

Safety in the Workplace: Differences Between Permanent and Temporary Workers

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Abstract

The Occupational Safety and Health Administration recently started a temporary worker initiative, due to a large number of temporary worker injuries. All too often, temporary worker injuries occurred on the first few days of a job, due to a lack of safety training. The goal of this research is to explore potential differences between temporary and permanent workers, in terms of safety. Although the two hypotheses were not supported statistically by the study, the research presented offers valuable insight into the challenges temporary workers face and how improve in the future.

In April of 2013, the Occupational Safety and Health Administration (OSHA) launched a new initiative to help protect temporary workers (Protecting temporary workers, 2018). The main goal of the initiative is to bring together host employers and staffing agencies to outline each parties' role in ensuring specific contractual obligations are met. One major obligation in these contracts is responsibility for the worker and the training they must receive in order to safely perform their job. OSHA's temporary worker initiative demonstrates that temporary worker safety in this country is a problem and needs to be addressed (Galassi, 2014). But how big of a problem is it? The answer: no one really knows. It's challenging to keep track of temporary workers and even more challenging to track how many injuries accrue throughout the year due to a number of reasons, which is what this research will explore.

According to the Department of Labor, temporary workers are those who fill temporary appointments, which are defined as, "appointment[s] lasting one year or less, with a specific expiration date" (Temporary employees, 2018). Temporary appointments are usually used to fill short-term positions, meet specific employment needs, and to fill irregular or seasonal work schedules. One example of this is when the United Postal Service (UPS) hires temporary workers for its busy season around the holidays. According to its website (McMackin, 2017), UPS planned to hire 95,000 temporary workers to fill its seasonal needs in 2017. Out of 95,000 temporary workers, how many were injured? And how many received adequate safety training? Just because these people are temporary workers does not mean they can be treated like temporary people.

Temporary workers can often be referred to as contingent workers or "temporary services, temporary staff, temps, employee leasing, flexible staffing, outsourcing, free-lancing, consultants, co-employees, on-call workers, independent contractors, flexible staff,

supplementals, peripherals, OPS (other personnel services), or interns” (Reardon). For the sake of this research, they will be referred to as temporary workers (unless using a direct reference).

Often, temporary workers are hired through a temporary staffing agency. Companies will reach out to temporary staffing agencies and request temporary employees for a variety of reasons. Essentially, temporary workers are working under the supervision of the staffing agency as well as the host employer. So, who is in charge of the temporary workers’ safety? Who is responsible for the necessary safety training? These are all things that are supposed to be hashed out in the contract between the staffing agency and host employer, prior to hiring the temporary worker. A common problem is that each contract is unique, so responsibilities may not always be clear and the content varies from contract to contract.

Before getting too far, it is important to understand where the notion of temporary workers originated. According to an article from Louis Hyman, temporary work began right after World War II (Hyman, 2016). The first temporary agency began in 1948, when Elmer Winter and his partner Aaron Scheinfeld, both lawyers at their private firm, needed a secretary to type their briefings. Winter and Scheinfeld reached out to employment agencies, but these agencies were only filling permanent positions, so they reached out to a former secretary of theirs and offered a temporary position until the briefs were typed up. Winter and Scheinfeld realized that their needs of temporary help were not exclusive, and they decided to start their own temporary staffing agency, Manpower (Hyman, 2016). In the beginning, staffing agencies were mainly in the administrative field, such as secretaries and assistants. However, as companies became more cost efficient, they soon began to realize that temporary workers could be used in every field.

In today’s job market, temporary workers are becoming more common for a variety of reasons. The Department of Labor estimates that there are approximately 3 million temporary

workers in the workforce (Employment, hours, and earnings from the current employment statistics survey, 2018). Approximate is a key word in that estimate because the true number cannot be precisely calculated. This is especially true for workers who are picked up just for a day and may work “under the table,” or not report their employment to the government. So why would companies turn to temporary workers? The answer is simple, to save money. As previously mentioned, contracts between host employers and staffing agencies are unique, but in most contracts, host employers will not have to pay for temporary workers’ benefits such as medical and dental insurance, retirement, paid vacation, maternity leave, etc. (Foley, Ruser, Shor, Shuford, & Sygnatur, 2014).

The U.S. Department of Commerce recently published an executive summary on temporary workers in the labor market with some interesting facts. According to the article, temporary workers accounted for “2.4 percent of all private sector jobs in the U.S. economy” (Nicholson, 2015). Although that does not make up a large percentage of the job market, it is an all-time high and is estimated that that number will continue to rise. The article also points out a number of positives for being a temporary worker such as, “a better work-life balance, more flexible hours, higher job mobility, or the opportunity to experience work in different industries” (Nicholson, 2015). Demographic statistics reveal that temporary workers are more likely to be younger, female, and Hispanic or African American (Nicholson, 2015).

One of the major problems regarding temporary employment is how the workers are reported. In terms of payroll, the Bureau of Labor Statistics does not ask temporary agencies where they place their workers, and host employers are not required to report their temporary workers’ payroll information, so they are essentially lost in the middle and there is not sufficient data on the subject (Nicholson, 2015). On the other hand, in terms of injuries, host employers are

required to record temporary worker injuries on their OSHA 300 log, but staffing agencies are not supposed record the injury on their OSHA 300 log (to avoid inflating injury rates, recording the same injury twice) (Foley et al. 2014). As can be seen here, it may be difficult to keep track of who is responsible to claim temporary workers depending on the situation.

Workplace safety is governed under 29 Code of Federal Regulation (CFR) 1910 and 1926, which is governed by OSHA. The 1910 and 1926 standards regulate general industry and construction, respectively. Under these regulations, companies that are larger than 10 employees are required to maintain an OSHA 300 log, which is essentially a list of serious occupational injuries and illnesses (Who keeps records, 2018). The OSHA 300 log records information such as employee name, title, description of injury/illness, date of incident, number of days missed, etc. The information from these logs are vital in “evaluating the safety of a workplace, understanding industry hazards, and implementing worker protections to reduce and eliminate hazards” (Who keeps records, 2018). What the OSHA log is lacking is whether the employee is a permanent or temporary worker, which may be one reason why temporary workers’ injuries are underreported (Foley et al. 2014). This lack of information, coupled with a host employer’s lack of knowledge for having to record temporary worker injuries leads to an almost guarantee of underreporting. How can OSHA implement worker protections, if records of temporary workers’ injuries are not maintained?

A comprehensive review of previous literature pertaining to temporary workers has revealed a few trends. The majority of literature on temporary workers and their safety has been focused on workers’ compensation claims in various states, using archival data. Other research has focused on the psychological aspect of temporary workers, and their job satisfaction, compared to permanent workers. There are also a number of articles pertaining to the current

OSHA regulations and ways that companies can avoid their responsibilities through legal loopholes. While all of these studies are important and focus on a specific problem, there is very little research on the safety of temporary workers compared to permanent workers, from the actual worker's perception. How safe do temporary workers feel while they're at work? Do they receive the same training as permanent workers? Are temporary workers given more hazardous jobs because they are unaware of the hazards, compared to permanent workers? These were all questions that needed to be answered from a temporary worker's perspective and not from archival data, which is the focus of this research.

According to Smith, Silverstein, Bonauto, Adams, & Fan (2010) who researched workers' compensation claims for temporary workers compared to permanent workers, in Washington State, found that temporary workers, "had higher rates of injury for all injury types, and higher median time loss (40 vs. 27 days)." Smith et al. (2010) focused on eight common injury types, based on previous research, and also used the North American Industrial Classification System (NAICS) codes to break down the workers' compensation claims by industry. By doing this, they were able to find common types of injuries in specific industries, such as "temporary agency workers had higher rates of injury for all injury/illness types in construction and manufacturing sectors from 88% higher rates for falls from elevation in manufacturing to almost 400% higher for toxics in construction" (Smith et al. 2010). Another interesting result from their study was that temporary workers have significantly higher medical bills than permanent workers, while also being more likely to have rejected claims (Smith et al. 2010).

Madigan, Forst, & Friedman published a similar study comparing temporary and permanent workers in terms of workers' compensation claims in Illinois (2017). Two problems

the researchers had were the “wide variety of definitions used to capture this group of workers,” and the “occupational health and safety regulations and procedures can vary by state, giving wide fluctuations in data available” (Madigan, Forst, & Friedman, 2017). One item that was not previously mentioned is that although OSHA in the federal governing body, states may decide to regulate workplace safety, as long as those regulations are at least as stringent as the federal regulations. Results from the study revealed that temporary workers had a higher frequency of upper body injury, but a lower frequency of lower body injuries compared to permanent workers. The most common injuries for temporary workers were overexertion, slip/trip/falls, struck by/against, repetitive trauma, and caught in/under/between (Madigan, Forst, & Friedman, 2017). One theory for this association is that the temporary workers are given the more hazardous jobs compared to permanent workers, with less safety training than permanent workers.

One article by Wuellner, Adams, & Bonauto (2016) explored the Bureau of Labor Statistics’ (BLS) annual Survey of Occupational Injuries and Illnesses (SOII). The survey is used by the Department of Labor to investigate injuries and illnesses in the workplace, and Wuellner et al. (2016) used data from the survey to measure underreporting, by comparing it to workers’ compensation claims. Similar to the previous literature, the researchers broke it down by industry and found that construction had one of the highest rates of underreporting injuries. This was due to the fact that when construction companies bid for jobs, an injury/illness rate is included with their bid, which is essentially an incentive to under report injuries, to increase the likelihood they win upcoming jobs (Wuellner et al. 2016). Other reasons for under reporting injuries include managers receiving bonuses for lower rates, poor safety culture, and lack of understanding reporting requirements (Wuellner et al. 2016).

Getting away from workers' compensation claims, and moving towards legal battles of temporary workers, Burgess and Connell (2006) explored the human resource management side of temporary workers. Temporary workers are often taken advantage of because they want to keep their host employer happy and will go above and beyond their original agreed upon duties. One such example is working at a temporary job for an extended period of time, often referred to as "permatemps" (Cole, 1999). When companies have "permatemps" they essentially have permanent workers, but only have to pay temporary worker rates. Microsoft was sued in the 1990s for having permatemps and had to settle by paying \$97 million dollars (Foley et al. 2014).

Being a temporary employee has its challenges. According to a law article by Lanza, Maryn, & Elders (2003), "contingent workers could not buy discounted software in the company store, use the company's athletic fields or participate in company bowling nights." On top of not receiving paid benefits from host employers, temporary workers often miss out on activities that boost company morale. Practices such as these may increase turnover and lose the company valuable temporary employees. If that's not bad enough, some companies are pushing to go even further.

As previously mentioned, on-demand workers can also be referred to as temporary workers. According to a policy brief, "on-demand jobs are the among the most dangerous in the country...three of the most common sectors in on-demand businesses are transportation, delivery, and home services" (On-demand workers should be covered by workers' compensation, 2016). One legal issue that has become relevant is that on-demand businesses will call their employees "independent contractors," which in turn allows the companies to avoid having to cover workers' compensation fees because the workers are not technically considered employees of that company. When this happens, if an on-demand worker is injured, they will

have to cover the costs of their medical expenses on their own. Situations such as this are just one of the many ways companies try to get around paying extra for their employees.

The last time the Bureau of Labor Statistics was able to focus solely on temporary workers was in 2005, due to “budgetary constraints” (Howard, 2017). Data for the report was collected from the Current Population Survey (CPS), which “is a monthly nationwide survey of about 60,000 households that obtains information on employment, unemployment, earnings, demographics, and other characteristics” (Contingent and alternative employment arrangement, 2005). According to their definitions of independent contractors, on-call workers, temporary help agency workers, and others by contract firms, there were just under 15 million in existence in 2005 (Contingent and alternative employment arrangement, 2005). From these statistics, contingent workers tended to be younger than traditional permanent workers and more likely to be female (Contingent and alternative employment arrangement, 2005). On top of that, over half of the contingent workers surveyed would have rather had a traditional permanent position than a temporary role.

As can be seen from previous research, temporary worker safety has been an issue for years and has only recently been addressed by OSHA, and their temporary worker initiative. According to OSHA, it is the “joint responsibility” of the host employer and staffing agency to ensure a safe working environment and can enforce this under Section 5(a) of the Occupational Safety and Health Act, otherwise known as the “general duty” clause (Lies II, & Mohan, 2013). Essentially, the general duty clause has two obligations that employers must follow: creating an environment free from recognized hazards, and following the occupational safety and health regulations (Galassi, 2012). OSHA is quite aware that employers try to get the most out of temporary workers, while offering them the least amount in return.

According to OSHA's website on temporary workers, some employers use temporary workers to avoid certain obligations, place them in hazardous jobs that permanent employees avoid, and deprive them of enough training to safely perform their job (Protecting temporary workers, 2018). One thing that OSHA would like to see is better communication between the host employer and staffing agency, along with staffing agencies better understanding the hazards associated with each host employer. Staffing agencies should also have better communication with their temporary workers to ensure they are receiving the necessary training and not performing jobs that are beyond their original scope. Although these look good on paper, the reality of it is that they are unlikely to happen in the field.

OSHA has also published a recommended practices guide, to help further protect temporary workers (Recommended practices, 2014). In order to split the responsibility (and most likely the costs), OSHA has recommended that "staffing agencies should provide general safety and health training applicable to different occupational settings, and host employers provide specific training tailored to particular hazards at their workplace" (Recommended practices, 2014). This is an important concept that should be adopted because staffing agencies can provide training before the temporary worker even arrives on the host employer's site, and once temporary workers are on site, they can receive their site-specific training.

However, Scott Harris, director of EHS Advisory Service for Underwriters Laboratory, points out that having temporary workers is a complicated situation, stating, "If that person comes in for, say, a day and turns around and walks around and never comes back, then all that's wasted... a lot of effort and money got spent on someone's who's just never going to come back" (Morrison, 2014). Harris states an interesting point because there is the possibility that companies spend more money on training temporary workers with a high turnover rate, rather

than just hire permanent workers. Furthermore, Harris points out that temporary workers are often not aware of their rights, such as their right to decline work that they believe is unsafe.

One area that needs special attention is personal protective equipment (PPE). Although PPE is a least effective step in the hierarchy of controls (Appendix A), for some industries such as construction, it is practically universal that construction sites require at least steel-toed boots, hard hats, safety glasses, and high visibility clothing. More PPE may be needed, depending on the nature of the work. Who should be responsible for supplying temporary workers with proper PPE, the host employer or staffing agency? According to OSHA (Temporary worker initiative, 2015), there should be communication between the host employer and staffing, but ultimately it should be the staffing agency supplying the required PPE to the temporary worker, at no charge. Communication is necessary in order to ensure that the PPE supplied by the staffing agency meets the requirements of the job task. Even though it is the primary responsibility of the staffing agency, both the host employer and staffing agency can be held accountable due to the general duty clause, previously mentioned.

Safety training, along with proper PPE, are two things that companies need to take seriously, no matter if the worker is permanent or temporary. Adrien Zamora, was a 28-year-old who was a temporary worker for a construction company in New York City. Zamora was cleaning on a scaffold, when he fell 40 feet to his death because the site was not equipped with the proper fall protection. Lawrence Daquan Davis was a 21-year-old temporary worker in Florida at a bottling facility. It was Davis' first day on the job when he went down into a machine to clean up some broken bottles. Employees did not know Davis was under the machine cleaning when they turned the machine back on, crushing Davis instantly. Investigation into the matter found that Davis and the other employee were not trained in lockout/tagout, which is a

simple training that de-energizes the machine and locks are placed on the power source to avoid it being energized again. Another temporary worker, Samir Storey, was also killed on his first day on the job, when he was instructed to clean the inside of a tank. While performing the job, liquid filled the tank, which trapped Storey inside. Investigation into the matter found that the company did not have the proper safety procedures in place, such as an emergency rescue plan, to protect workers (Michaels, 2013).

Stories such as these are unfortunately all too common for temporary workers, due to lack of safety training and companies not caring about their employees, especially temporary ones. While companies may cut corners by foregoing safety training, thinking they save money in the short run, this is not the case if a worker is injured, or worse killed. OSHA issues hefty fines when they investigate injuries in the workplace. For example, a packaging company in Massachusetts was fined over \$330,000 dollars when the company failed to contact emergency services for a temporary worker who was injected with a propellant gas. On top of that, the company failed to notify OSHA within the required 24 hours for serious injuries. The temporary worker was not provided the necessary safety training for working on a production line, and through OSHA's investigation they found both the host employer and two staffing agencies responsible. All three were fined accordingly, with the host employer receiving the worst of fines (Occupational Health and Safety Administration, 2016).

Communication is a key component of any relationship, but this is especially true for host employers and staffing agencies. Improper communication between these two can be the difference between life and death for a temporary worker. As previously mentioned, both the host employer and staffing agency are responsible for temporary workers, which means that both are responsible for safety training. Although communication, along with contractual agreements,

will decide which entity provides certain trainings, a general consensus is that the staffing agency should provide general safety training, whereas the host employer should provide site-specific safety training (Galassi, 2012).

General safety training may include fit-testing for respirators and industrial truck (forklift) operating, whereas site-specific training would be lockout/tagout and emergency evacuation plans (Deakins, 2013). There are also safety trainings that can take a hybrid approach, with good communication. Examples of this approach would be the staffing agency training temporary workers on general hazard communication, and host employers focusing on the specific chemicals temporary workers may come across at the site, as well as what to do if they come in contact with them. Although it was previously mentioned that safety training can become costly to host employers, a large majority of injuries and deaths can be avoided from basic safety trainings.

From previous research, there is a strong association that temporary workers in industries such as general manufacturing and construction have a greater risk of injury compared to permanent workers, for a number of reasons. These reasons range from lack of safety training, not understanding protection laws, doing riskier jobs for the host employer, not having proper PPE, etc. Moreover, “no calculation exists for a temporary-worker injury rate” (Morrison, 2014). Much of the existing data on temporary workers focuses on archival data, which has shown to be inconsistent due to varying definitions of temporary workers, underreporting injuries, lack of understanding reporting requirements, and “under the table” working. Research that took temporary workers’ perspective was predominately about psychological well-being, organizational structures, and motivations.

The focus of this research was to get a better understanding of temporary workers' perspective of safety in the workplace compared to permanent workers. From the author's understanding, there is no other research that focuses on temporary worker safety, from the perspective of temporary workers. The results of the research can offer insight on how to better train temporary workers and create an overall safer work environment. The first hypothesis states that temporary workers will receive significantly less safety training compared to permanent workers. The second hypothesis states that on average, temporary workers will fail to report injuries on the job more frequently than permanent workers. Overall, the goal of the research is to neither discourage nor encourage companies from employing temporary workers, but to present insight on potential issues and how they may be addressed in a proactive manner.

Methods

Due to the lack of literature on temporary worker safety, from the perspective of the worker, an observation approach was chosen. A survey (Appendix B) was developed in order to compare temporary and permanent workers in Western New York. In an attempt to increase participation in the survey, by decreasing perceived risk, the survey did not collect the names of the participants, or the company that the participant worked for. Companies in the general industry and/or the construction industry that employed temporary and permanent workers were chosen for the study. From previous research, general industry and construction fields had higher rates of injuries.

To further increase participation, the survey was sent electronically to managers of these companies for internal review. Managers received an email from the researcher with a recruitment message (Appendix C) and consent form (Appendix D). The consent form did not have to be signed and returned because completion of the survey constituted consent. The

surveys were also sent to temporary staffing agencies in the Western New York area and instructed that the survey was for temporary workers in general industry or construction.

The survey was comprised of 17 multiple choice questions, 6 of which were demographic, and 11 questions (2 had open-ended responses available) were aimed at safety in the workplace. Permanent and temporary workers were given the same survey in order to easily compare the two. Managers were also encouraged to partake in the survey. Demographic questions included gender, age, level of education, race/ethnic origin, marital status, and employment status. The employment status question would be used as the filter question to compare temporary and permanent workers, as well as managers.

The remaining questions were statements about safety, and asked participants to rate on a 5-point Likert-scale whether they strongly agreed, agreed, neither agreed nor disagreed, disagreed, or strongly disagreed. These scores were coded as 5, 4, 3, 2, and 1, respectively. There was also a non-applicable option, which was coded with a (-), in order to not skew the data. The questions focused on general safety topics, injuries, safety training, PPE, safety committees, and job hazards. Means and standard deviations were calculated to compare demographics of temporary workers, permanent workers, and managers. T-tests were calculated to compare temporary and permanent workers' responses for each of the safety questions. Minitab 17 and Microsoft Excel were used for the necessary calculations.

The safety questions in the survey were developed by the researcher, and not taken from previous literature. The survey was created using the online software, *SurveyMonkey*, which allows users to customize surveys and easily collect/analyze data. The link to the survey was placed within the recruitment message and allowed participants to access it with a simply click of the mouse. The average time it took to complete the survey was just under two minutes. One

goal of the researcher was to keep the survey short, in order to ensure completion. Completion rate of the survey was 100 percent.

There was total of 29 participants in the study. Of the 29 participants, 7 were temporary workers, 15 were permanent workers, 6 were managers, and 1 was self-employed. Refer to Tables 1, 2, 3, and 4 for the age, education level, race/ethnicity, and marriage status, respectively, for demographic information by employment group. The average age of temporary workers was slightly younger than permanent workers, which is consistent with previous research (Contingent and alternative employment arrangement, 2005).

Table 1. Age of Participants by Employment Status

	Temporary Workers	Permanent Workers	Management	Self- Employed	Total
18-24 years old	4	-	-	-	4
25-34 years old	1	5	2	-	8
35-44 years old	1	2	1	1	5
45-54 years old	1	4	3	-	8
55-64 years old	-	4	-	-	4
Total	7	15	6	1	29

Table 2. Educational Levels of Participants by Employment Status

	Temporary Workers	Permanent Workers	Management	Self- Employed	Total
Some high school	2	-	-	-	2
High school graduate	2	2	-	-	4
Some college	-	1	1	1	3
Trade/technical/vocational	1	2	-	-	3
Associate's degree	-	1	-	-	1
Bachelor's degree	2	5	5	-	12
Master's degree	-	4	-	-	4
Postdoctoral degree	-	-	-	-	-
Total	7	15	6	1	29

Table 3. Race/Ethnicity of Participants by Employment Status

	Temporary Workers	Permanent Workers	Management	Self- Employed	Total
Black/African American	2	2	-	-	4
Hispanic/Latino	1	-	-	-	1
White/Caucasian	4	13	6	1	24
Total	7	15	6	1	29

Table 4. Marital Status of Participants by Employment Status

	Temporary Workers	Permanent Workers	Management	Self- Employed	Total
Single	6	2	2	-	8
Married/Partnership	1	12	2	1	16
Divorced	-	1	2	-	3
Total	7	15	6	1	29

Results

Upon collecting the data from *SurveyMonkey*, descriptive statistics were calculated for the demographics of the participants. Responses to the 11 safety questions were then coded for statistical analysis, from 1-5. Higher scores (4-5) indicated agreement with the questions, whereas lower scores (1-2) indicated disagreement, with a middle score (3) indicating neither agreement nor disagreement. Due the safety questions varying in topic (i.e. injuries, safety training, PPE, safety committees, and job hazards), t-tests, comparing temporary and permanent workers, were calculated for each question. The confidence interval was set at 95 percent.

There was no significant difference in ratings for question #7 (survey attached in Appendix B) between permanent workers ($M = 4.40$, $SD = 0.83$) and temporary workers ($M = 4.29$, $SD = 0.76$), $t(12) = -0.32$, $p > 0.05$. There was no significant difference in ratings for question #8, between permanent workers ($M = 4.07$, $SD = 1.10$) and temporary workers ($M = 4.00$, $SD = 0.58$), $t(19) = -0.19$, $p > 0.05$. There was no significant difference in ratings for question #9, between permanent workers ($M = 2.62$, $SD = 1.39$) and temporary workers ($M = 2.71$, $SD = 1.38$), $t(12) = 0.15$, $p > 0.05$.

There was no significant difference in ratings for question #10, between permanent workers ($M = 4.13$, $SD = 0.92$) and temporary workers ($M = 3.86$, $SD = 0.90$), $t(11) = -0.67$, $p > 0.05$. There was no significant difference in ratings for question #11, between permanent workers ($M = 3.47$, $SD = 0.99$) and temporary workers ($M = 3.43$, $SD = 0.54$), $t(19) = -0.12$, $p > 0.05$.

There was no significant difference in ratings for question #12, between permanent workers ($M = 4.47$, $SD = 0.83$) and temporary workers ($M = 4.29$, $SD = 0.76$), $t(12) = -0.51$, $p > 0.05$. There was no significant difference in ratings for question #13, between permanent workers ($M = 4.27$, $SD = 0.88$) and temporary workers ($M = 3.43$, $SD = 1.13$), $t(9) = -1.73$, $p > 0.05$.

There was significant difference in ratings for question #14, between permanent workers ($M = 4.53, SD = 0.83$) and temporary workers ($M = 2.40, SD = 1.14$), $t(5) = -3.85, p < 0.05$. Permanent workers rated significantly higher than temporary workers in terms of safety committees at their company. There was significant difference in ratings for question #15, between permanent workers ($M = 4.33, SD = 0.90$) and temporary workers ($M = 2.75, SD = 0.96$), $t(4) = -2.98, p < 0.05$. Permanent workers rated significantly higher than temporary workers in terms of their safety committees regularly meeting at their company.

There was no significant difference in ratings for question #16, between permanent workers ($M = 3.83, SD = 0.84$) and temporary workers ($M = 3.29, SD = 1.25$), $t(9) = -1.03, p > 0.05$. There was no significant difference in ratings for question #17, between permanent workers ($M = 2.13, SD = 1.19$) and temporary workers ($M = 2.71, SD = 1.11$), $t(12) = 1.12, p > 0.05$. There were 3 open-ended responses to question #16, one response from a manager and two from permanent workers. There were also 3 open-ended responses to question #17, one response from a temporary and two from permanent workers. The open-ended responses were not significant, and therefore not reported.

Table 5. Means, Standard Deviations, & P-Values for Temporary and Permanent Workers

	Temporary Workers	Permanent Workers	P - Value
Question #7	4.29 (0.76)	4.40 (0.83)	0.75
Question #8	4.00 (0.58)	4.07 (1.10)	0.85
Question #9	2.71 (1.38)	2.62 (1.39)	0.88
Question #10	3.86 (0.90)	4.13 (0.92)	0.52
Question #11	3.43 (0.54)	3.47 (0.99)	0.91
Question #12	4.29 (0.76)	4.47 (0.83)	0.62
Question #13	3.43 (1.13)	4.27 (0.88)	0.12
Question #14	2.40 (1.14)	4.53 (0.83)	0.01
Question #15	2.75 (0.96)	4.33 (0.90)	0.04
Question #16	3.29 (1.25)	3.83 (0.84)	0.33
Question #17	2.71 (1.11)	2.13 (1.19)	0.29

Discussion & Limitation

Overall, the research provided some interesting results, even though nine out of eleven safety questions did not provide significant differences between temporary and permanent workers. Therefore, the researcher did not find significant results to support either of the hypotheses. However, these findings need to be taken with a grain of salt. There are limitations that may have played a significant role, such as a sample size and geographical region, and should be considered in future research. As previous literature (Howard, 2017; Saha, Ramnath, Chaudhuri, & Saiyed, 2004) has shown, temporary workers are at a greater risk for injury

compared to permanent workers. Changes need to be made to ensure the safety of all workers because no one should lose their life over a paycheck.

OSHA's temporary worker initiative a good start, but more can be accomplished. First and foremost, companies should be held more accountable for the safety of their employees. It is worth noting that not all companies have poor safety standards, and some companies have come a long way in last few decades. According to OSHA's website (OSHA Penalties, 2018), there are three types of penalties (and fines) that OSHA can issue to a company for not complying with their safety standards. These penalties (and fines) range from serious (\$12,934 per violation), to failure to abate (\$12,934 per day), to willful or repeated (\$129,336 per violation). However, these fines may prove to be minimal to companies whose revenue is in the millions, or even billions. Companies with revenues this large may afford to gamble with saving money on safety for their employees, if the fine imposed barely makes a dent in their revenue. Penalties and fines should be based on the size of the company and the amount of revenue brought in, in order to have a significant impact.

Penalties and fines should not be the only focus of change. Incentives should be put in place that reward companies that go the "extra-mile" in training their employees in safety. This approach would need special consideration and implementation because incentive programs in-house have previously proven to discourage employees from reporting injuries and encourage managers to focus more on their bonuses rather than safety. As an example, companies could receive tax breaks for hosting a certain number of training sessions instructed by a competent person, or OSHA could offer grant funding with special recognition for those companies that go above and beyond.

Recordkeeping has proven to be a problem for temporary workers that should also be addressed. Although recordkeeping may not directly affect temporary workers' safety, as much as safety training, it is still very important. When previous literature referenced numbers of temporary workers, there was always a range because the true amount was nearly impossible to track. So when it comes to injury rates for temporary workers, they are essentially non-existent on a national scale. Furthermore, there are too many definitions that essentially describe the same type of work. The OSHA 300 log should have a section that denotes whether the injured worker is a permanent or temporary worker. There should be a log developed that is similar to the OSHA 300 log, but is maintained by staffing agencies so injuries can be better tracked. OSHA 300 logs can then be compared to the staffing agency logs and better represent the injury rate. A log should also be created that is used just to keep track of temporary workers, which records information such as job tasks, length of employment, training received, etc.

Lastly, certain safety training by the host employer, should be made mandatory before a temporary worker begins. There was the previous argument that training every temporary employee would cost companies a lot of money, but the reality of it is that you cannot put a price on safety. It can also be argued that this is already required by OSHA, but whether this actually happens is clearly up for debate.

As with any research study, there are limitations that should be discussed. First and foremost, one major limitation in this study was the sample size of participants. Originally, the researcher was expecting to have 100 participants, 50 temporary workers and 50 permanent workers. As can be seen in the methods and results sections, there were only 29 total participants. Due to the lack of participants, means and standard deviations were used to compare the workers' demographics, and t-tests were used to compare the workers on each safety. Future

research should attempt a more comprehensive sample population in order to ensure stronger results.

Lack of participation in the research study could be for a number of reasons. Upon reflection, research, and consultation from managers, sending the surveys electronically may have hurt participation instead of increase participation. In today's age of technology, more and more phishing scams are occurring through emails, where links are disguised as legitimate sites, but in reality, are phony and used to collect personal information (Stenger, 2017). In talking with a safety manager at one company, he/she did not have access to personal information such as email addresses for temporary workers, and therefore could not distribute the survey to them. On the other hand, in speaking with upper level management at a couple companies, they were reluctant to even pass the survey on to their workers, which may hint that these companies do not have strong safety cultures and do not want to others to know. There is also the possibility that managers at these companies simply did not receive the email or were too busy to look into it.

Another limitation of the research is that safety questions in the survey do not capture the full picture of the dynamic working environments. Unfortunately, as previously mentioned, there is not existing literature focusing on the temporary workers' perspective, so the questions were specifically developed for this research and not from former well-established questions. Other approaches could have been utilized, such as interviews or more open-ended questions, allowing temporary and permanent workers to elaborate on specific experiences that have come across in their fields. One interesting approach taken by Hrica & Eiter (2017) was to develop interactive worksite hazards for mineworkers. A number of panoramic images were taken of a mine site with specific hazards in each image. Then mineworkers would attempt to identify as many

hazards as possible. Due to the extensive funding needed for equipment to recreate these virtual work environments, this approach was not feasible.

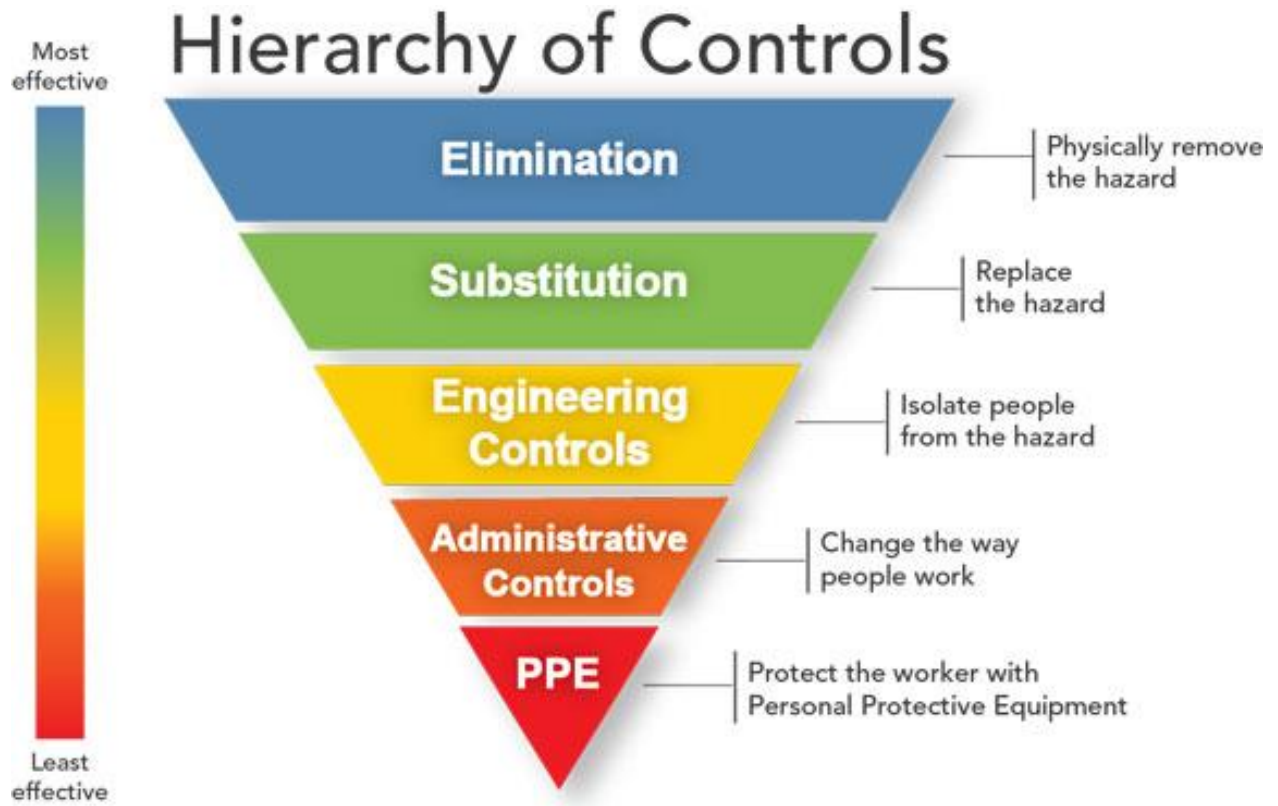
The survey being offered only in English is another limitation. As previously mentioned, a significant number of temporary workers are Hispanic or Latino. Although the researcher was never contacted about this problem, surveys offered only in English may deter Spanish-speaking temporary workers from partaking. Future researchers should take this into consideration, to ensure acceptable sampling populations. OSHA is clear in their training requirements that if “employees receive job instructions in a language other than English, then training and information to be conveyed under the [hazard communication standard] will also need to be conducted in a foreign language” (Michaels, 2010). Furthermore, special attention should be given to temporary workers who are “on-call” to work single day shifts, as it is likely they receive even little to no training compared to temporary workers from a staffing agency.

One aspect of the survey that could be seen as both an advantage and disadvantage, is the fact that the survey does not collect identifying information. Although the tactic was used to increase participation in the research, it does not let the researcher know what company the workers are from. The survey may have been completed by workers from companies with strong safety cultures, therefore inflating the results. This is a likely scenario because managers will have a general understanding of how safety conscious their company is, which can determine if they want their workers to fill out safety surveys. Unfortunately, there is not a database for Western New York with all the companies that have temporary and permanent workers, so it is more than likely that a number of these companies were not contacted in the first place. As with most research studies, geographic location may have an effect on the results, so they cannot be representative of the whole United States. For example, there is the possibility that the OSHA

office in Buffalo, NY has been focusing on temporary worker safety the last 10 years, which in turn, increased temporary worker safety in Western New York.

In conclusion, the results from this study may not have yielded statistical significance to support the presented hypothesis; however, the research should continue to explore not only temporary worker safety, but safety for all workers.

Appendix A – Hierarchy of Controls



Hierarchy of Controls (2016)

Appendix B – Survey

1. What is your gender?

- Male
- Female
- Other (please specify)

2. What is your age?

- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65+ years old

3. What is the highest degree or level of education you have completed?

- Some high school (no diploma)
- High school graduate, or equivalent (ex. GED)
- Some college (no degree)
- Trade/technical/vocational training
- Associate's degree
- Bachelor's degree
- Master's degree
- Postdoctoral degree

4. What is your race or ethnic origin?

- White or Caucasian
- Black or African American
- Hispanic or Latino
- Other (please specify)
- Asian or Asian American
- American Indian or Alaska Native
- Native Hawaiian or other Pacific Islander

5. What is your marital status?

- Single, never married
- Married or domestic partnership
- Widowed
- Divorced
- Separated

6. What is your employment status?

- | | |
|--|-------------------------------------|
| <input type="radio"/> Permanent, part-time | <input type="radio"/> Self-employed |
| <input type="radio"/> Permanent, full-time | <input type="radio"/> Management |
| <input type="radio"/> Temporary, part-time | <input type="radio"/> Unemployed |
| <input type="radio"/> Permanent, full-time | |
| <input type="radio"/> Other (please specify) | |

7. "Safety is a priority at the company I work for."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

8. "I have adequately been trained on how to safely complete every task/job I am required to perform."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

9. "I have been injured at work, but did not report it to my manager/supervisor."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

10. "When I see something at work that is a potential hazard, I notify my manager/supervisor."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

11. "Potential hazards are fixed/addressed in a timely manner."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

12. "I have access to the proper personal protective equipment (PPE) for each task I perform."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

13. "I receive refresher training on important safety topics (i.e., PPE, lockout/tagout, hazard communication)"

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

14. "My company has a safety committee that brings together management and the employees."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

15. "The safety committee regularly meets to address safety concerns and promote worker's safety."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

16. "In terms of safety, permanent and temporary workers receive the same training."

- | | |
|--|---|
| <input type="radio"/> Strongly agree | <input type="radio"/> Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Strongly disagree |
| <input type="radio"/> Neither agree nor disagree | <input type="radio"/> N/A |

Comments

17. "In terms of job hazards, temporary employees often perform more hazardous jobs compared to permanent employees."

Strongly agree

Disagree

Agree

Strongly disagree

Neither agree nor disagree

Comments

Appendix C – Recruitment Message

Safety in the Workplace: Differences between Permanent and Temporary Workers

Principal Investigator: Nick DiSarno

Recruitment Message

To whom it may concern,

I am currently a second-year graduate student at the University at Buffalo, in the Department of Industrial and Systems Engineering. The focus of my research is safety in the workplace, and I am conducting a study looking at the differences between permanent and temporary workers in terms of the safety training they receive. I am looking for potential participants, permanent and temporary workers, to partake in a short survey that I have developed to better understand these potential differences.

The survey (link attached) is completely anonymous, for both the company and the participant; no identifying information will be collected during the survey. The survey will take participants less than 5 minutes to complete, and responses will automatically be sent to the principal investigator when participants click the submit button at the end. Potential participants are not required to complete the survey, but are encouraged.

Survey: <https://www.surveymonkey.com/r/WLDTSF0>

Please let me know if you have any questions or concerns about the survey or the scope of my research. Thank you for your time and consideration.

Best,
Nick DiSarno
Master's Candidate
Department of Industrial and Systems Engineering
University at Buffalo
njdisarn@buffalo.edu
(716) 472 – 2845

Appendix D – Consent Form



University at Buffalo Institutional Review Board (UBIRB)

Office of Research Compliance | Clinical and Translational Research Center Room 5018

875 Ellicott St. | Buffalo, NY 14203

UB Federalwide Assurance ID#: FWA00008824

Adult Consent to Participate in a Research Study

Safety in the Workplace: Differences Between Permanent and Temporary Workers

Version Date: Version 1, 2/23/18

Investigator: Nicholas DiSarno

Why am I being invited to take part in a research study?

You are being invited to take part in a research study because you are permanent or temporary employee in the field of construction or in general industry.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at njdisarn@buffalo.edu or (716) 472-2845. You may also contact the research participant advocate at 716-888-4845 or researchadvocate@buffalo.edu.

This research has been reviewed and approved by an Institutional Review Board (“IRB”). You may talk to them at (716) 888-4888 or email ub-irb@buffalo.edu

if:

- You have questions about your rights as a participant in this research
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

Why is this research being done?

The purpose of the study is to better understand the difference between temporary employees compared to permanent employees, in terms of safety in the workplace. The aim of the study is to quantify the difference in the level of safety training permanent employees receive compared to temporary employees. The information gathered from the study will potentially show the gap between training levels, and illustrate the need for more training to better protect temporary workers.

How long will the research last?

We expect that you will be in this research study for approximately five to fifteen minutes.

How many people will be studied?

We expect about 100 people in this research study.

What happens if I say yes, I want to be in this research?

- **Use the survey link to access the survey. The survey can be accessed electronically on a computer, tablet, mobile phone, etc. Your responses to the survey will be completely anonymous and will not be collected until you hit the submit button at the end of the survey.**

What happens if I do not want to be in this research?

Your participation in this research study is voluntary. You may choose not to enroll in this study.

What happens if I say yes, but I change my mind later?

You can leave the research at any time it will not be held against you.

Is there any way being in this study could be bad for me?

There are no known risks associated with these procedures.

What happens to the information collected for the research?

Efforts will be made to limit the use and disclosure of your personal information, including research study and medical or education records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization

Can I be removed from the research without my OK?

The principal investigator of the study can remove you from the research study without your approval. Possible reasons for removal include not being a permanent or temporary worker, and/or incomplete survey responses.

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