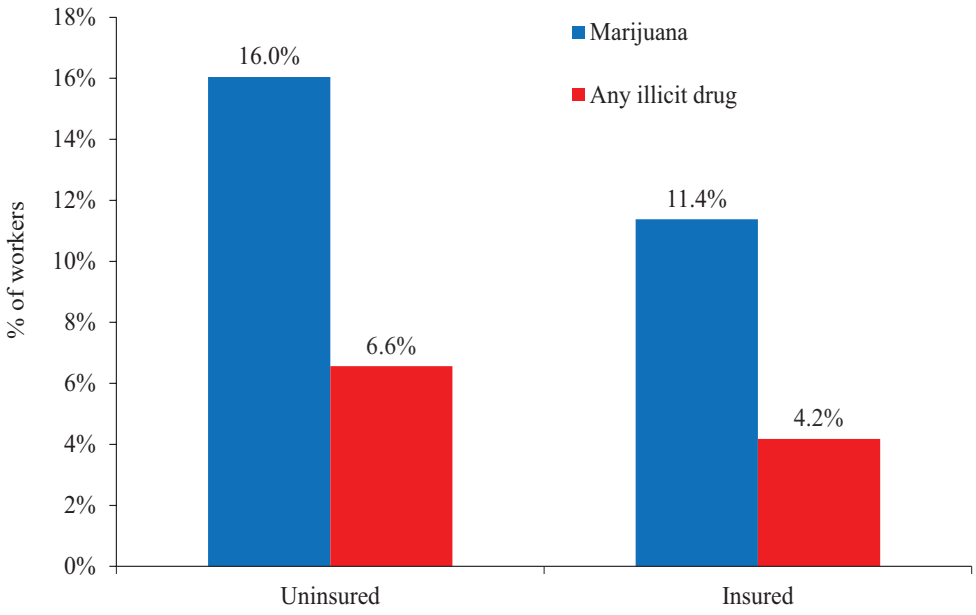
21. Percentage of drug use in prior month among construction workers, by employment status, average of 2011-2014



[13]"Unemployed" refers to the respondents who reported being "unemployed/on layoff, looking for work" in the past week, or those that did not work in the past 12 months when the survey was conducted.
[14]"Employed" refers to the respondents who reported working at a full-time or part-time job in the past week, or those that had a job but did not work in the past week.
Source: 2011-2014 National Survey on Drug Use and Health. Calculations by the CPWR Data Center.

Drug use was affected by health insurance coverage. About 16% of construction workers who lacked health insurance used marijuana in the prior month, 40% higher than those who were insured (chart 22). Moreover, 6.6% of uninsured construction workers used any illicit drug, 57% higher than their insured counterparts.

22. Percentage of drug use in prior month among construction workers, by health insurance coverage, average of 2011-2014



Source: 2011-2014 National Survey on Drug Use and Health. Calculations by the CPWR Data Center.

Conclusion/Discussion

Unintentional overdose fatalities on construction jobsites have increased dramatically in recent years. Demographically, overdose fatalities were disproportionally high among workers who were white, non-Hispanic, and in the Northeast. Overdose fatalities also varied by employment characteristics in which they were higher among construction laborers, workers in residential construction, and those who were self-employed.

The findings suggest that the patterns of prescribed opioid use and self-reported illicit drug use were quite different, but both were attributed to worker demographics, employment status, and insurance coverage. In particular, construction workers suffering work-related injuries were more than twice as likely to use prescribed opioids or non-opioid analgesics as those who were not injured. These findings are consistent with previous research showing the correlation between work-related injuries and analgesic use among construction workers (Harduar Morano et al., 2018; MDPH, 2018).

Although prescribed opioid use was somewhat lower among construction workers than all industries combined, illicit opioid use was higher in this industry than other major industry sectors. These contradictory findings may be due to lower health insurance coverage rates in construction and the highly addictive nature of opioids (CDC, 2017).

This report only includes deaths on job sites, which are a very small fraction of the overall overdose deaths. Intervention strategies to prevent opioid overdose deaths should include improving worker safety and health, reducing occupational injuries and illnesses, managing pain effectively, providing worker and employer education, ensuring effective treatment of substance use disorders, and supporting workers in recovery.

Acknowledgements

The authors greatly appreciate the contribution of Dr. Rosemary K. Sokas for her review and constructive comments on the drug names and categories of opioid and non-opioid pain relievers or analgesics.

Data Sources:

- U.S. Bureau of Labor Statistics, 2011-2017 Census of Fatal Occupational Injures (CFOI)
- U.S. Department of Health & Human Services, Agency for Healthcare Research and Quality, 2011-2017 Medical Expenditure Panel Survey (MEPS)
- U.S. Department of Health & Human Services, Substance Abuse and Mental Health Services Administration, 2011-2014 National Survey on Drug Use and Health (NSDUH)

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Fourth Quarter 2019

Appendix I

Prescription Drug Name - Opioid Pain Relievers (MEPS)	
Acetaminophen Codeine	Hydrocone-Acetaminophen
Acetaminophen-Cod #4	Hydromorphon
Aceteminophen-Codeine #3	Hysingla Er
Apap/Codeine	Morphine
Bupren/Nalox	Morphine Sul
Codeine / Acetaminophen	Morphine Sulfate
Codeine Phos/Acetaminophen	Narcotic Analgesic Combinations
Codeine Sulfate	Narcotic Analgesics
Endocet	Norco
Fentanyl	Norco Hydrocodone/Apap
Fentora	Oxycod/Apap
Hydroco/Apap	Oxycodone
Hydrocodon-Apap	Oxycodone Hcl
Hydrocodone / Acetaminophen	Oxycodone Hcl Acetominophen
Hydrocodone 10 / Apap	Oxycodone Hcl Tab 5 Mg
Hydrocodone 10/ Apap	Oxycodone Hcl/Acetaminophen 5 Mg-325Mg
Hydrocodone Aceraminophen	Oxycodone W/ Acetaminophen Tab 5 325 Mg
Hydrocodone Acetaminophen	Oxycodone-Acetaminophen
Hydrocodone Acetaminophen Tab 5 325 Mg	Oxycodone/Acetaminophen
Hydrocodone Acetaminophen Tab 5 500 Mg	Oxycodone/Apap
Hydrocodone Apap	Oxycoldone/Acet
Hydrocodone Bit / Acetaminophen	Oxycontin
Hydrocodone Bit/Acetaminophen	Roxicodone
Hydrocodone-Ace	Suboxone
Hydrocodone-Acetaminophen	Tramadol
Hydrocodone-Actaminophen	Tramadol Hcl
Hydrocodone/ Acetaminophen	Tramadol Hcl Tab 50 Mg
Hydrocodone/Acetaminophen	Vicodin
Hydrocodone/Acetaminophne	Vicodin Es
Hydrocodone/Apap	Xtampza Er
Hydrocodone/Apaps	

Fourth Quarter 2019

Appendix II

Prescription Drug Name - Non-Opioid Pain Relievers (MEPS)	
Acephen	Fenoprofen
Acetamin	Fioricet 50 300 40
Acetaminophen	Flector
Acetaminophen Cap 500 Mg	Flurbiprofen
Acetaminophen Elixir	Ibruprofen
Acetaminophen Liquid 160 Mg/5Ml	Ibu
Acetaminophen Mcd	Ibuprofen
Acetaminophen Susp 160 Mg/5Ml	Ibuprofen Susp 100 Mg/5Ml
Acetaminophen Tab 325 Mg	Ibuprofen Susp 40 Mg/Ml
Acetaminophen Tab 500 Mg	Ibuprofen Tab 200 Mg
Acetaminophen Tab Er 650 Mg	Ibuprofen Tab 400 Mg
Acetaminophn	Ibuprofen Tab 600 Mg
Amrix	Ibuprofen Tab 800 Mg
Asa Buffered (Ca Carb Mg Carb Mg Ox) Tab 325 Mg	Ibuprophen
Aspir-81	Indomethacin
Aspirin	Ketoprofen
Aspirin Acetaminophen Caffeine Tab 250 250 65 Mg	Ketorolac
Aspirin Adlt	Ketorolac Trometh
Aspirin Chew	Ketorolac Tromethamine
Aspirin Chew Tab 81 Mg	Kpbabucdg
Aspirin Ec	Low Dose Aspirin Ec
Aspirin Ec Low Dose	Mapap
Aspirin Er	Meloxicam
Aspirin Low	Meloxican
Aspirin Tab 325 Mg	Metaxalone
Aspirin Tab 81 Mg	Methocarbam
Aspirin Tab Delayed Release 325 Mg	Methocarbamol
Aspirin Tab Delayed Release 81 Mg	Nabumeone
Asprin E.C.	Nabumetone
Baclofen	Naproxen
But/Apap/Caf	Naproxen Dr
Cambia	Naproxen Sod
Carisoprodol	Naproxen Sodium Tab 220 Mg
Cetirizine Pseudoephedrine Tab Er 12Hr 5 120 Mg	Naproxen Tab 500 Mg
Child Asa	Oxaprozin
Chld Silapap	Pennsaid
Cp Aceteminophen	Piroxicam
Cyclobenzapr	Q-Pap
Cyclobenzaprine	Skeletal Muscle Relaxants

Fourth Quarter 2019

Appendix III

Opioid Drug Name (NSDUH)	
Actiq, Fentanyl, Duragesic, Sublimaze	Morphine
Buprenorphine, Subutex	Morphine, Roxanol
Codeine	Nucynta
Codeine, Phenaphen With	Opium
Darvocet, Darvon, Tylenol W/Codeine	Oxycodone Or Unspecified Oxycodone Products
Phenaphen With Codeine	Oxycodone Products
Phenergan W/Codeine, Promethazine W/Codeine	Oxycontin
Promethazine Vc With Codeine	Percocet, Percodan, Tylox
Tylenol With Codeine, Tylenol 3, Tylenol 4	Roxicet
Propoxyphene	Roxicodone
Propoxyphene/Codeine Products	Roxiprin
Darvocet	Oxymorphone
Darvon	Stadol (Butorphanol)
Cough Medicine With Codeine	Talwin
Demerol, Meperidine	Talwin Nx
Demerol	Talacen
Dihydrocodeine	Tramadol
Dilaudid, Hydromorphone	Tramadol Products
Dilaudid	Ultram
Hydrocodone	Heroin
Hydrocodone Products	Apokyn, Apomorphine, Ixense, Spontane, Uprima
Vicodin, Lortab, Lorcet, Anexsia, Co-Gesic	Suboxone
Methadone	Tramadol
Methadone, Dolophine	

Fourth Quarter 2019

About the CPWR Data Center

The CPWR Data Center is part of CPWR – The Center for Construction Research and Training. CPWR is a 501(c)(3) nonprofit research and training institution created by North America's Building Trades Unions, and serves as its research arm. CPWR has focused on construction safety and health research since 1990. The Quarterly Data Reports – a series of publications analyzing construction-related data, is part of our ongoing surveillance project funded by the National Institute for Occupational Safety and Health (NIOSH).

Please visit CPWR's other resources to help reduce construction safety and health hazards:

Construction Solutions http://www.cpwrconstructionsolutions.org/
Construction Solutions ROI Calculator http://www.safecalc.org/
Exposure Control Database http://ecd.cpwrconstructionsolutions.org/
The Electronic Library of Construction OSH http://www.elcosh.org/index.php
Falls Campaign http://stopconstructionfalls.com/
Hand Safety http://choosehandsafety.org/
Safety and Health Network https://safeconstructionnetwork.org/
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