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WORKPLACE INJURIES

Fatal occupational injuries to independent workers

By Stephen Pegula and Matt Gunter

In recent years, the nature of the worker–employer dynamic has changed in many ways. One change is a shift from a continuous work agreement with no foreseeable end to a relationship that is finite and that encompasses a single-task, short-term contract, or freelance work. The rise of this so-called “gig economy” appears in the growth of peer-to-peer ridesharing applications on smartphones and the emergence of online marketplaces that match freelance labor to specific computer-based job tasks.[1] One trait most of these services share is their ability to match consumer needs with available workers in real time.

These workers, henceforth called independent workers, face unique challenges in terms of workplace safety. Independent workers are considered in current academic literature to be an at-risk group because of their fluid employment situation, which potentially puts them at greater risk for poorer workplace safety and health outcomes.[2]

The Bureau of Labor Statistics (BLS) Current Population Survey (CPS) has published employment data on contingent/alternative workers, which are defined similarly (but not identically) to independent workers in the Census of Fatal Occupational Injuries (CFOI), both in the past and, more recently, in June 2018.[3] However, BLS has not published any data on the workplace injury and illness experience of independent workers until now. The CFOI identified 662 fatal occupational injuries among independent workers in 2016 and 613 in 2017.

In this article, we review the methodology that the CFOI developed to identify these workers, detail the categories of independent workers, analyze the results of the 2 years of data available, and describe some important limitations of the data.[4]

Aspects of independent workers

Although independent workers perform a myriad of different types of work and can be found in many different occupations, they share a few common elements:

- Jobs are short term and/or usually consist of a discrete task. Examples of such jobs are a dog walker who is tasked with walking a dog for an hour on a certain day, a wedding planner in charge of the details of a couple's wedding, a landscaper who mows a homeowner's yard, and a plumber who fixes the pipes at a restaurant. These types of jobs have a definite beginning and end, and payment is often not made until the task has been completed.[5]
- There is no guarantee of future work beyond the task. Per the wedding planner example above, the successful planning of a wedding in the past does not guarantee future jobs planning weddings. Instead, it is incumbent upon the worker to identify new opportunities and make arrangements with prospective customers.
- Work is not guaranteed to be available when the worker wants it. Even though a landscaper might be available to work on a particular afternoon, there must be an available job.
- The worker and client both have to agree to the terms of the work. An independent worker can choose to undertake a job or not. A job commences only when the worker and client mutually agree to the terms—the work to be performed, the duration of the job, the payment involved—of the job.
- Almost all independent workers are self-employed. In general, individuals working for a wage or salary would not be considered independent workers, because they have the expectation for continued work and they are expected to undertake the work assigned by their employers. There are exceptions, however: those employed by temporary help agencies and those functioning as day laborers. (See the next section.)

It is important to note that some workers may share one or more of the above characteristics and not be considered independent workers. For example, a tree trimmer employed by a landscaping firm may work many different jobs in a single day. The tree trimmer, however, has the expectation of continued work at his or her firm beyond the day's jobs and therefore would not be considered an independent worker. A self-employed tree trimmer, however, would be deemed an independent worker, because she or he would be dependent on setting up future jobs to sustain work.

Although most independent workers are self-employed, not all self-employed workers are independent workers.[6] Self-employed workers who have the expectation of continued employment at a location they oversee are not considered independent workers in the CFOI. Among such workers are farmers, owners of retail and wholesale establishments, mechanics and repairers with their own garages, and other self-employed workers who have an established base of operations.[7]

Because of the huge variety of employment situations that exist, independent workers are difficult to categorize precisely. Independent workers were identified through information already collected for the CFOI, so no new data were sought beyond what is typically collected for that instrument. If the decedent's employment situation was consistent with the aspects outlined above, the worker was considered an independent worker in the CFOI.

Defining independent workers in the CFOI

To categorize independent workers properly in the CFOI, analysts codified the aforementioned general aspects into categories that can be applied uniformly across the data. Exhibit 1 shows the CFOI categories for independent workers.[8] The CFOI captures the job or task of the worker at the time of the fatal injury, but does not have information on whether the injury happened on the worker's primary job or a secondary job.

Exhibit 1. Independent-worker definitions in the Census of Fatal Occupational Injuries (CFOI)

Category	Definition	Examples
Intermediate contractors	Workers are self-employed and use an intermediary to connect them with customers	Drivers who find their clients via a peer-to-peer ridesharing app, freelance photographers, journalists, caterers, musicians, dog walkers, house cleaners, landscapers, and other workers who find their clients via an online marketplace or other intermediary
	Client payment goes to the intermediary	
	Workers are paid directly by the intermediary but are not employed by the intermediary	
	Workers are vetted and sometimes trained by the intermediary	
	Classified ads (online or print) and other informational sites are not considered intermediaries, because they do not meet all of the above criteria	
Independent contractors	Workers are not represented by another agency and are self-employed	Drivers, freelance photographers, journalists, caterers, musicians, dog walkers, house cleaners, landscapers, and other workers who do not use intermediaries to find their clients
	Typically, workers are solicited to perform a skilled, temporary service	
	Usually a preagreed-upon contract or arrangement is set in place for work done	
	Contracted on a per-event basis	
On-call employees	Workers who are under direct, formal, ongoing employment in an organization and who do not have a regular work schedule	Substitute teachers and on-call or call-in retail workers
	Those who work on an as-needed, on-call basis	
	Scheduled shifts are not guaranteed	
	Excludes workers who are paid for time that they are on call, such as physicians and firefighters	
Day laborers	Workers who typically are available for general labor needs	Construction day laborers, handymen and handywomen, moving help

Exhibit 1. Independent-worker definitions in the Census of Fatal Occupational Injuries (CFOI)

Category	Definition	Examples
	No formal work contract and not considered to be in the ongoing employment of the employer beyond the period of proffered work	
	No promise of future employment, although they can be scheduled to work for several days or weeks in a row	
	Considered wage or salary workers in the CFOI and de facto employees of the firm while at work	
Temporary-help agency workers	Workers are represented by another agency	Temporary agency workers who are provided to another firm or individual for work. Does not include direct employees of the temporary-help firm who are not placed with clients, such as accountants and analysts
	The agency "owns" the relationship with the contracting entity	
	Considered wage or salary workers in the CFOI	
Source: U.S. Bureau of Labor Statistics.		

What the fatalities data show

During the 2016–17 period, 1,275 (12 percent) of the 10,337 fatal occupational injuries nationwide were incurred by independent workers. The vast majority of independent workers (85 percent) were independent contractors.

Table 1. Fatal occupational injuries by type of independent worker, 2016–17

Type of independent worker[1]	2016	2017
All independent workers	662	613
Independent and intermediate contractors	579	535
Intermediate contractors	11	17
Independent contractors	568	516
On-call workers	25	29
On-call employees	-	3
Day laborers	24	26
Temporary help agency workers	58	49

[1] Independent workers generally have short-term jobs that involve a discrete task, have no guarantee of future work based on their current job, have no guarantee work will be available when they are able to work, and have the ability to decide which work they undertake.
Note: Data for all years are revised and final. Totals for major categories may include subcategories not shown separately. Dashes indicate no data reported or data that do not meet publication criteria. CFOI fatal injury counts exclude illness-related deaths, unless precipitated by an injury event.
Source: U.S. Bureau of Labor Statistics, in cooperation with state, New York City, District of Columbia, and federal agencies, Census of Fatal Occupational Injuries.

Table 2 shows the occupations with the highest numbers of fatally injured independent workers by occupation. Heavy and tractor-trailer truck drivers have the most fatalities with 173. The next two groups are both construction related with 174 fatalities in total.

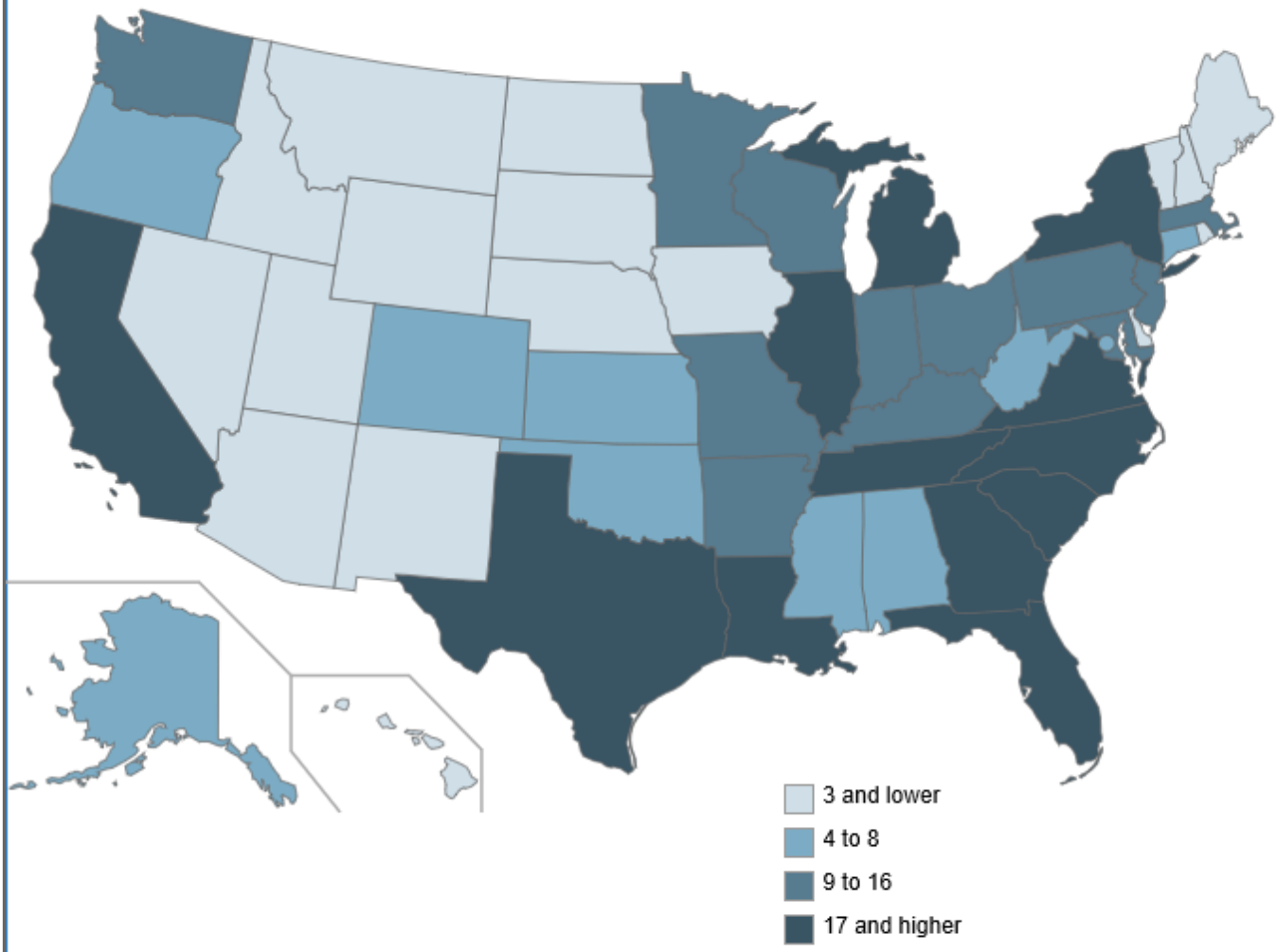
Table 2. Fatal occupational injuries to independent workers, by occupation, 2016–17

Occupation[1]	Number of injuries
Heavy and tractor–trailer truck drivers	173
First-line supervisors of construction trades and extraction workers	95
Construction laborers	79
Landscaping and groundskeeping workers	70
Tree trimmers and pruners	68
Fallers (loggers)	54
First-line supervisors of landscaping, lawn service, and groundskeeping workers	54
Carpenters	47
Roofers	46
Taxi drivers and chauffeurs (includes peer-to-peer rideshare drivers)	43
Athletes and sports competitors	33

[1] Occupation data are based on the Standard Occupational Classification system, 2010.
Note: Data for all years are revised and final. Totals for major categories may include subcategories not shown separately. CFOI fatal injury counts exclude illness-related deaths, unless precipitated by an injury event.
Source: U.S. Bureau of Labor Statistics, in cooperation with state, New York City, District of Columbia, and federal agencies, Census of Fatal Occupational Injuries.

Chart 1 shows the states that have the highest number of fatal occupational injuries to independent workers in 2016 and 2017. California and Texas were the two states with the most fatal injuries to independent workers. These two states also had the most fatal injuries to all other workers in 2016 and 2017 as well.

Chart 1. Fatal occupational injuries to independent workers by state of incident, 2016–17



Hover over a state to see data.
Hover over legend items to see states in a category.
Source: U.S. Bureau of Labor Statistics.

It is difficult to compare the numbers of fatalities for independent workers and all other workers because of the differences in total number: 1,275 and 9,062, respectively. Propensity ratios may be used to compare data on worker groups of different sizes. Reginald Harris, a BLS economist, applied propensity ratios in a recent analysis of workplace suicides and described the concept as follows (with a revised example using independent worker data).[9]

Propensity ratios higher than 1.00 indicate a higher propensity for an attribute; propensity ratios lower than 1.00 indicate a lower propensity for the attribute. A propensity ratio of 1.00 is neutral. For example, falls, slips, and trips accounted for 26.4 percent of the workplace fatalities among independent workers in 2016 and 2017, while, during the same period, only 15.4 percent of fatalities to all other workers were due to falls, slips, and trips. Dividing 26.4 by 15.4 yields a propensity ratio of 1.71. This ratio means that the proportion of falls, slips, and trips among independent workers was 71 percent higher than the proportion of falls, slips, and trips for all other workers.

Interpreted differently, this ratio means that, compared with non-independent workers, independent workers had a disproportionately higher share of fatalities due to falls, slips, and trips.

Table 3. Fatal occupational injuries, percentage of fatalities, and propensity ratio for independent workers and all other workers, by event or exposure, 2016–17

Event or Exposure[1]	Non-independent workers		Independent workers		Propensity ratio
	Count	Percent	Count	Percent	
All Events or Exposures	9,062	100	1,275	100	1.00
Violence and other injuries by persons or animals	1,558	17	115	9	0.52
Transportation incidents	3,725	41	435	34	0.83
Fire or explosion	191	2	20	2	0.74
Fall, slip, trip	1,399	15	337	26	1.71
Exposure to harmful substances or environments	900	10	149	12	1.18
Contact with objects and equipment	1,238	14	218	17	1.25

[1] Based on the BLS Occupational Injury and Illness Classification System (OIICS) 2.01, implemented for 2011 data forward.
Note: Data for all years are revised and final. Totals for major categories may include subcategories not shown separately. CFOI fatal injury counts exclude illness-related deaths, unless precipitated by an injury event.
Source: U.S. Bureau of Labor Statistics, in cooperation with state, New York City, District of Columbia, and federal agencies, Census of Fatal Occupational Injuries.

Table 4 presents details on propensity ratios by age group for independent workers compared with all other workers.[10] The following are some items of note on propensity ratios:

- The proportion of older workers that accounted for independent worker fatalities was greater than the proportion of older workers that accounted for all other worker fatalities, with a propensity ratio of 1.17 for ages 55 to 64 and 1.33 for ages 65 and older.
- Violence (including homicides and suicides) is relatively less frequent among independent workers than all other workers, with a propensity ratio of 0.52.
- Falls to a lower level had a propensity ratio of 2.01, meaning that they accounted for 101 percent more independent worker deaths (24 percent) than all other workers' deaths (12 percent).
- Entertainers and performers, and sports and related workers, had a very high propensity ratio of 11.52. Other occupation groups with a high propensity ratio include forest, conservation, and logging workers (4.64); supervisors of construction and extraction workers (4.22); fishing and hunting workers (3.72); grounds maintenance workers (3.67); and air transportation workers (2.32).

Table 4. Fatal occupational injuries, percentage of fatalities, and propensity ratio for independent workers and all other workers, by age, 2016–17

Age	Non-independent workers		Independent workers		Propensity ratio
	Count	Percent	Count	Percent	
All workers	9,062	100	1,275	100	1.00
16 to 17 years	21	0	3	0	1.02
18 to 19 years	102	1	3	0	0.21
20 to 24 years	562	6	41	3	0.52
25 to 34 years	1,555	17	151	12	0.69
35 to 44 years	1,658	18	228	18	0.98

Table 4. Fatal occupational injuries, percentage of fatalities, and propensity ratio for independent workers and all other workers, by age, 2016–17

Age	Non-independent workers		Independent workers		Propensity ratio
	Count	Percent	Count	Percent	
45 to 54 years	1,916	21	288	23	1.07
55 to 64 years	1,987	22	328	26	1.17
65 years and older	1,233	14	230	18	1.33

Note: Data for all years are revised and final. CFOI fatal injury counts exclude illness-related deaths, unless precipitated by an injury event.
Source: U.S. Bureau of Labor Statistics, in cooperation with state, New York City, District of Columbia, and federal agencies, Census of Fatal Occupational Injuries.

Conclusion

Independent workers face distinct challenges related to workplace safety. In an effort to identify the risks that relate to being an independent worker, the Census of Fatal Occupational Injuries (CFOI) first defined what it meant to be an independent worker. The CFOI highlighted specific characteristics that these workers have in order to then codify and apply these characteristics to the definition of independent workers.

The CFOI found that independent workers accounted for 12 percent of all fatalities during the 2016–17 period. We used propensity ratios to compare independent workers and non-independent workers across various aspects including the demographics of the worker, the incident that precipitated the fatality, and the employment situation of the worker. Among those occupations with large propensity ratios were entertainers and performers, and sports and related workers; forest, conservation, and logging workers; and supervisors of construction and extraction workers.

More years of data will provide additional information to assess the independent worker safety experience and identify trends. The CFOI program continues to collect these data and will report them annually. Additional data on fatal injuries to independent workers is available here.

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RELATED ARTICLES

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NOTES

[1] BLS does not use the term "gig economy" to describe these workers.

[2] John Howard, "Nonstandard work arrangements" NIOSH Science Blog (Atlanta: Centers for Disease Control and Prevention), January 3, 2017 https://blogs.cdc.gov/niosh-science-blog/2017/01/03/nonstandard-work-arrangements/, and "Nonstandard work arrangements and worker health and safety," American Journal of Industrial Medicine, vol. 60, issue 1, (October 25, 2016): 1–10,doi: https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.22669.

For more on independent workers, see Seth D. Harris and Alan B. Krueger, "A Proposal for modernizing labor laws for twenty-first-century work: The 'Independent Worker,' " Discussion Paper 2015-10 (Washington, DC: Brookings Institution, The Hamilton Project, December 2015), http://www.hamiltonproject.org/assets/files/modernizing_labor_laws_for_twenty_first_century_work_krueger_harris.pdf.

[3] For more information about U.S. labor force statistics from the CPS, see "Labor force statistics from the Current Population Survey" (U.S. Bureau of Labor Statistics), https://www.bls.gov/cps/lfcharacteristics.htm. The definitions of independent workers in the CFOI and contingent/alternative workers in the CPS differ, so users should not directly compare data from these instruments. One notable difference is that the CFOI categorizes the worker according to the job in which he or she is working at the time of the fatal incident, whereas the CPS counts the worker's primary job only. For example, consider a full-time engineer who also works 10 hours a week as a rideshare driver. If the person was killed while driving for the rideshare, the CFOI would categorize the worker as a driver. By contrast, the CPS would categorize the worker as an engineer. The CPS is exploring additional questions to better identify contingent/alternative workers; for more information, see "Labor force statistics from the Current Population Survey: Electronically mediated employment" (U.S. Bureau of Labor Statistics, September 28, 2018), https://www.bls.gov/cps/electronically-mediated-employment.htm.

For an example of previous data, see "Contingent and alternative employment arrangements, February 2005" (U.S. Bureau of Labor Statistics, press release, July 27, 2005), https://www.bls.gov/news.release/archives/conemp_07272005.pdf.For more recent data, see "Contingent and alternative employment arrangements—May 2017" (U.S. Bureau of Labor Statistics, press release, June 7, 2018), https://www.bls.gov/news.release/pdf/conemp.pdf.

[4] The CFOI has published data on fatal occupational injuries in the United States since 1992. More information about the CFOI can be found in "Census of Fatal Occupational Injuries: Overview," Handbook of Methods (U.S. Bureau of Labor Statistics, November 3, 2017), https://www.bls.gov/opub/hom/cfoi/home.htm.

[5] A worker who meets the other criteria for being an independent worker and who performs a discrete task but does so on a consistent basis (such as a landscaper who mows a person's lawn each week) is generally considered to be an independent worker because performing that job today does not guarantee that the job will be available next week (even if it often is). In addition, worker protections that generally come with working for a wage or salary, like severance pay and advance notification of being laid off, are not always present in these scenarios.

[6] Over the 2-year period of 2016–17, 84 percent of fatally injured independent workers were self-employed.

[7] Each workplace fatality has its own unique set of circumstances. For unusual cases, a group of senior economists at BLS assign independent worker status after reviewing the case in full. More information on the data sources available for CFOI cases can be found in "Census of Fatal Occupational Injuries: Data sources," *Handbook of Methods* (U.S. Bureau of Labor Statistics, November 3, 2017), https://www.bls.gov/opub/hom/cfoi/data.htm. For 2016 and 2017 data, the CFOI collected more than 46,000 unique source documents to substantiate the 10,337 fatal occupational injuries incurred in those years.

[8] Besides the categories listed in the table, there are two others—independent contractors, unspecified; and on-call workers, unspecified—that are available when the data are sufficient to establish that the decedent was an independent worker but are not detailed enough to choose a more detailed option.

[9] The formula for calculating a propensity ratio is $P = (I_x/I)/(AW_x/AW)$, where

P = Propensity ratio,

I_x = Workplace fatalities for characteristic x that occurred to independent workers,

I = All independent worker fatalities,

AW_x = Workplace fatalities for characteristic x that occurred to all other workers, and

AW = All workplace fatalities to all other workers.

For additional details on propensity ratios, see Reginald Harris, "Suicide in the workplace," *Monthly Labor Review*, December 2016, https://www.bls.gov/opub/mlr/2016/article/suicide-in-the-workplace.htm.

[10] As noted in the text of this article, the vast majority of independent workers are self-employed. More data are needed to examine the relationship between self-employed and independent workers to see if one drives the other. For more information on fatal occupational injuries to self-employed workers, see Stephen M. Pegula, "Occupational fatalities: self-employed workers and wage and salary workers," *Monthly Labor Review*, March 2004, https://www.bls.gov/opub/mlr/2004/03/art2full.pdf.

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