

Health, Healthcare, and Medical Expenditures among Construction Workers

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Construction workers are exposed to numerous hazards in the workplace that can not only lead to fatal and nonfatal injuries, but also cause chronic conditions and other adverse health effects. Understanding overall health status of construction workers, accessibility to care, and cost containment, and being alert to emerging issues that can affect these elements, will help ensure that workers are afforded accessible, high quality, and cost-effective care. Moreover, identifying and measuring health problems and the associated costs can motivate construction workers and the public to take these problems more seriously, and help policy makers to formulate health policies and allocate medical resources efficiently. Therefore, this Quarterly Data Report provides updated information on health status, healthcare utilization, and medical expenditures among construction workers by analyzing the Medical Expenditure Panel Survey (MEPS). The MEPS is a large nationally representative household survey conducted by the Agency for Health Care Research and Quality and the National Center for Health Statistics. In addition to employment and demographic data, the MEPS collects detailed information on health, healthcare, insurance coverage, medical expenditures, sources of payment, and other factors for the U.S. civilian non-institution population. This report focused on construction workers, and compared them to workers in all industries and major industry sectors for selected measures. For most analyses, the MEPS data between 2012 and 2014 were pooled together for reliable estimates. Data prior to 2012 were used for one historical comparison. Only employed respondents were included in the analysis. Thus, the numbers in this report may differ from reports on the general population (e.g., including those who were not in labor force) that use the same data source.



KEY FINDINGS

- Between 2012 and 2014, more than 30% of construction workers had no health insurance, while the uninsured accounted for 14% in all industries.
- Nearly six in ten (59%) insured construction workers had a routine medical checkup in the previous year, whereas for uninsured workers only 22% had done the same.
- Both self-reported physical and mental health worsened after workers reached age 45.
- About half of construction workers reported having at least one doctor-diagnosed health condition, and nearly three out of four workers were either overweight or obese.
- Medical expenditures among construction workers who reported fair or poor physical health were more than two and a half times as high (\$4,619 vs \$1,785) as among those who reported excellent health.

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Image: Expat & Offshore

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SECTION 1: CHARACTERISTICS OF CONSTRUCTION WORKERS

Annually, about 9.4 million workers were employed in the construction industry from 2012 to 2014, accounting for 6.3% of the U.S. workforce (Chart 1). Although the average age of workers in construction was similar to that for all industries, the oldest and youngest workers were less represented in construction than in the overall workforce. For example, 21.3% of construction workers were 55 or older, compared to 23.5% of workers in all industries. Construction workers were more likely to be male (91.6% versus 52.4%) and Hispanic (24.4% versus 15.5%) than the general U.S. workforce. In addition, the proportion of black, non-Hispanic workers in construction (5.1%) was less than half that of all industries (10.8%).

1. Worker characteristics, construction versus all industries, 2012-2014 average

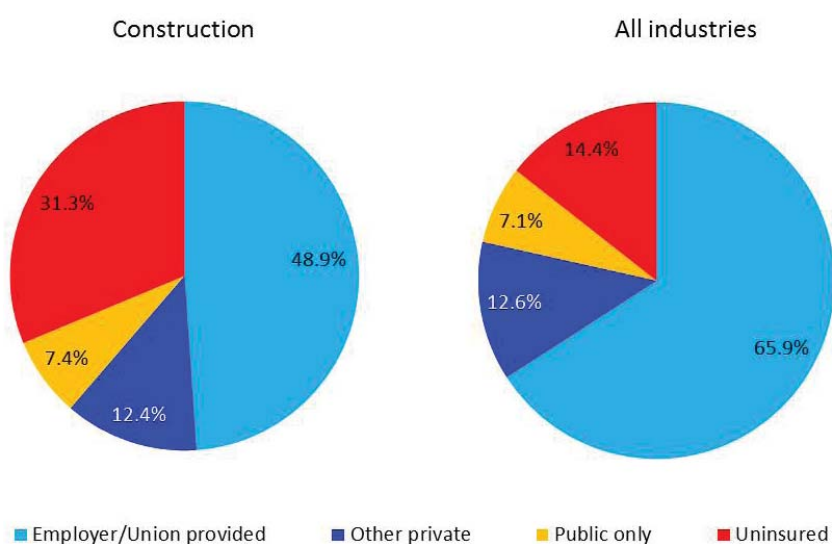
	Construction	All Industries
All Employment	9.4 million	149.1 million
Age		
Mean age (years)	42.9	42.9
16-34	31.0%	32.8%
35-44	24.3%	21.1%
45-54	23.3%	22.6%
55-64	16.8%	17.4%
65 and over	4.5%	6.1%
Gender		
Male	91.6%	52.4%
Race / Ethnicity		
Hispanic	24.4%	15.5%
White, non-Hispanic	66.7%	65.7%
Black , non-Hispanic	5.1%	10.8%
Other races	3.9%	8.0%

Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 1: Characteristics of Construction Workers

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Construction workers were more likely to be uninsured than the overall workforce¹. Between 2012 and 2014, nearly a third (31.3%) of construction workers lacked any type of insurance, more than twice the rate in all industries (14.4%; Chart 2). While rates of public insurance coverage (7.4% versus 7.1%), and other private insurance (e.g., self-purchased, 12.4% versus 12.6%) were comparable between construction workers and the overall workforce, the percentage of health insurance through employment/union in construction was significantly lower than in all industries (48.9% versus 65.9%).

2. Health insurance coverage, construction versus all industries, 2012-2014 average

Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

¹ The estimates were three-year averages. For information on insurance coverage before and after the Affordable Care Act, please refer to CPWR fourth Quarterly Data Report in 2015 Impact of the Affordable Care Act on health insurance coverage and healthcare utilization among construction workers.

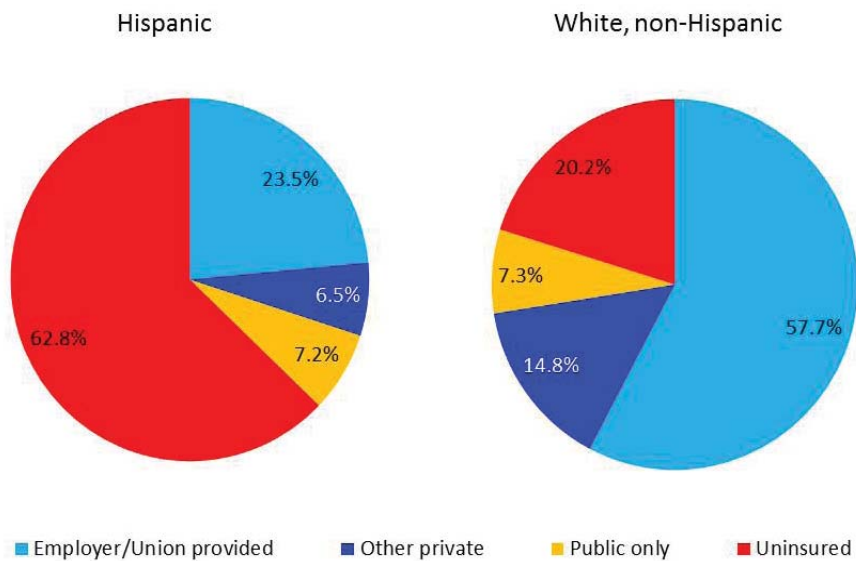
<http://www.cpwr.com/publications/fourth-quarter-impact-affordable-care-act-health-insurance-coverage-and-healthcare>

Section 1: Characteristics of Construction Workers

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Within construction, Hispanic workers were covered by insurance at a significantly lower rate than their white, non-Hispanic counterparts. Less than one quarter (23.5%) of Hispanic workers received health insurance through their employment/union, while 57.7% of white, non-Hispanic workers had employment-based insurance coverage (Chart 3). Overall, nearly two in three (62.8%) Hispanic construction workers were uninsured, more than three times the uninsured rate among white, non-Hispanic workers (20.2%).

3. Health insurance coverage among construction workers, Hispanic versus white, non-Hispanic, 2012-2014 average



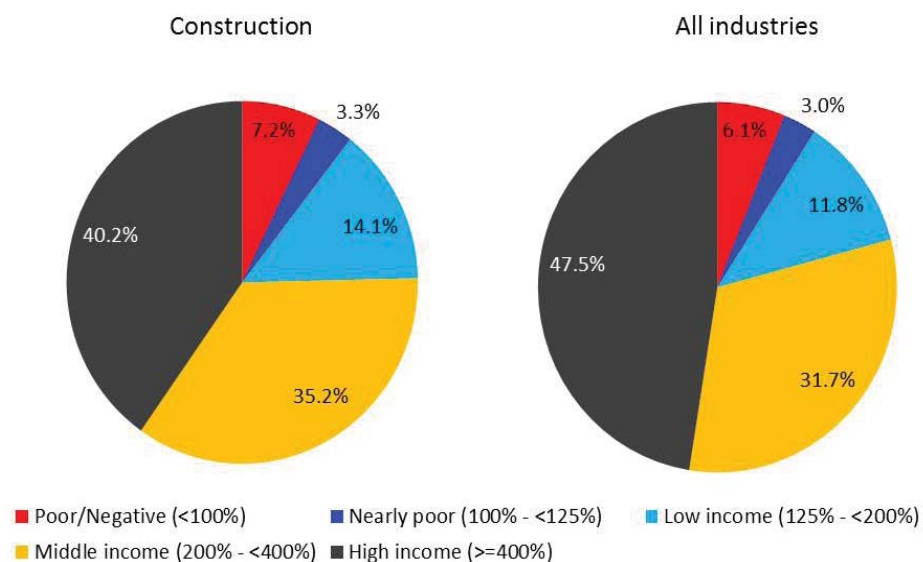
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 1: Characteristics of Construction Workers

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Construction workers were more likely than the general workforce to be working poor (BLS, 2016). From 2012 to 2014, more than 7% of construction workers lived below the federal poverty level. Overall, nearly one in four construction workers had a family income less than two times the federal poverty level, compared with about one in five workers in all industries (Chart 4).

4. Family income as a percentage of poverty line, construction versus all industries, 2012-2014 average



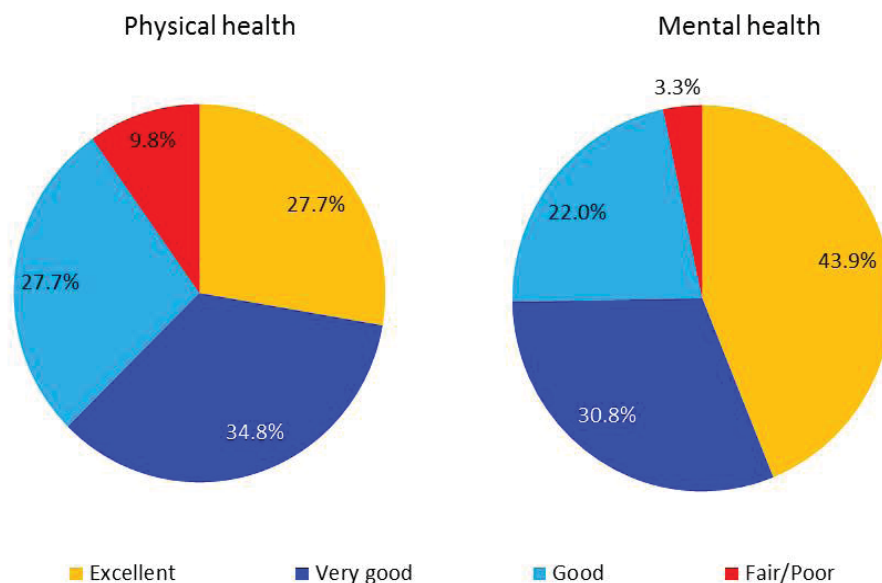
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

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SECTION 2: HEALTH STATUS OF CONSTRUCTION WORKERS

Construction workers overall had higher perceptions of their mental health than their physical health. Over the period of 2012-2014, about 44% of construction workers reported their mental health to be excellent, while less than 28% of construction workers described their physical health in the same way (Chart 5). In addition, almost one in ten construction workers reported fair or poor physical health, but only 3.3% of workers rated their mental health fair or poor.

5. Self-reported physical and mental health of construction workers, 2012-2014 average

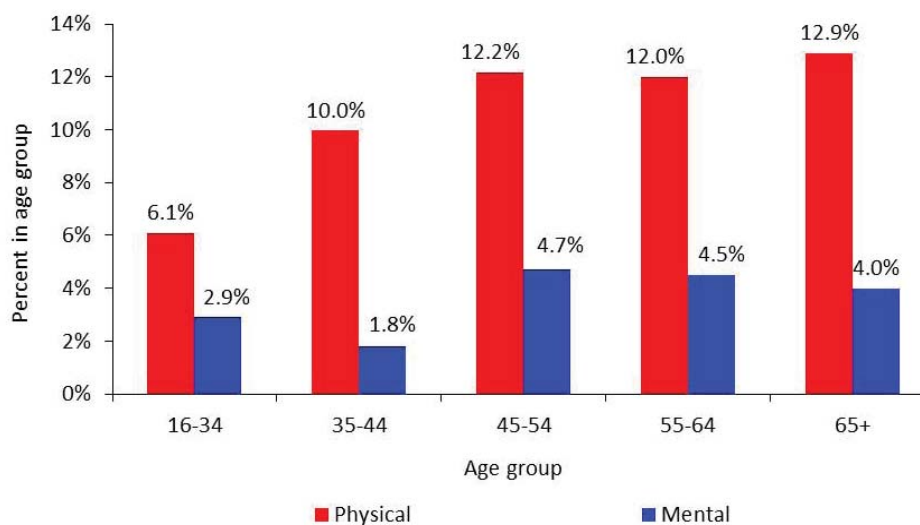


Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 2: Health Status of Construction Workers

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In general, older construction workers were more likely than younger workers to report fair or poor physical and mental health. Health status, either physical or mental, tends to worsen after workers reach age 45. More than 12% of construction workers 45 years and older reported fair or poor physical health, double the percentage among workers aged 16 to 34 (6.1%; Chart 6). Similarly, 4.7% of construction workers aged 45 to 54 reported fair or poor mental health, more than twice the percentage among workers aged 35 to 44 years old (1.8%).

6. Self-reported fair/poor physical and mental health by age group, 2012-2014 average

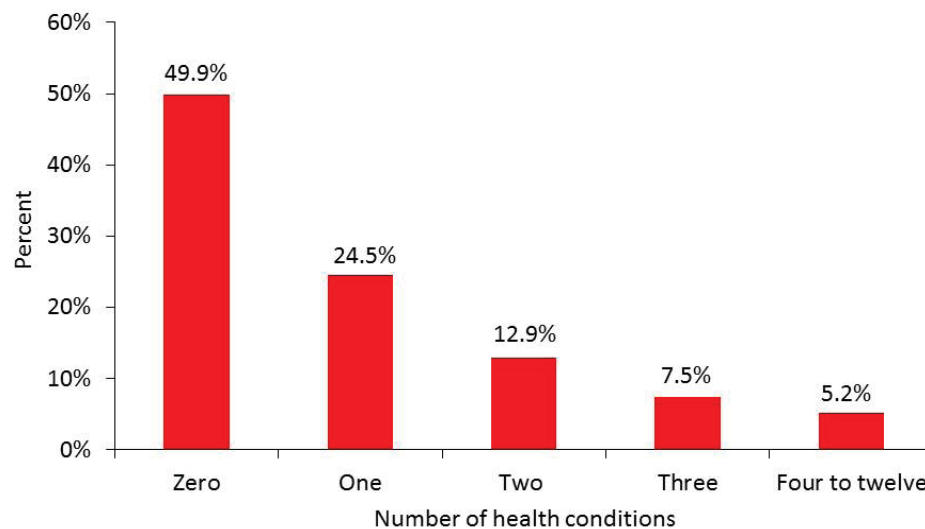
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 2: Health Status of Construction Workers

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While self-perceived health status is an important indicator of overall worker health, health conditions² diagnosed by doctors may provide a more objective health measure. Between 2012 and 2014, nearly one quarter (24.5%) of construction workers reported one doctor-diagnosed health condition, and another quarter (25.6%) reported two or more conditions (Chart 7). Overall, about half (50.1%) of construction workers reported having at least one doctor-diagnosed health condition.

7. Number of doctor-diagnosed health conditions among construction workers, 2012-2014 average



Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

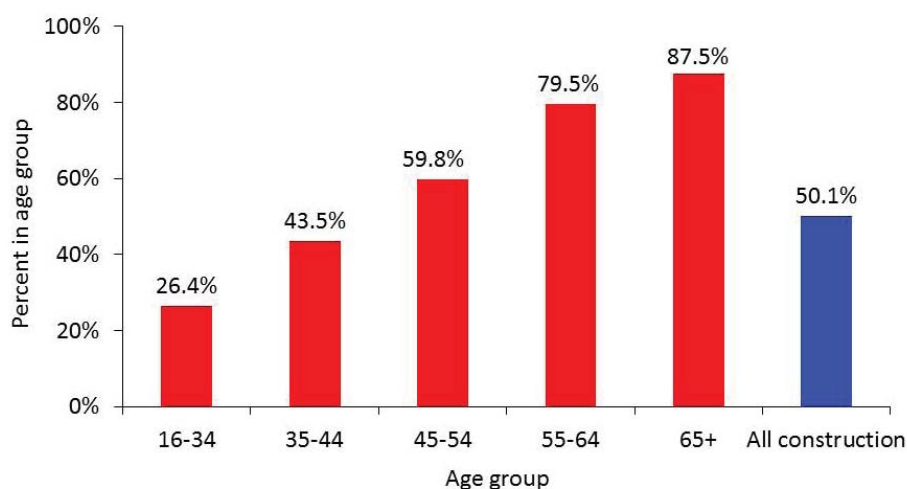
2 Twelve doctor-diagnosed health conditions were included in this study. Please see Chart 9 for detailed information.

Section 2: Health Status of Construction Workers

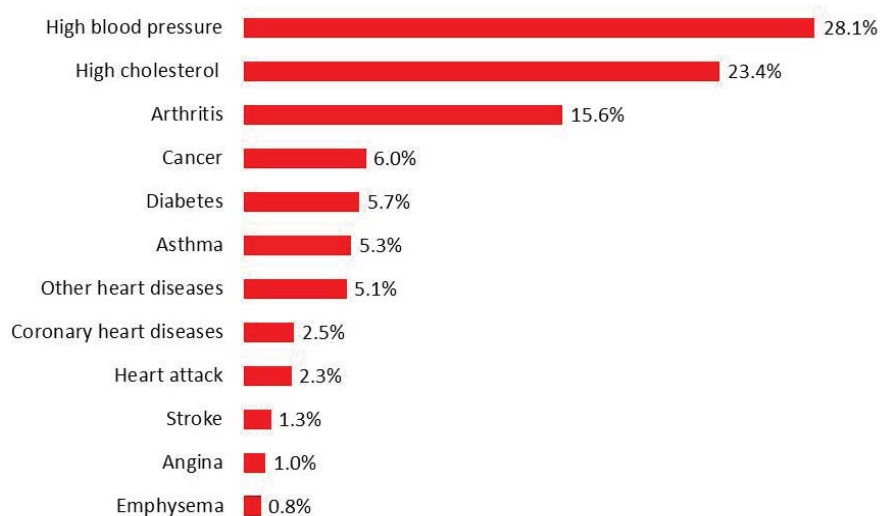
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The number of doctor-diagnosed health conditions escalated with age. Only 26.4% of construction workers aged 16-34 reported one or more doctor-diagnosed health conditions, whereas for workers aged 65 and older, that proportion was 87.5% (Chart 8). Among common doctor-diagnosed health conditions, high blood pressure (28.1%) ranked the first, followed by high cholesterol (23.4%), and arthritis (15.6%; Chart 9).

8. Percentage of construction workers with at least one doctor-diagnosed health condition, by age group, 2012-2014 average



9. Prevalence of doctor-diagnosed health conditions among construction workers, 2012-2014 average



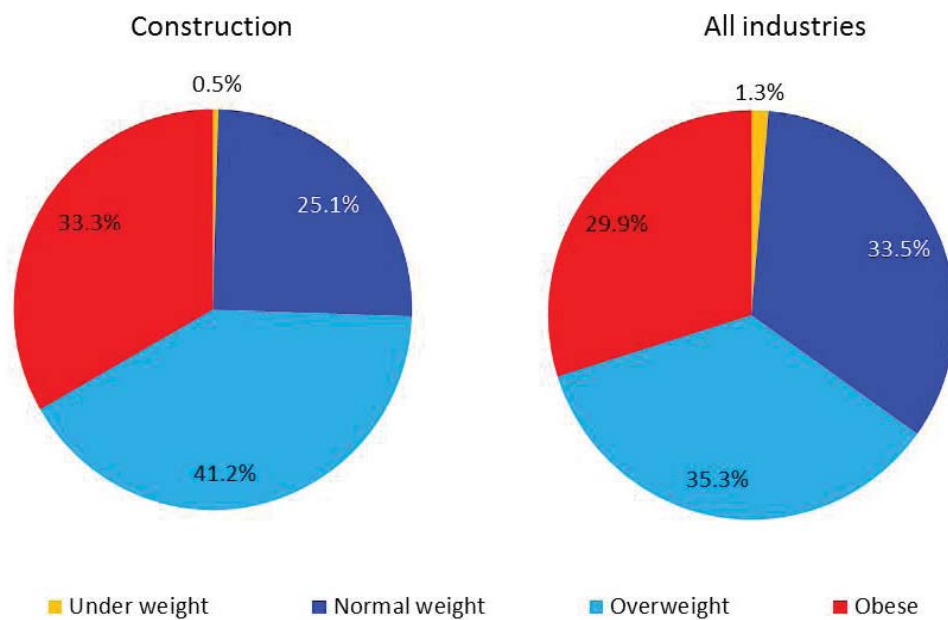
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 2: Health Status of Construction Workers

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In general, construction workers were heavier than the overall workforce in the U.S. Between 2012 and 2014, nearly three out of four (74.5%) construction workers were either overweight or obese (measured by Body Mass Index [BMI]), compared to 65.2% of the overall workforce (Chart 10).

10. Body Mass Index, construction versus all industries, 2012-2014 average



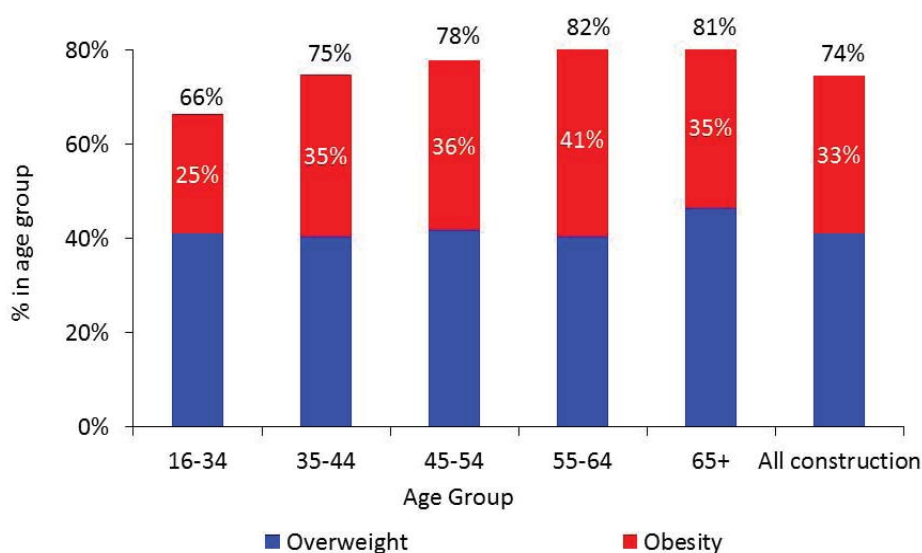
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 2: Health Status of Construction Workers

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Within construction, rates of an unhealthy BMI increased with age. More than 80% of construction workers aged 55 years or older were either overweight or obese. Abnormal BMI was prevalent not only among older construction workers, but also among younger workers. Among the youngest age group (those under age 35) in construction, two in three had a BMI above the normal range (Chart 11), higher than the average for workers in all industries (65.2%; see Chart 9).

11. Overweight and obesity among construction workers, by age group, 2012-2014 average



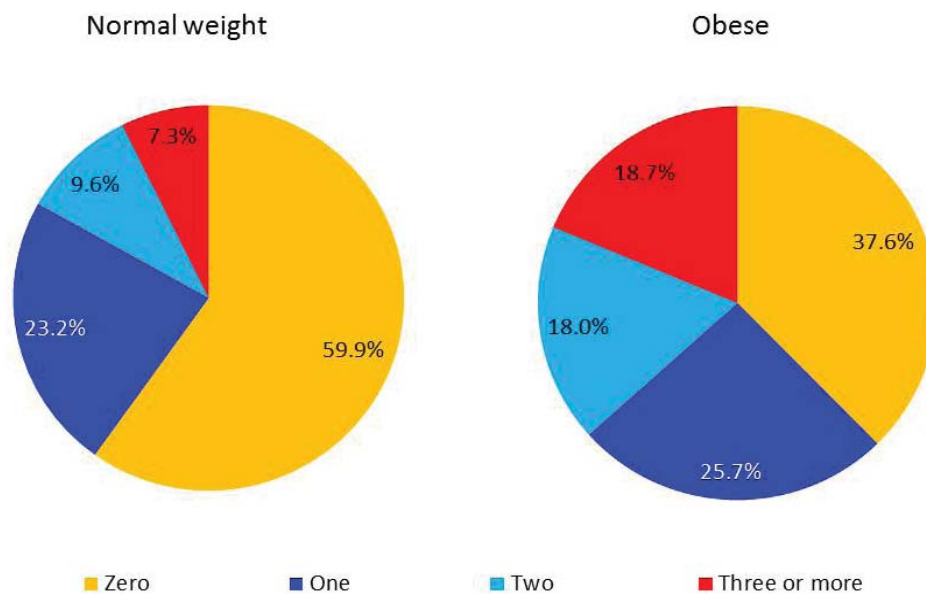
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 2: Health Status of Construction Workers

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BMI is strongly associated with the number of health conditions. Construction workers with obesity were more likely to have a doctor-diagnosed health condition than their counterparts with a normal BMI. Less than four out of ten (37.6%) obese construction workers were free of doctor-diagnosed health conditions, compared to six out of ten (59.9%) of those with a normal weight (Chart 12). Nearly a fifth (18.7%) of obese workers had three or more doctor-diagnosed health conditions, more than twice the rate of workers at a normal weight (7.3%).

12. Number of doctor-diagnosed health conditions among construction workers, normal weight versus obese, 2012-2014 average



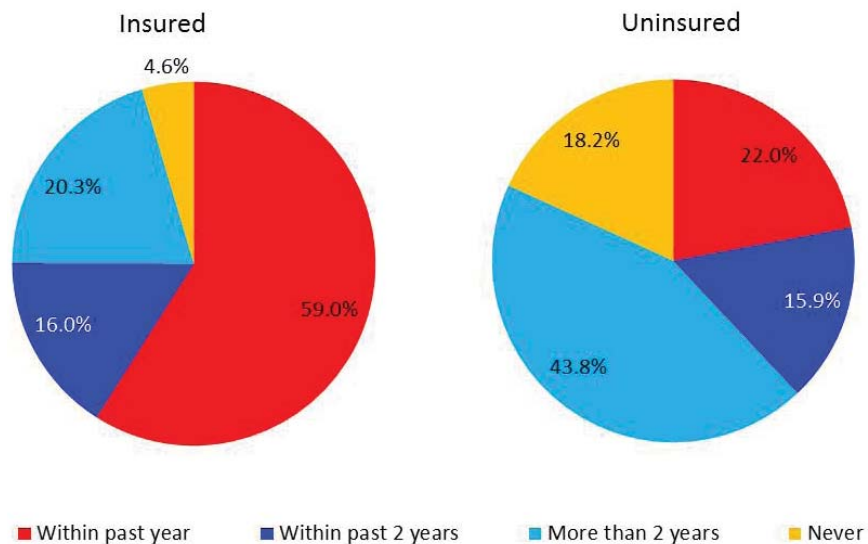
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

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SECTION 3: HEALTHCARE UTILIZATION OF CONSTRUCTION WORKERS

Construction workers with health insurance were much more likely to use healthcare services than workers who were uninsured. The majority (59%) of insured construction workers had received a routine medical checkup within the last year, while only 22% of uninsured workers did so (Chart 13). Nearly a fifth (18.2%) of uninsured construction workers had never received a routine checkup, four times the rate among insured workers (4.6%).

13. Frequency of routine medical checkup among construction workers, insured versus uninsured, 2012-2014 average



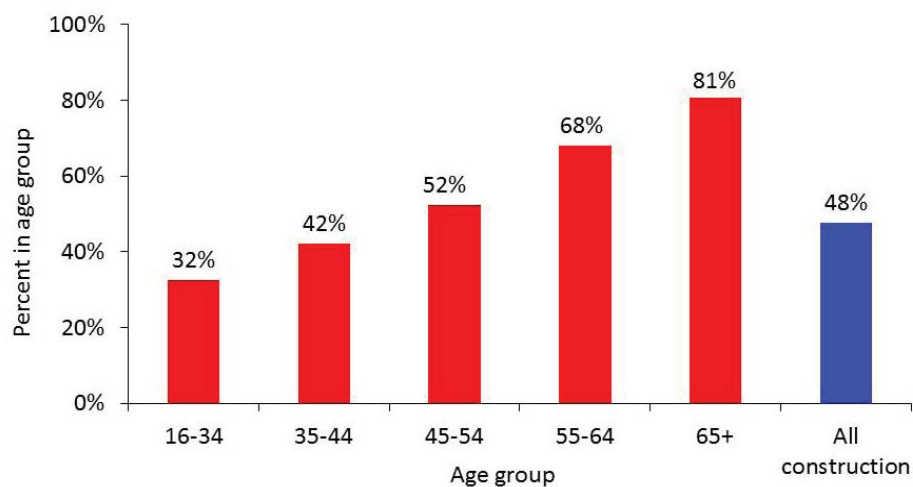
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 3: Healthcare Utilization of Construction Workers

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The frequency of recent medical checkup increased with age. Only 32% of construction workers aged 16-34 had a routine checkup within the previous year, while the rate increased to 81% among construction workers aged 65 and older (Chart 14). Overall, just under half (48%) of construction workers received a routine checkup within the past year.

14. Percentage of construction workers who had routine medical checkup within past year by age group, 2012-2014 average



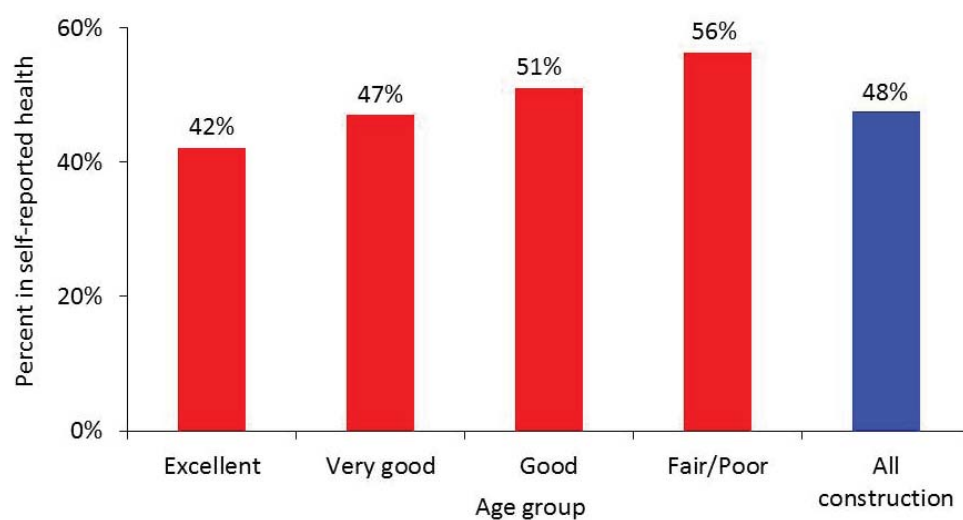
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 3: Healthcare Utilization of Construction Workers

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The frequency of recent medical checkup was also affected by health status. About 56% of construction workers who reported fair or poor physical health received a checkup within the past year, 33% higher than those who reported excellent health (42%; Chart 15).

15. Percentage of construction workers who had routine medical checkup within past year by self-reported physical health, 2012-2014 average



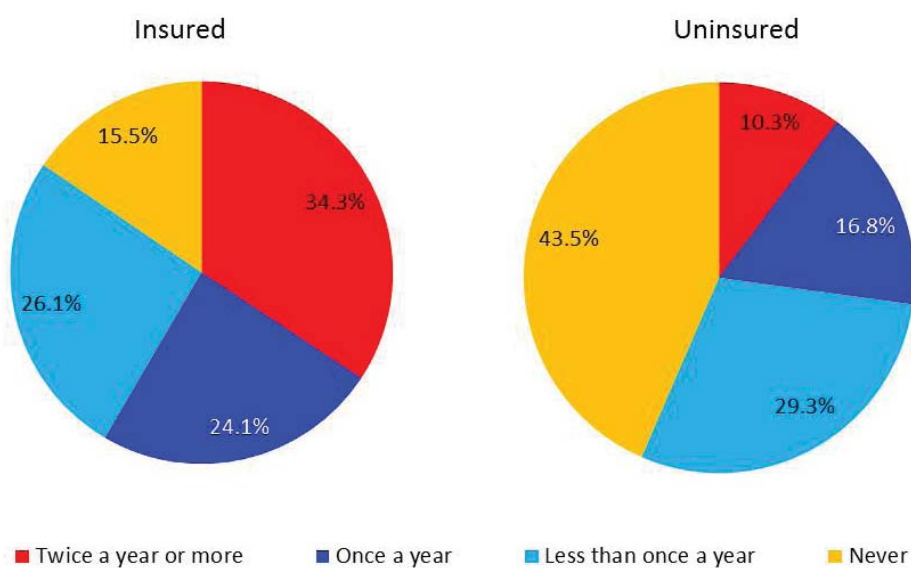
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 3: Healthcare Utilization of Construction Workers

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Regular dentist visits are important to overall health. However, in construction, only a little over one third (34.3%) of insured workers said they received dental checkups twice a year or more, and just one in ten uninsured workers received such services (10.3%; Chart 16). Moreover, the majority (43.5%) of uninsured construction workers reported never having received a dental checkup, compared to 15.5% of insured workers.

16. Frequency of dental checkup among construction workers, insured versus uninsured, 2012-2014 average



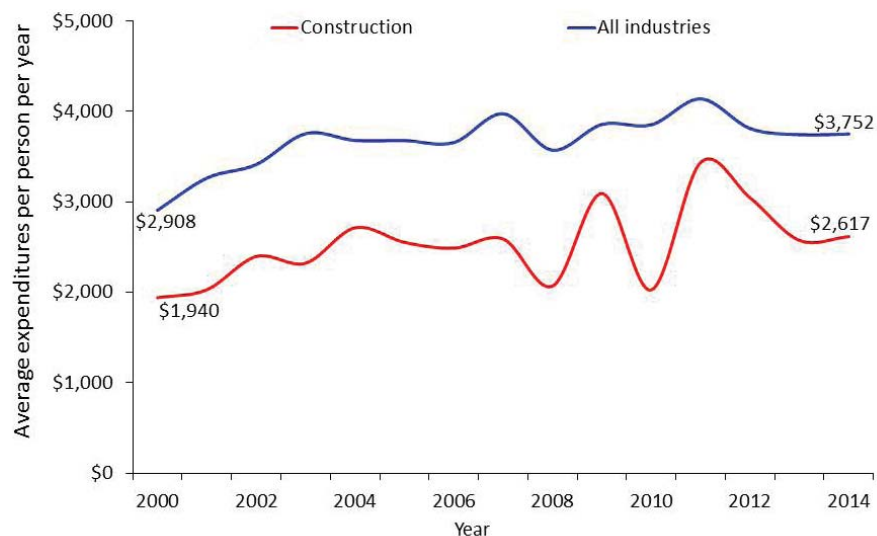
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

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SECTION 4: MEDICAL EXPENDITURES

Average total medical expenditures per person among U.S. workers increased from \$2,908 in 2000 (adjusted to 2014 dollars) to \$3,752 in 2014, a 29% increase (Chart 17). Although medical expenditures among construction workers were consistently lower than all industries combined, expenditures among construction workers experienced a higher growth rate (35% from \$1,940 in 2000 to \$2,617 in 2014) than workers in all industries (29% from \$2,908 in 2000 to \$3,272 in 2014) during this period.

17. Total medical expenditures per person per year, construction versus all industries, 2000-2014 (2014 Dollars)

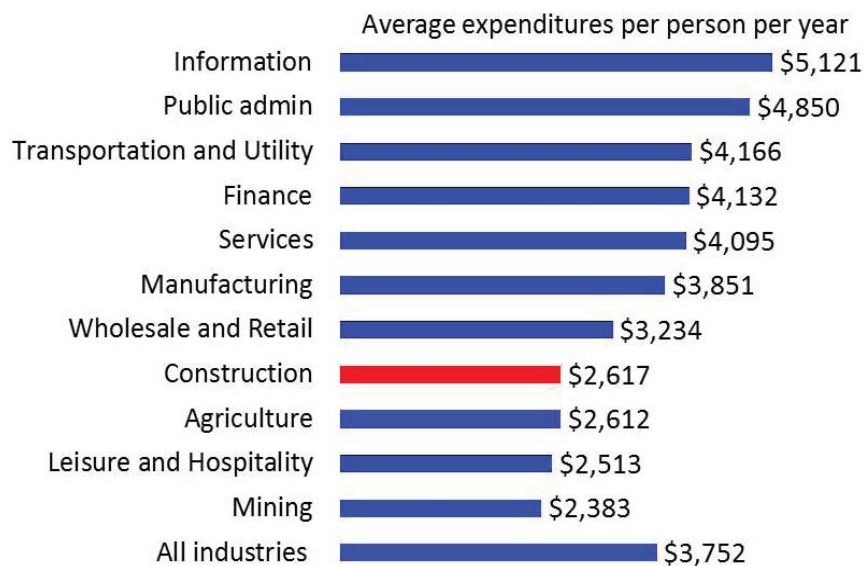


Source: 2000-2014 Medical Expenditure Panel Survey. Dollar value adjusted by CPI medical care. Calculations by the authors.

Section 4: Medical Expenditures

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When stratified by major industry, total medical expenditures per person in construction in 2014 was lower than the industry average, but higher than several industry sectors, including agriculture and mining, two goods-producing industries (Chart 18). While mining is known to be a high-risk industry (CDC, 2016), medical expenditures in this industry were the lowest among the major industry sectors in 2014; spending was \$2,383 that year, \$234 less per worker than in construction.

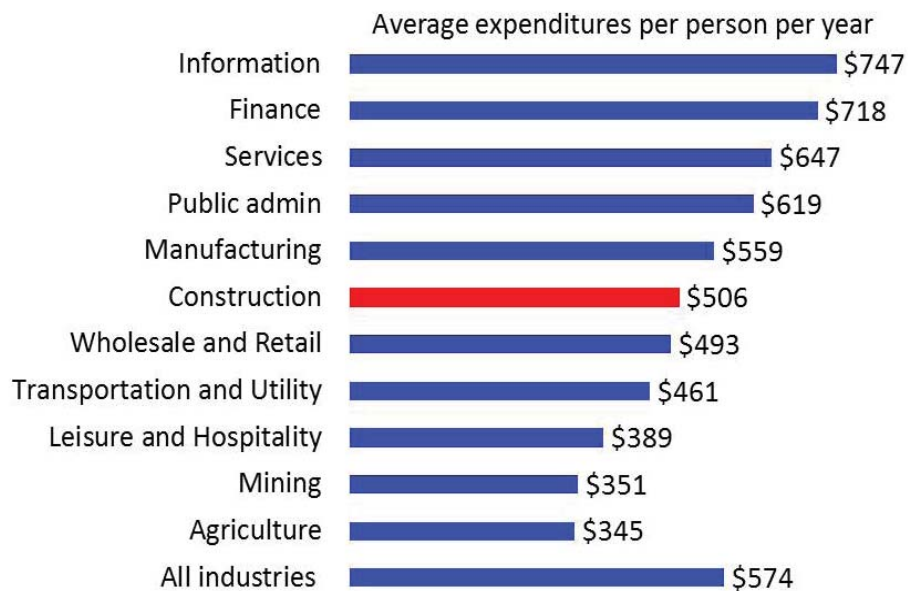
18. Total medical expenditures by major industry, 2014

Source: 2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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In 2014, construction workers paid an average of \$506 per person in out-of-pocket medical expenditures, compared with \$574 in all industries (Chart 19). Although out-of-pocket medical costs in construction were 12% lower than average for all industries, the out-of-pocket costs as a percentage of total medical expenditures was the highest among all major industries (19.3% in construction versus 15.3% in all industries).

19. Out-of-pocket medical expenditures by major industry, 2014

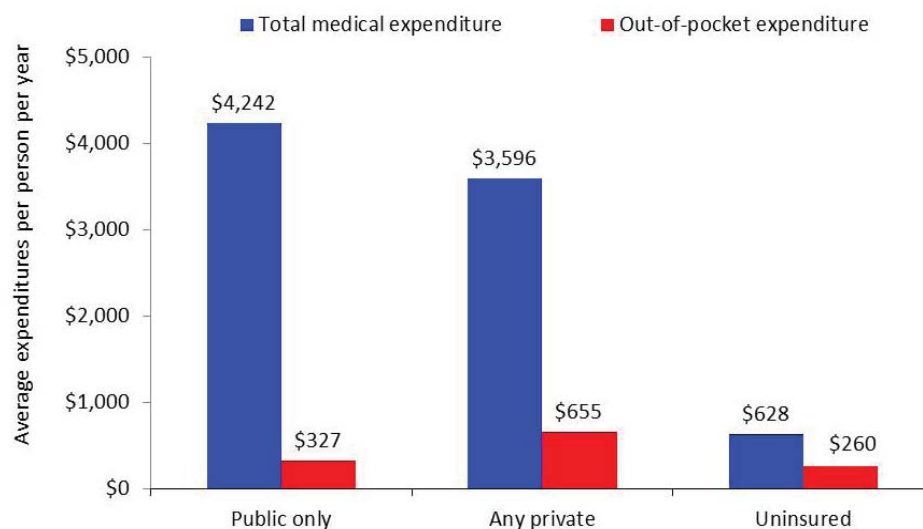
Source: 2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Medical expenditures among construction workers differed by type of insurance. Construction workers who depended on public health insurance alone had the most total medical expenditures, at \$4,242 per person per year, while those with any private insurance had the most out of pocket expenditures, at \$655 per person per year (Chart 20). While uninsured construction workers had the least expenditures, out-of-pocket expenditures made up 41% of their total medical costs, which was considerably higher than for their insured counterparts.

20. Medical expenditures among construction workers by type of insurance, 2012-2014 average (2014 Dollars)



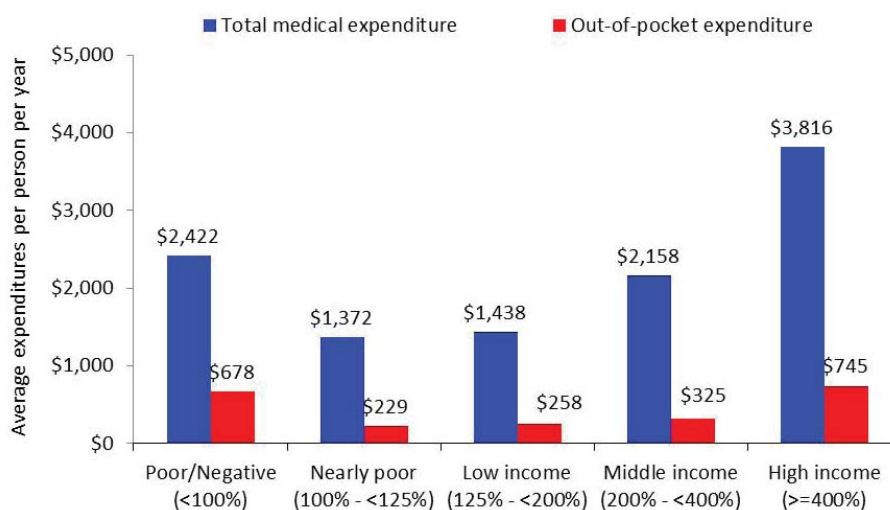
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Medical expenditures were correlated to family income in general. Construction workers with the highest family income had the highest total and out-of-pocket medical expenditures, spending per person on average \$3,816 in total expenditures and \$745 out-of-pocket (Chart 21). The poorest construction workers, however, paid more in both total and out-of-pocket expenditures than any other income bracket except for the highest bracket. These costs can be a significant financial burden relative to income for poor workers.

21. Medical expenditures among construction workers by family income, 2012-2014 average (2014 Dollars)



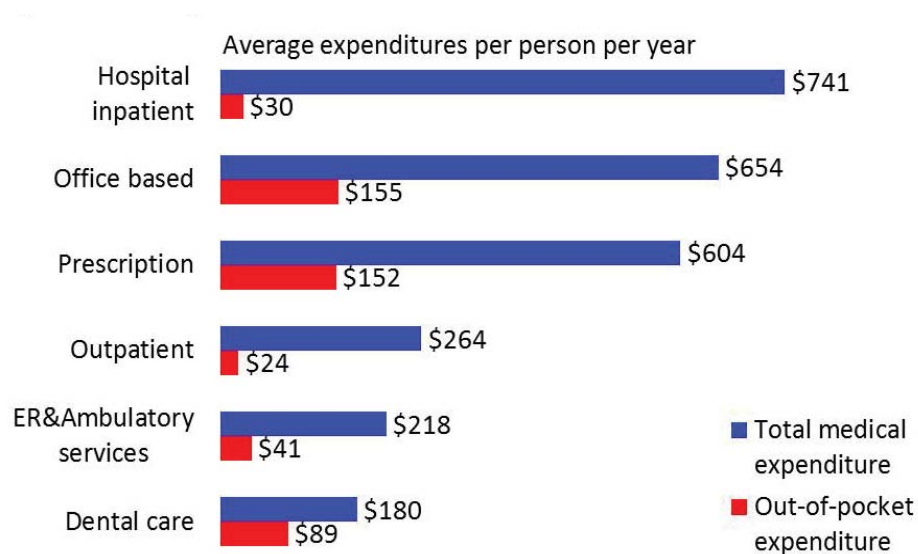
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Medical expenditures were also dependent upon type of health services. Hospital inpatient care contributed the most to total medical expenditures and the least to out-of-pocket expenditures among construction workers, averaging \$741 per person per year and \$30 out of pocket (Chart 22). Office-based and prescription-related expenditures generated the highest out-of-pocket costs, at \$155 and \$152 respectively, as well as the most total expenditures outside of inpatient care (\$654 and \$604, respectively).

22. Medical expenditures among construction workers by type of health service, 2012-2014 average (2014 Dollars)



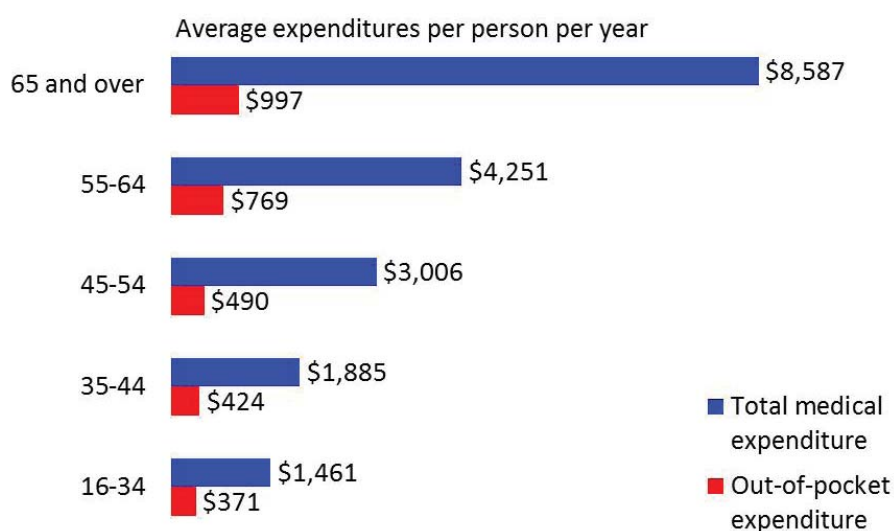
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Both total and out-of-pocket expenditures were strongly correlated to age, with the oldest workers spending the most and the youngest workers spending the least. Construction workers aged 65 and older had total medical expenditures of \$8,587 per person per year; this was nearly six times as much as those aged 16-34 (\$1,461; Chart 23). The oldest workers also spent \$997 in out-of-pocket costs, nearly three times that of the youngest workers (\$371).

**23. Medical expenditures among construction workers by age group,
2012-2014 average (2014 Dollars)**



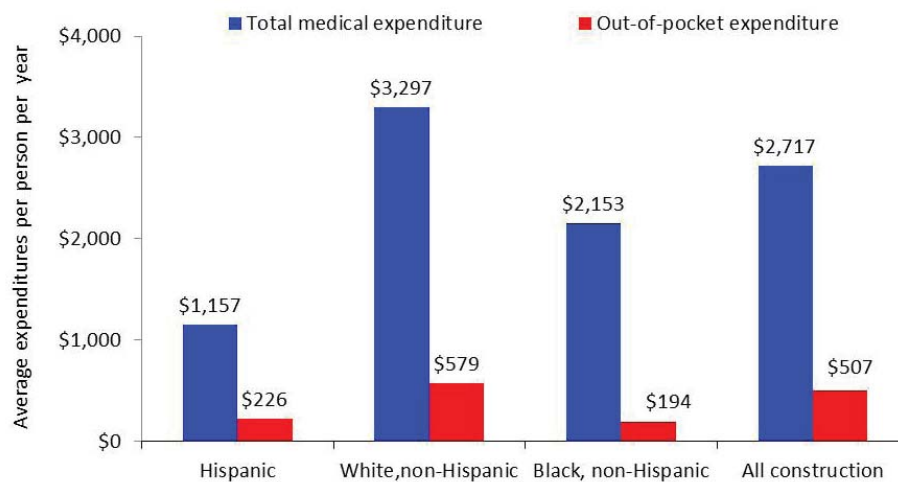
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Racial and ethnic disparities are evident in differences in medical cost among construction workers. On average, white, non-Hispanic construction workers spent more than minorities, with \$3,297 in total medical expenditures per person per year, compared to \$2,153 for black, non-Hispanics, and \$1,157 for Hispanics (Chart 24). Similar patterns were found in out-of-pocket expenditures. White, non-Hispanic construction workers paid an average of \$579 per person per year out of pocket, compared to \$194 for blacks and \$226 for Hispanics. For Hispanics, out-of-pocket expenses made up a higher proportion (20%) of total medical expenditures compared to other races, suggesting lower health insurance coverage among this population.

24. Medical expenditures among construction workers by race and ethnicity, 2012-2014 average (2014 Dollars)



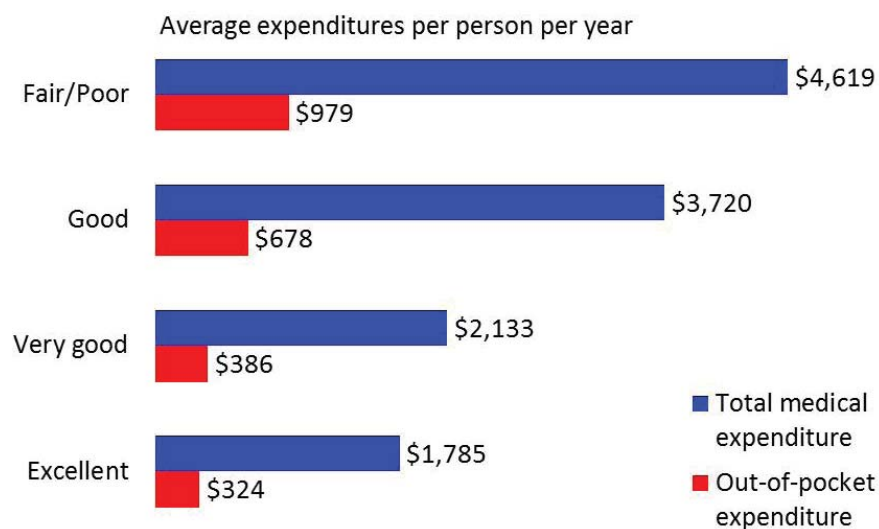
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Medical expenditures were also determined by health status. Construction workers who reported fair or poor health had average medical expenditures of \$4,619 per person per year, more than 2.5 times the amount of \$1,785 for workers in excellent health (Chart 25). The difference in out-of-pocket expenditures was even larger; workers reporting the worst health paid \$979 in out of pocket expenditures, three times the \$324 paid by workers reporting the best health.

25. Medical expenditures among construction workers by self-reported physical health, 2012-2014 average (2014 Dollars)



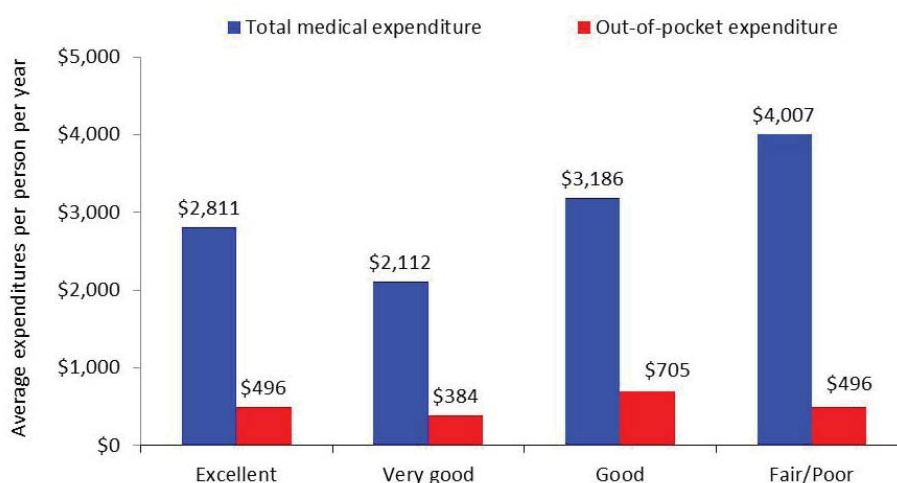
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Although poorer mental health was related to higher medical expenditures in general, the relationship was less clear than for physical health. Construction workers who reported fair or poor mental health had the highest total medical expenditures at \$4,007 per person per year, nearly twice as much as that for those with very good mental health (\$2,112; Chart 26). However, workers reporting excellent mental health spent more than those in very good mental health (\$2,811 versus \$2,112).

26. Medical expenditures among construction workers by self-reported mental health, 2012-2014 average (2014 Dollars)



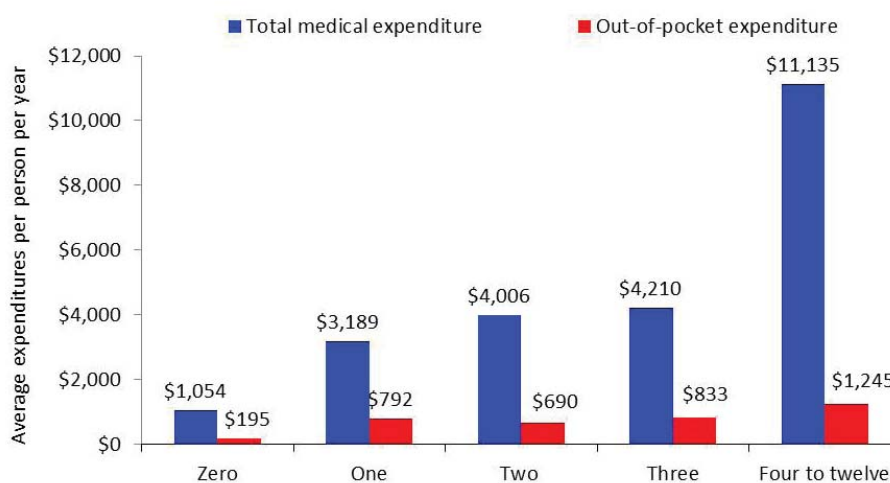
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Medical expenditures soared with increasing number of health conditions. Construction workers with four or more health conditions had more than ten times the total medical expenditures (\$11,135 versus \$1,054) and more than six times the out of pocket costs (\$1,245 versus \$195) of workers without any health conditions (Chart 27). Even for workers with only one health condition, the total medical expenditures were three times as high, and the out of pocket costs were four times as high, as that of workers with no health conditions.

27. Medical expenditures among construction workers by number of health conditions, 2012-2014 average (2014 Dollars)



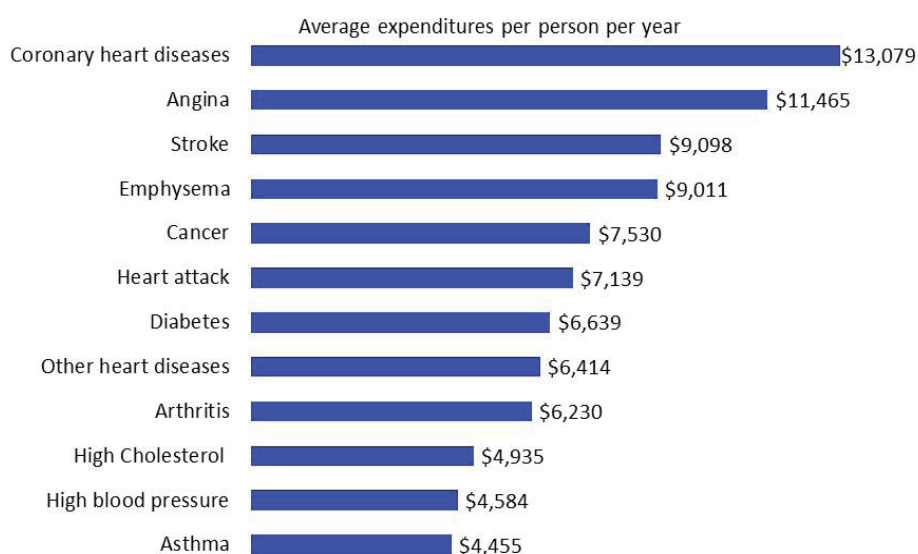
Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Section 4: Medical Expenditures

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Medical expenditures were also dependent on type of health conditions. Construction workers with coronary heart diseases had the highest medical expenditures, at \$13,079 per person per year (Chart 28). Workers with angina had the second highest medical costs, at \$11,465 per person per year. Workers with high cholesterol, high blood pressure, and asthma had much lower expenditures, with less than \$5,000 per person per year on average for workers with one of these conditions.

28. Total medical expenditures among construction workers by health condition, 2012-2014 average (2014 Dollars)



Source: 2012-2014 Medical Expenditure Panel Survey. Calculations by the authors.

Conclusion

In general, construction workers perceived their mental health to be better than their physical health. However, both self-reported mental and physical health worsened after workers reached age 45. Between 2012 and 2014, about half (50.1%) of construction workers reported having at least one doctor-diagnosed health condition, and nearly three out of four (74.5%) construction workers were either overweight or obese. Moreover, the proportion of construction workers with one or more conditions or unhealthy weight increased with age. Health care utilization among construction workers was affected by workers' health status, age, and insurance coverage. Although the average medical expenditures among construction workers were consistently lower than all industries combined from 2000 to 2014, expenditures among construction workers experienced a higher growth rate (35% from \$1,940 in 2000 to \$2,617 in 2014) than among workers in all industries (29% from \$2,908 in 2000 to \$3,272 in 2014). Furthermore, medical expenditures, either total or out-of-pocket, were associated with age, the number of health conditions, health insurance coverage, family income, and race/ethnicity. This report provided insight for researchers and policymakers to identify the vulnerable groups that lack of health care access and the risk factors associated with high care expenditures.

References

- Bureau of Labor Statistics (BLS). 2016. A Profile of the Working Poor, 2014. <http://www.bls.gov/opub/reports/working-poor/2014/home.htm> The “working poor” are people who are working but whose incomes fall below the poverty level.
- Center for Diseases Control and Prevention (CDC). 2016. Statistics: All Mining. <https://www.cdc.gov/niosh/mining/statistics/allmining.html>

Definitions

Body Mass Index (BMI) – A measure of body weight relative to height. It is calculated as weight in kilograms divided by height in meters squared. Healthy weight for adults is defined as a BMI of 18.5 to less than 25; overweight as greater than or equal to a BMI of 25; obesity as greater than or equal to a BMI of 30.

Federal Poverty Level(FPL) – A measure of income issued every year by the Department of Health and Human Services. FPLs are used to determine the eligibility for certain programs and benefits, including savings on Marketplace health insurance and Medicaid.

Goods-producing industry – From the North American Industry Classification System: consists of Agriculture, Forestry, Fishing and Hunting (NAICS 11), Mining, Quarrying, and Oil and Gas Extraction (NAICS 21), Construction (NAICS 23), and Manufacturing (NAICS 31-33).

Definitions *(continued)*

Health insurance coverage

- **Any private health insurance** – Individuals who, at any time during the year, had insurance that provided coverage for hospital and physician care (other than Medicare, Medicaid, or other public hospital/physician coverage) were classified as having private insurance.
- **Employer/Union provided health insurance** – Individuals who, at any time during the year, had insurance provided by their employer or union.
- **Public health insurance** – Individuals were considered to have public coverage only if they met both of the following criteria: 1) they were not covered by private insurance at any time during the year, and 2) they were covered by any of the following public programs at any point during the year: Medicare, Medicaid, or other public hospital/physician coverage.
- **Uninsured** – The uninsured were defined as people not covered by any private insurance, Medicare, TRICARE, Medicaid, or other public programs at any time during the entire year or their period of eligibility for the survey.

Medical expenditures

- **Total medical expenditures** – include payments from all sources to hospitals, physicians, other medical care providers, and pharmacies for services received for medical conditions reported by respondents. Sources include direct payments from individuals, private insurance, Medicare, Medicaid, workers' compensation, and miscellaneous other sources. Expenditures for hospital-based services include those for both facility and separately billed physicians' services. Over-the-counter drugs, alternative care services, or telephone contacts with medical providers are not included.
- **Out-of-pocket medical expenditures** – include expenses paid by the respondent and other family member.

Second Quarter 2016

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/>

The Electronic Library of Construction OSH <http://www.elcosh.org/index.php>

Falls Campaign <http://stopconstructionfalls.com/>

Hand Safety <http://choosehandsafety.org/>

Work Safely with Silica <http://www.silica-safe.org/>

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