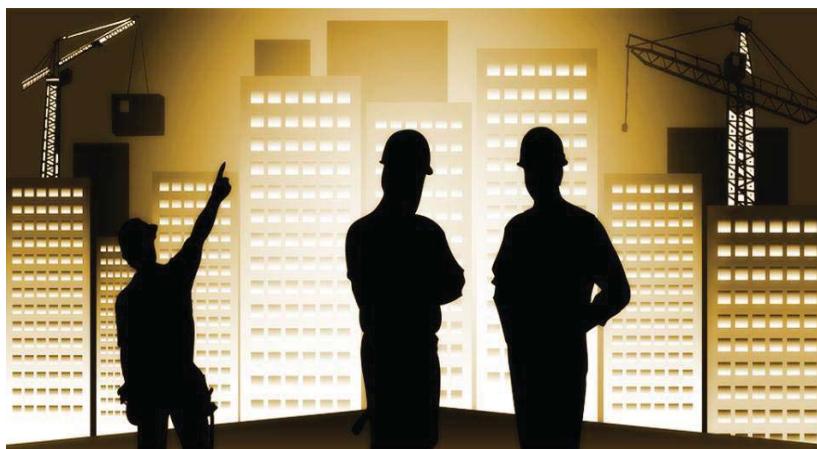


## Workplace Safety and Health Perceptions of Construction Workers

CPWR Data Center: Xiuwen Sue Dong, DrPH\*, Xuanwen Wang, PhD, and Linda M. Goldenhar, PhD

Safety climate is an indicator of the overall strength of an organization's safety culture – a subset of organizational culture. In recent years, many safety climate measures have been developed, to assess safety-related perceptions of management or workers. While the construction industry is a relative latecomer to the safety climate discussion (Schwatka et al, 2016), the April 2016 Dodge SmartMarket Report “[Building a Safety Culture: Improving Safety and Health in the Construction Industry](#),” indicates progress in this industry in recent years (Dodge & Data Analytics, 2016). The second 2016 CPWR Quarterly Data Report “[Safety Management and Safety Culture among Small Construction Firms](#)” suggests that small construction firms lag behind larger ones on most of the safety climate indicators (Wang et al, 2016). Both these reports, however, present concerns from management's perspective. To better understand workers' perspectives on workplace safety and health, and other work-related concerns, we analyzed data from the NIOSH Occupational Health Supplement (OHS) to the National Health Interview Survey (NHIS). NHIS is a large population-based survey used to gather health data from more than 40,000 households and is the principal source of information on the health of the U.S. population. NIOSH sponsored a series of more in-depth work-related questions in the 2010 NHIS and 2015 NHIS. The findings described in this Quarterly Data Report are based only on the 2015 NHIS-OHS. While the NHIS-OHS questions were designed to measure work-related issues more generally, a number of the items do measure safety climate at job sites.



### KEY FINDINGS

- Less than half (46.6%) of construction workers thought their workplace was very safe, the lowest among all industries, except agriculture.
- Only 23.9% of construction wage-and-salary workers reported their employers provided health promotion programs at work, the second lowest among all industries.
- Construction workers in smaller firms were less likely than their counterparts to agree that employee safety and health were important to management.
- Hispanic construction workers were more likely to worry about losing their jobs than their white, non-Hispanic counterparts (16.5% versus 9.8%).
- Temporary construction workers were more likely to think their job interfered with their personal or family life than regular permanent employees.

\* Correspondence to: Xiuwen Sue Dong, SDong@cpwr.com.  
Image: Microsoft PowerPoint

## SECTION 1: Worker Characteristics

In 2015, about 9 million workers were employed in the construction industry, accounting for 6% of the U.S. workforce (Chart 1). Worker characteristics differ between construction and all industries. Construction workers were more likely to be male (90.0% versus 53.0%), Hispanic (29.9% versus 16.3%), and foreign-born (26.9% versus 18.1%) than the general U.S. workforce. Construction workers were also more likely to work for small employers. Among 6.8 million wage-and-salary construction workers, 36.4% were employed in small firms with fewer than 10 employees, nearly double the percentage among workers in all industries (19.4%).

### 1. Characteristics of workers, construction versus all industries, 2015

	Construction	All Industries
<b>All Employment</b>	9.0 million	148.9 million
<b>Gender</b>		
Male	90.0%	53.0%
<b>Race / Ethnicity</b>		
Hispanic	29.9%	16.3%
White, non-Hispanic	62.2%	65.1%
Black, non-Hispanic	5.6%	11.7%
Other races	2.2%	6.9%
<b>Foreign-born</b>	26.9%	18.1%
<b>Wage-and-salary Workers</b>	6.8 million	130.6 million
<b>Firm Size (Number of Employees) *</b>		
1-9	36.4%	19.4%
10-49	34.7%	28.6%
50-99	10.6%	12.3%
100-499	10.9%	20.0%
500+	7.4%	19.6%

*Note* \*: Self-employed and workers who did not report size information were excluded.

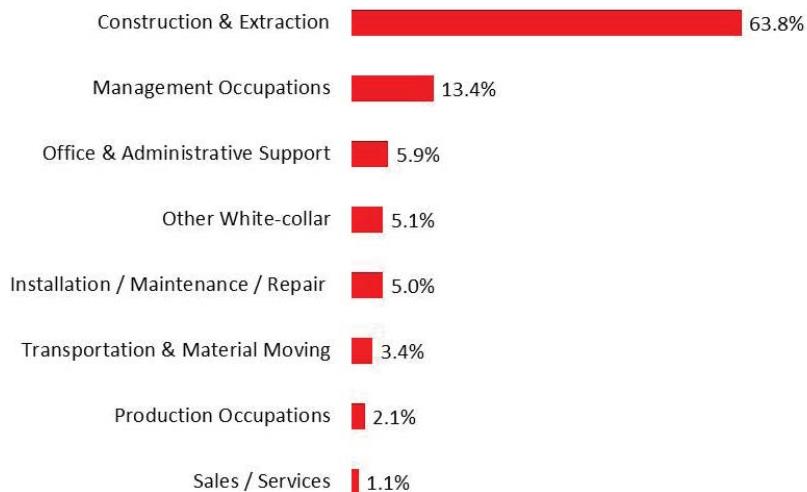
*Source*: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 1: Worker Characteristics

Third Quarter 2016

Overall, three out of four construction workers were blue-collar (e.g., construction trades, production, installation, etc.) workers. In terms of occupational distribution, the majority of construction workers were employed in construction and extraction occupations (63.8%; Chart 2), followed by management occupations (13.4%), and office and administrative support occupations (5.9%).

## 2. Occupational distribution in construction, 2015



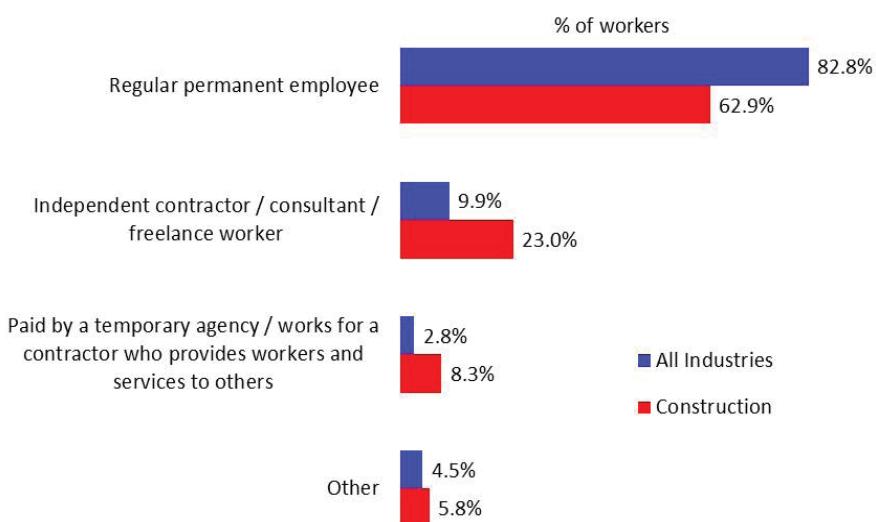
*Source:* 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 1: Worker Characteristics

Third Quarter 2016

Work arrangements among construction workers were quite different from that for all industries combined. Overall, 37% of construction workers had non-traditional work arrangements in 2015 (Chart 3). About 23% of construction workers worked as independent contractors, consultants, or freelance workers, while only 9.9% of U.S. workers had this work arrangement. In addition, 8.3% were paid by a temporary agency or worked for a contractor who provided workers or services to others under contract, triple the rate among all U.S. workers (2.8%).

**3. "Which of the following best describes your work arrangement?"**  
Construction versus all industries, 2015

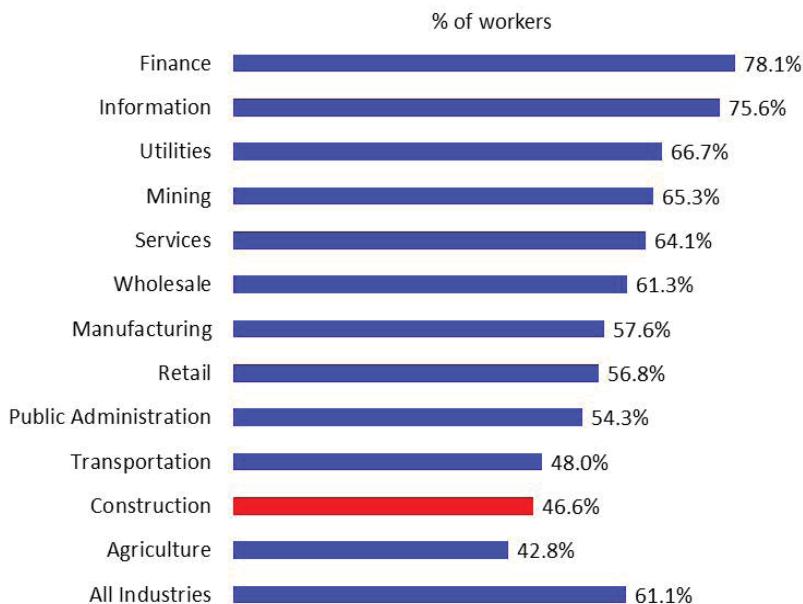


Third Quarter 2016

## SECTION 2: Perceptions of Workplace Safety and Health

The respondents were asked, "Overall, how safe do you think your workplace is?" Less than half (46.6%) of construction workers thought their workplace was very safe, the second lowest among all industries (Chart 4).

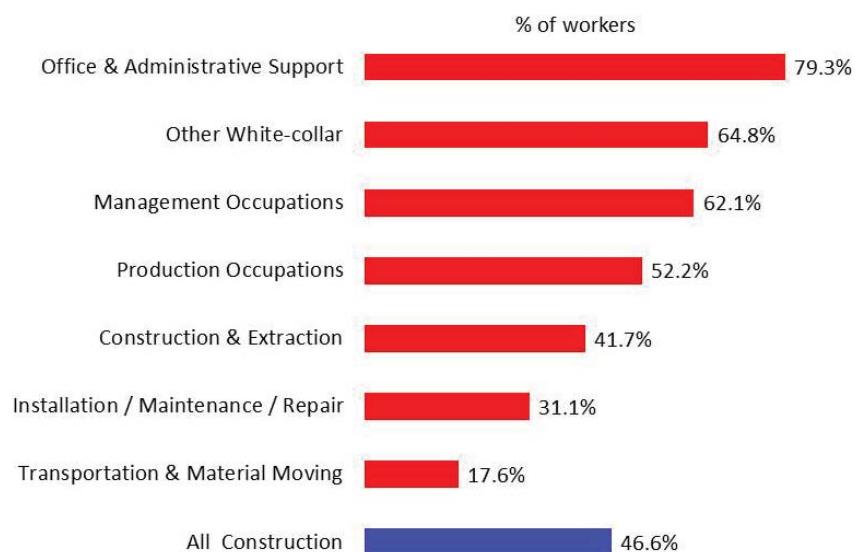
### 4. Perceptions that the workplace was "very safe," by major industry, 2015



## Section 2: Perceptions of Workplace Safety and Health

Third Quarter 2016

In general, blue-collar construction workers thought their workplace was less safe than their white-collar (such as management, office and administrative support) counterparts. Only 17.6% of construction workers with transportation and material moving occupations thought their workplace was very safe (Chart 5), while nearly 80% of workers with office and administrative support occupations had the same response. Nearly 42% of construction and extraction workers, the largest occupational group in construction, thought their workplace was very safe.

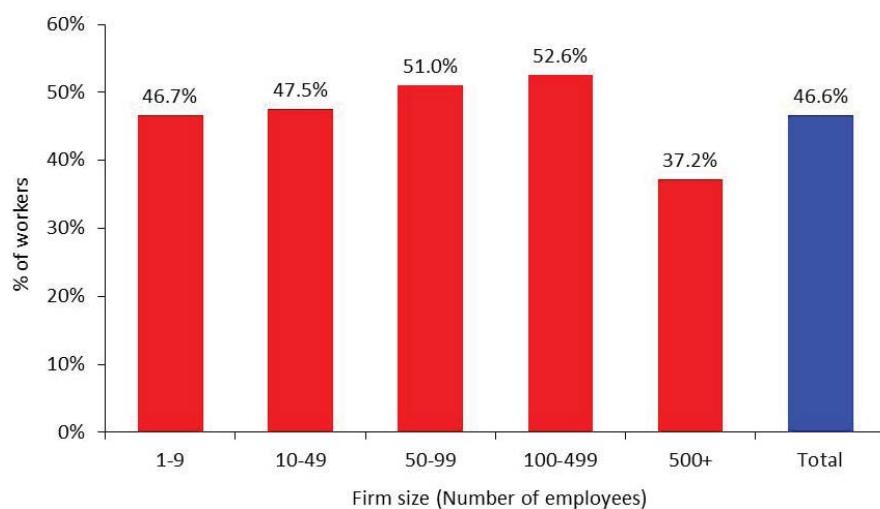
**5. Perceptions that the workplace was “very safe,” by major occupational group in construction, 2015**

*Source:* 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 2: Perceptions of Workplace Safety and Health

Third Quarter 2016

Among firms with fewer than 500 employees, the percentage of construction workers who reported their workplace was very safe increased as firm size increased (Chart 6). However, this trend reversed for firms with 500 or more employees; only 37% of these workers considered their workplace to be very safe (37%). A potential explanation could be that workers in large construction firms may be encouraged to report hazards at workplaces, are more likely to be aware of hazards at the workplace due to better safety and health training, and are typically working on large, complex projects which involve layers of sub-contractors that present unique challenges on multi-employer worksites.

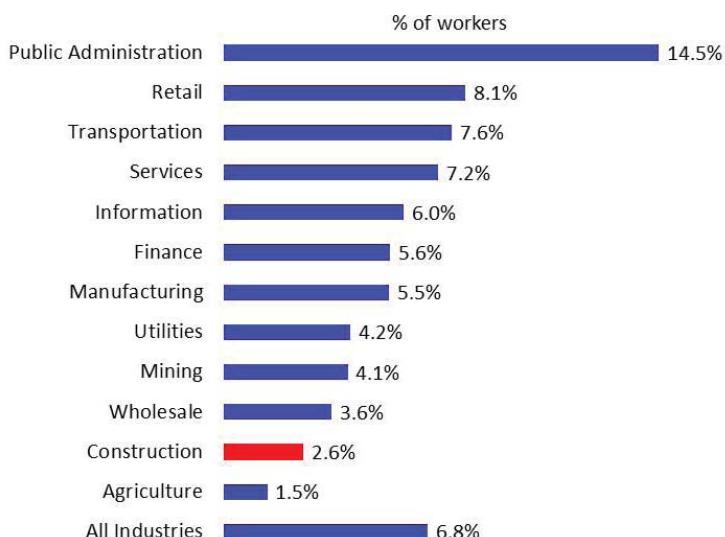
**6. Perceptions that the workplace was “very safe,” by construction firm size, 2015  
(Wage-and-salary workers)**

## Section 2: Perceptions of Workplace Safety and Health

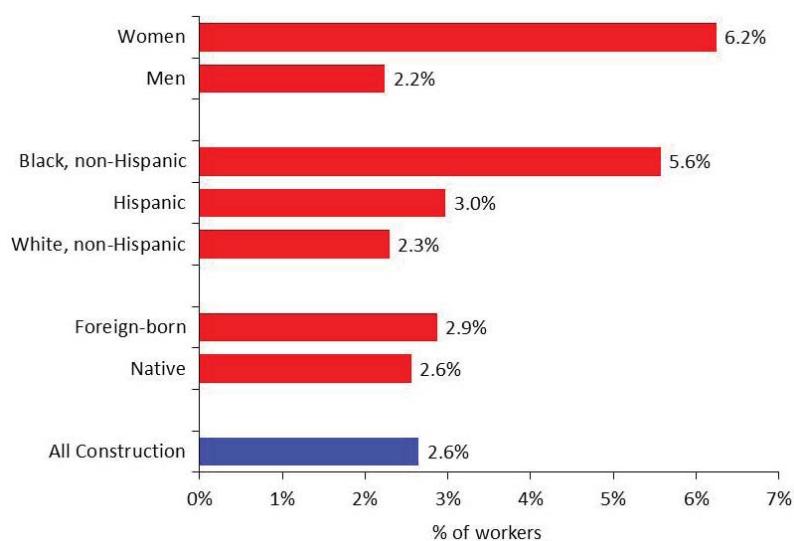
Third Quarter 2016

The respondents were asked, "During the past 12 months, were you threatened, bullied, or harassed by anyone while you were on the job?" Less than 3% of construction workers had such an experience, the second lowest among all industries (Chart 7). When stratified by demographic characteristics, significant gender and race/ethnicity disparities were found among construction workers. More than 6% of women workers and 5.6% of workers who were African American were threatened, bullied, or harassed while on the job, compared to less than 3% for all construction workers combined (Chart 8). No significant differences were found between foreign-born and native-born construction workers.

## 7. Threatened, bullied, or harassed while on the job, by major industry, 2015



## 8. Threatened, bullied, or harassed while on the job, by demographic characteristics in construction, 2015



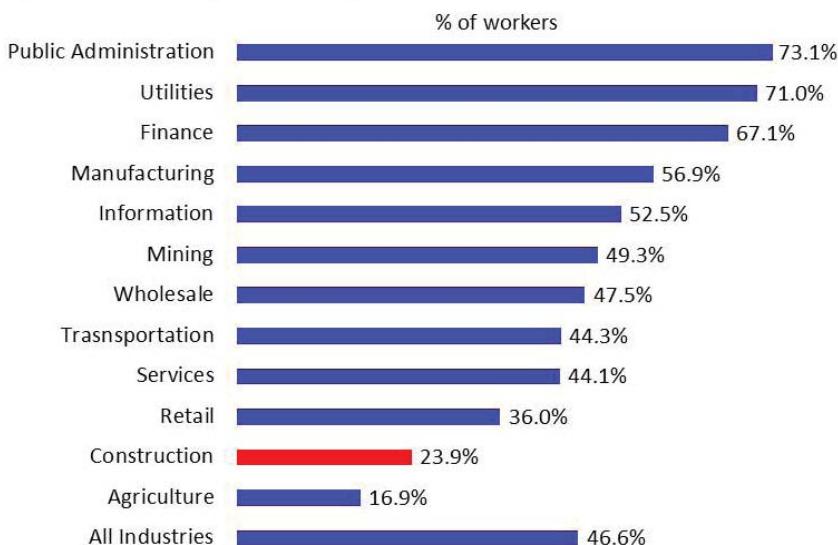
Source: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 2: Perceptions of Workplace Safety and Health

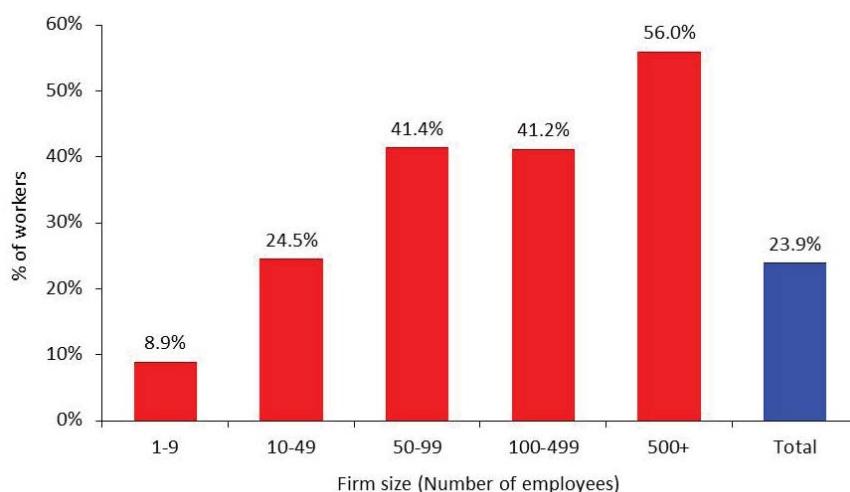
Third Quarter 2016

When asked whether health promotion programs<sup>1</sup> were made available at work, 23.9% of construction wage-and-salary workers reported their employers provided such programs at work, the lowest among all non-agricultural industries (Chart 9). Moreover, the percentage increased by firm size. While 56% of construction workers from large firms with 500 or more employees were offered health promotion programs at job sites, less than 10% of construction workers from firms with 1-9 employees reported such programs at their workplace (Chart 10).

**9. Health promotion programs were available at work, by major industry, 2015  
(Wage-and-salary workers)**



**10. Health promotion programs were available at work, by construction firm size, 2015  
(Wage-and-salary workers)**



*Source:* 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

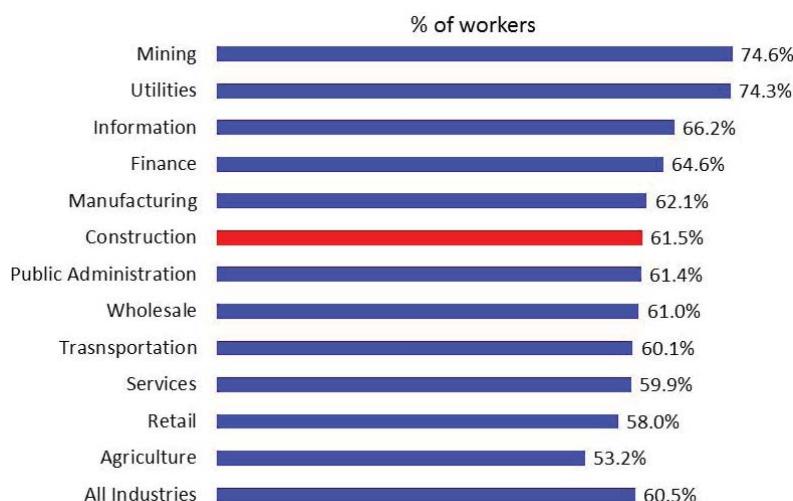
<sup>1</sup> Examples of health promotion programs include education about weight management, smoking cessation, screening for high blood pressure, high cholesterol, or other health risks, as well as on-site fitness facilities or discounted gym memberships.

## Section 2: Perceptions of Workplace Safety and Health

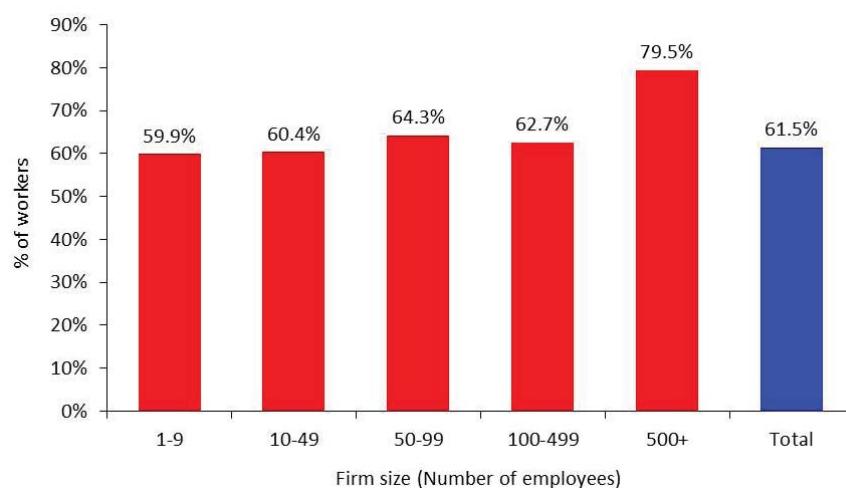
Third Quarter 2016

The respondents were asked to rate the statement, “The health and safety of workers is a high priority with management where I work.” More than 61% of construction wage-and-salary workers strongly agreed with this statement, slightly higher than all industries on average (60.5%; Chart 11). Construction workers from the largest firms were more likely than their counterparts from smaller firms to agree that employee safety and health were important to management. Nearly 80% of construction workers from firms with at least 500 employees strongly agreed with this statement, while about 60% of construction workers from firms with fewer than 10 employees had the same response (Chart 12).

**11. Employee health/safety is a high priority with management, by major industry, 2015  
(Wage-and-salary workers)**



**12. Employee health / safety is a high priority with management, by firm size, 2015  
(Wage-and-salary workers)**



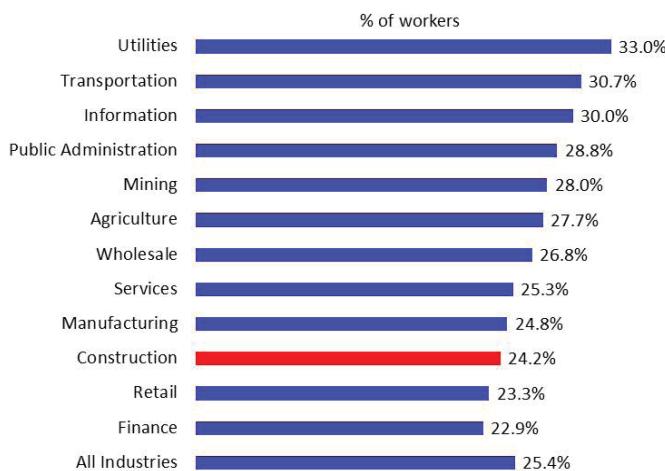
*Source:* 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

Third Quarter 2016

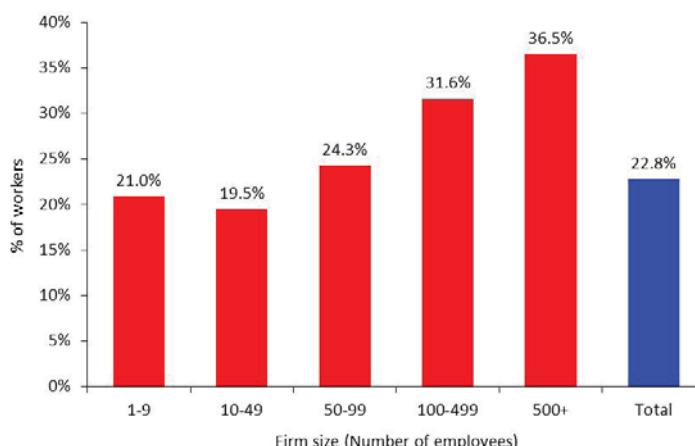
## SECTION 3: Perceptions of Current Job

The respondents were asked to rate the statement, “The demands of my job interfere with my personal or family life.” About 24% of construction workers agreed or strongly agreed with this statement, slightly lower than all industries on average (25.4%; Chart 13). Among construction wage-and-salary workers, the percentage increased by firm size. Around 20% of construction workers from firms with fewer than 50 employees agreed or strongly agreed with this statement, while 36.5% of their counterparts from the largest firms had the same response (Chart 14). The higher percentages among workers in larger firms suggest that larger firms may be more likely to take larger projects that could have less flexible deadlines and need close coordination among multiple crews and trades on job sites. Furthermore, larger projects such as heavy civil and infrastructure projects are usually constructed in remote areas, which may require temporary relocation of work crews to the job site for the life cycle of the project. From a task demands perspective, working away from home for an extended period of time can impact workers’ family life and their production performance as well (Memarian & Mitropoulos, 2016; Sobeih et al, 2009; Sluiter, 2006).

### 13. Job interferes with personal or family life, by major industry, 2015



### 14. Job interferes with personal or family life, by firm size, 2015 (Wage-and-salary workers)

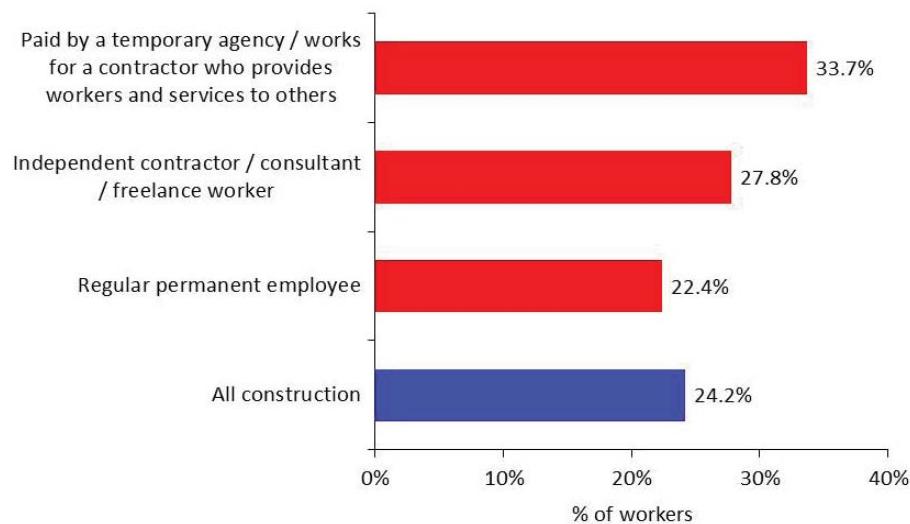


Source: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 3: Perceptions of Current Job

Third Quarter 2016

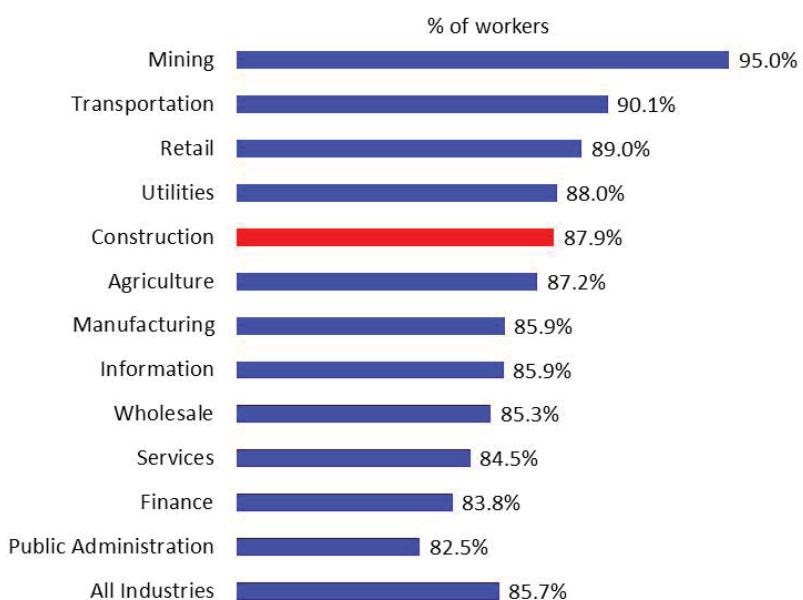
Construction workers with non-traditional work arrangements were more likely to think their job interfered with their personal or family life than regular permanent employees. Among construction workers paid by a temporary agency or working for a contractor, 33.7% agreed or strongly agreed with this sentiment (Chart 15), which was 50% higher than the percentage among their regular permanent counterparts (22.4%).

**15. Job interferes with personal or family life, by work arrangement in construction, 2015**

## Section 3: Perceptions of Current Job

Third Quarter 2016

Almost 88% of construction workers agreed or strongly agreed with the statement “I have enough time to get the job done”, which was slightly higher than all industries on average (85.7%; Chart 16).

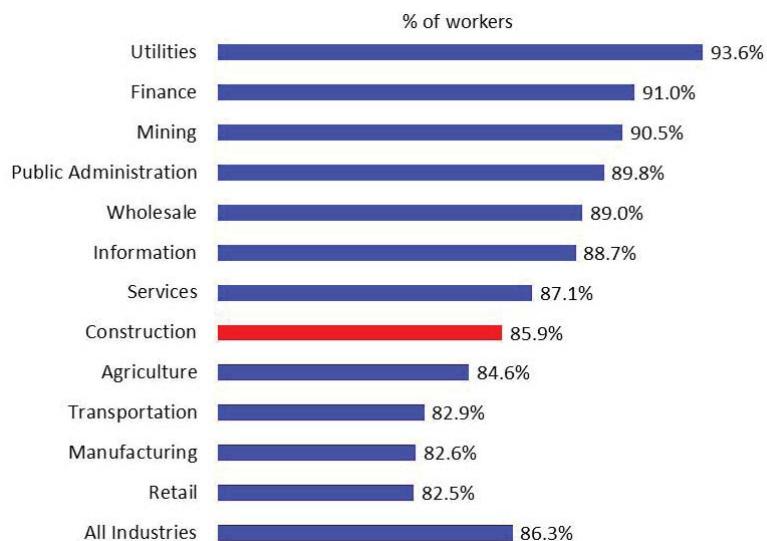
**16. Have enough time to get job done, by major industry, 2015**

## Section 3: Perceptions of Current Job

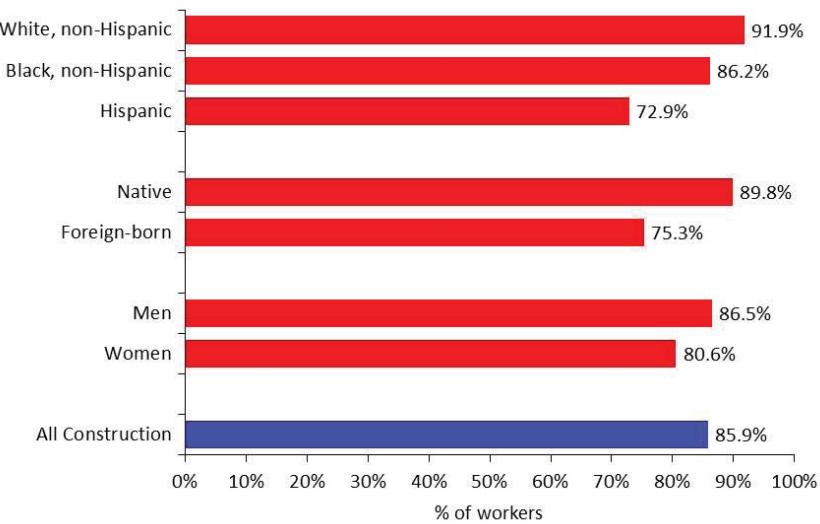
Third Quarter 2016

When asked to rate the statement, "My job allows me to make a lot of decisions on my own," 85.9% of construction workers agreed or strongly agreed with this statement, similar to the percentage among workers in all industries (86.3%; Chart 17). Stratified by demographic characteristics, Hispanic construction workers were less likely to agree that their job allows them to make decisions on their own compared to their white, non-Hispanic counterparts (72.9% versus 91.9%; Chart 18). In addition, the percentage among foreign-born and women construction workers was lower than their corresponding counterparts.

## 17. Job allows me to make decisions, by major industry, 2015



## 18. Job allows me to make decisions, by demographic characteristics in construction, 2015

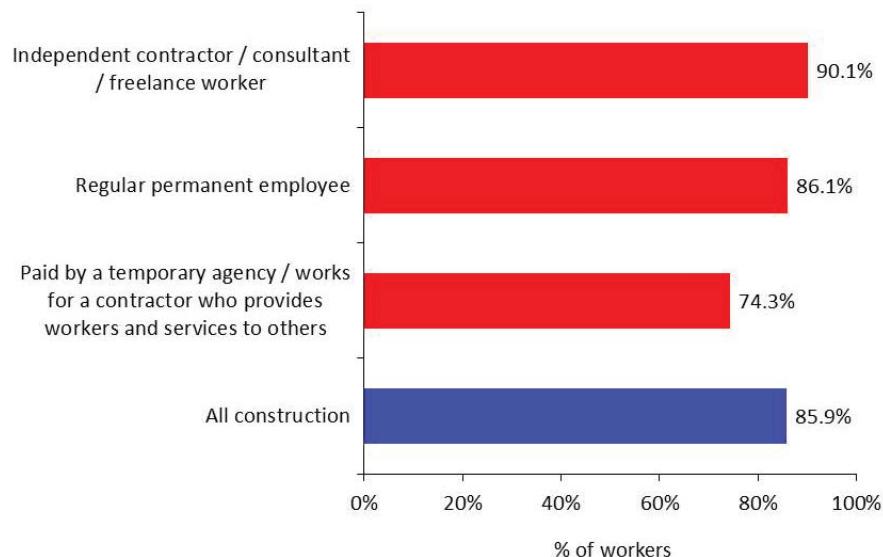


Source: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 3: Perceptions of Current Job

Third Quarter 2016

Among construction workers who were independent contractors, consultants, or freelance workers, about 90% agreed or strongly agreed that their job allows them to make decisions on their own. This was slightly higher than the percentage among regular permanent employees (86.1%; Chart 19), and 21% higher than the percentage for construction workers paid by a temporary agency or who worked for a contractor (74.3%).

**19. Job allows me to make decisions, by work arrangement in construction, 2015**

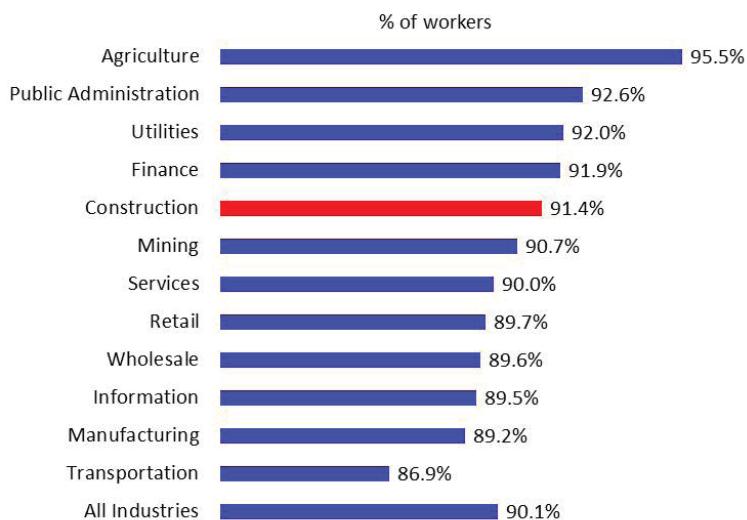
Source: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 3: Perceptions of Current Job

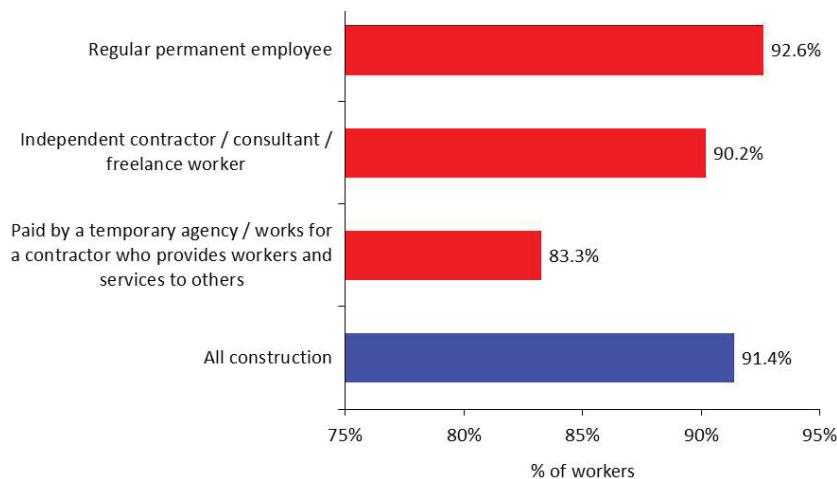
Third Quarter 2016

When presented with the statement, “I have support from my supervisor when necessary,” 91.4% of construction workers agreed or strongly agreed with this statement, which was similar to the percentage of workers in all industries (90.1%; Chart 20). Construction workers who were regular permanent employees were more likely to think that they had support from their supervisors when necessary than construction workers in non-traditional work arrangements. Furthermore, 92.6% of construction workers who were regular permanent employees agreed or strongly agreed with this statement, which was 11% higher than the percentage of construction workers paid by a temporary agency or who worked for a contractor (83.3%; Chart 21).

**20. Have support from supervisor when needed, by major industry, 2015  
(Wage-and-salary workers)**



**21. Have support from supervisor when needed, by work arrangement, 2015  
(Wage-and-salary workers)**



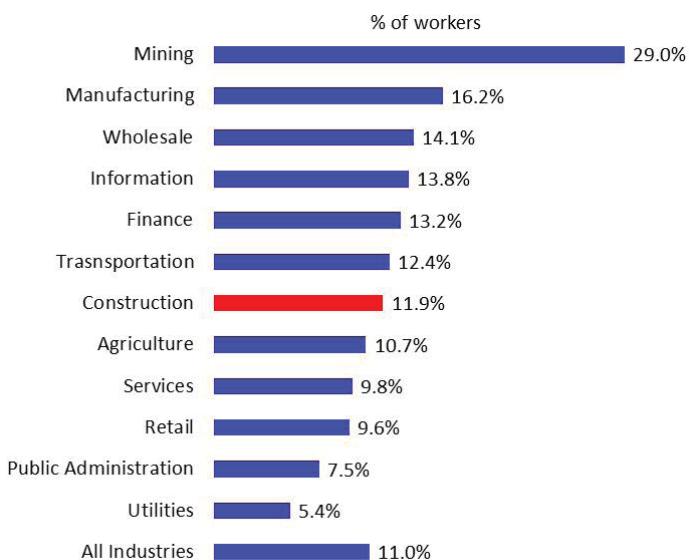
*Source:* 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 3: Perceptions of Current Job

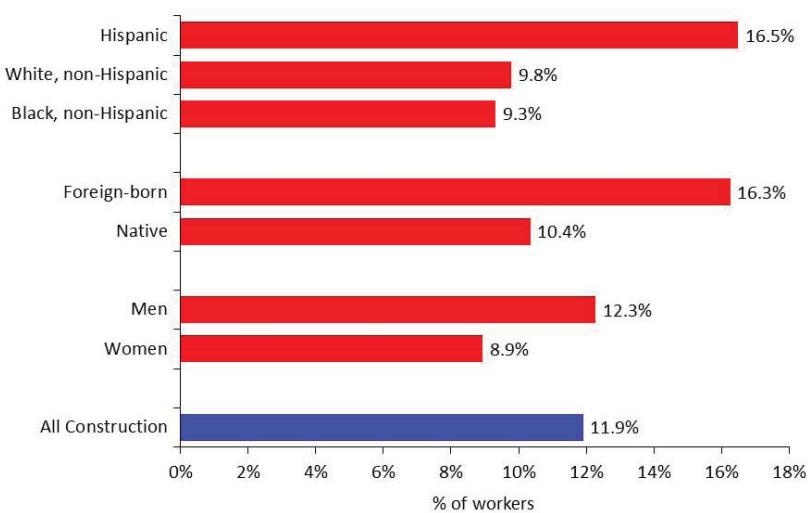
Third Quarter 2016

In response to, "I am worried about losing my job," almost 12% of construction workers agreed or strongly agreed with this statement, similar to the percentage for workers in all industries (11%; Chart 22). The high percentage among workers in mining may reflect slow job growth, even declining employment in that industry in recent years (BLS, 2015). When stratified by demographic characteristics, Hispanic construction workers were more likely to agree that they were worried about losing their jobs than non-Hispanic workers (Chart 23). In addition, the percentage among foreign-born and male construction workers was higher than their corresponding counterparts.

## 22. Worried about losing job, by major industry, 2015



## 23. Worried about losing job, by demographic characteristics in construction, 2015



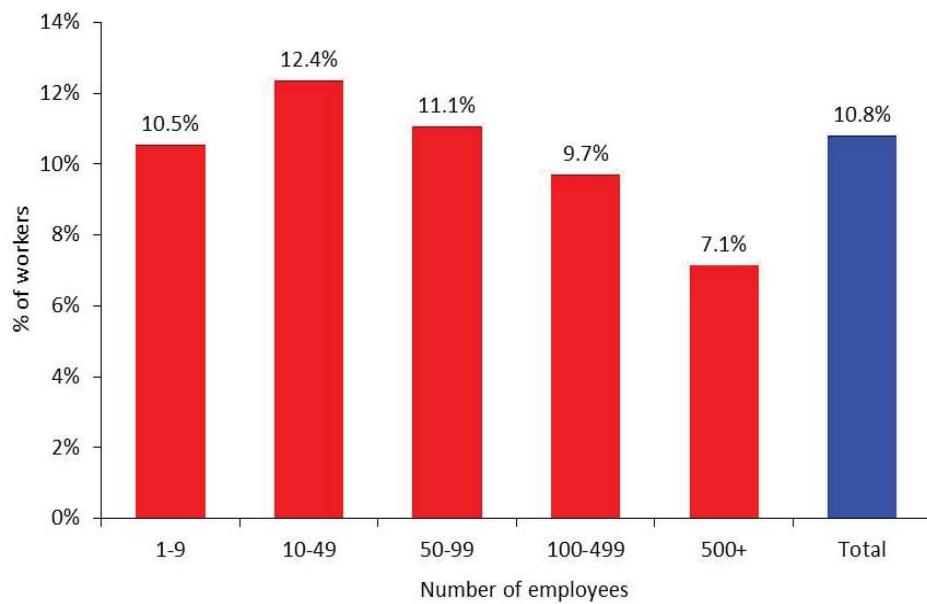
Source: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 3: Perceptions of Current Job

Third Quarter 2016

In terms of firm size, 10.5% of construction workers in firms with 1 to 9 employees were worried about losing their jobs, similar to the average for all construction firms (10.8%; Chart 24). Among construction workers in firms with 10 or more employees, the percentage of workers worried about losing their jobs decreased with firm size. Around 12% of construction workers from firms with 10-49 employees worried about losing their jobs, while only 7% of construction workers from firms with 500 and more employees were worried about losing their jobs.

**24. Worried about losing job, by firm size, 2015**  
(Wage-and-salary workers)

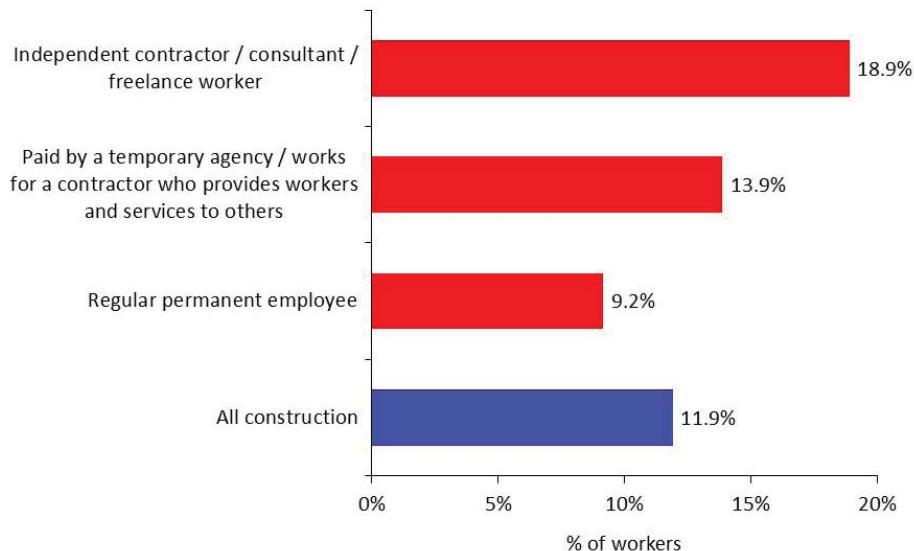


*Source:* 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

## Section 4: Safety and Health Training

Third Quarter 2016

Construction workers with non-traditional work arrangements were more likely to worry about losing their jobs than construction workers who were regular permanent employees. Among independent contractors, consultants, or freelance workers in construction, nearly 19% were worried about losing their jobs, which was more than double the percentage among regular permanent employees in this industry (9.2%; Chart 25).

**25. Worried about losing job, by work arrangement in construction, 2015**

Source: 2015 Occupational Health Supplement to the National Health Interview Survey. Calculations by the authors.

Third Quarter 2016

## Conclusion

The findings indicate that less than half of construction workers thought their workplace was very safe, the lowest among all industries, except agriculture. This suggests that construction remains more dangerous than most major industries. While national injury rates are going down, indicating overall improvement in construction safety, the data show that there are still a significant number of construction employers that do not make worker safety and health a priority. In particular, workers in smaller construction firms were less likely to report that worker safety and health is a high priority with management, and less likely to have health promotion programs at work than their counterparts from large firms. This is consistent with the findings from previous reports (Dodge & Data Analytics, 2016; Wang et al., 2016). Moreover, compared to regular permanent employees, construction workers with non-traditional work arrangements were more likely to think their job interfered with their personal or family life, and less likely to have support from supervisors when needed. Women construction workers were more likely to be threatened, bullied, or harassed on the job than their male counterparts; and Hispanic construction workers and foreign-born workers were more likely to worry about losing their jobs. Although these are not direct safety measures, job strain such as job insecurity and harassments on the job may impair a worker's health and hinder a worker's productivity.

While only employee perceptions are reported above, these findings may reveal gaps between management and employee perceptions, or between espoused and enacted policies. Some employers may not be doing as well as they think they are in terms of a positive safety culture or safety climate. It is important for management to monitor safety and health perceptions regularly across their company as part of their written safety and health programs. This may also trigger proactive communication about how to improve safety climate and mitigate negative safety and health outcomes.

## References

- Bureau of Labor Statistics (BLS). 2015. Labor Force Statistics from the Current Population Survey. <http://www.bls.gov/cps/tables.htm> (Accessed October 2016).
- Dodge & Data Analytics. 2016. Building a Safety Culture: Improving Safety and Health in the Construction Industry. <http://www.cpwr.com/sites/default/files/research/Building%20a%20Safety%20Culture%20SmartMarket%20Report%202016%20ff.pdf>.
- Memarian B, and Mitropoulos P. 2016. Production practices affecting worker task demands in concrete operations: A case study. *WORK: A Journal Prevention, Assessment and Rehabilitation*, 53, P 535-550.
- Schwatka NV, Hecker S, and Goldenhar LM. 2016. Defining and Measuring Safety Climate: A Review of the Construction Industry Literature. *Ann Occup Hyg*, 60(5): 537–550.
- Sluiter K. 2006. High-demand jobs: Age-related diversity in work ability. *Applied Ergonomics*, 37(4), 429–440.
- Sobeih T, Salem O, Genaidy A, Abdelhamid T, and Shell R. 2009. Psychosocial factors and musculoskeletal disorders in the construction industry. *Journal of Construction Engineering & Management*, 135(4), 267–277.
- Wang X, Dong X, and Goldenhar LM. 2016. Safety Management and Safety Culture among Small Construction Firms. [http://www.cpwr.com/sites/default/files/publications/2nd%20Quarter%202016\\_0.pdf](http://www.cpwr.com/sites/default/files/publications/2nd%20Quarter%202016_0.pdf).

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/>

© 2016, CPWR – The Center for Construction Research and Training. All rights reserved.

CPWR is the research arm of North America's Building Trades Unions, and it is uniquely qualified to serve workers, contractors, and the scientific community through its program of applied research. This Quarterly Data Report was produced using funds provided by Cooperative Agreement U60-OH009762 from The National Institute for Occupational Safety and Health (NIOSH). The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.