

Today's Date: June 30, 2015

FRAME in Residential Construction Pilot Study Final Report

EXECUTIVE SUMMARY

The Falls Reported Among Minority Employees (FRAME) in Residential Construction study was a research collaboration between the Department of Public Health Sciences at the University of Miami, Miller School of Medicine and the Occupational Health and Safety Program in the Florida Department of Health, conducted from January 2016 through June 2016. This pilot study was designed to inform and develop a unique fall-related near miss measurement instrument for workers employed in the construction industry. The newly developed near miss measurement instrument was used to collect data from minority construction workers as well as temporary and full-time workers in order to identify variations on near miss experiences between the worker groups. This instrument aimed to increase worker knowledge and awareness of potential hazards at construction worksites that pose a risk to injury. Across various temporary staffing agencies in South Florida we recruited 46 construction workers to participate in our 6 focus group discussions. Additionally, we distributed and collected 250 near miss survey instruments at three residential construction sites in South Florida. Overall, there were no significant differences in the worker's socio-demographic characteristics between the temporary and payroll construction workers. When asked about job characteristics, payroll workers differed significantly in the frequency with which they were provided tools on the worksite. In addition, payroll workers also differed significantly from temporary workers when asked if the worker would report a near miss if the near miss resulted in injury. Future studies should further explore similarities and differences between the temporary and payroll workforce in the construction industry and develop interventions targeted at reporting near miss experiences.



A. DATA COLLECTED

PART 1: Focus Group Data

To develop the near miss survey instrument, we conducted 6 focus groups lasting 30-60 minutes with both Hispanic and non-Hispanic construction workers. The focus group discussed 2 domains, each consisting of 4 to 7 questions regarding, 1) experience and safety risks in residential construction, and 2) near misses (i.e., how to define, identify, and report such experiences). Using a sequential exploratory mixed method study design, the survey instrument was developed after collecting and analyzing the qualitative data from the focus groups using NVivo Software. Focus group participants were asked to complete a 1-page baseline questionnaire before participating in the subsequent discussion, the focus group sample demographics are listed in **Table 1** and were analyzed using SPSS.

When asked about worker safety experience and identifying risks in residential construction, participants had the following comments: "The biggest risk is not paying attention to the red flags" [Group 1, Participant 4]. "The daily risk I see is just the obstacles [when] walking. The risk is just getting from one spot to the other walking." [Group 3, Participant 3]. "The buck hoist" [Group 2, Participant 6] and [Group 6, Participant 6]. "[Not] being aware", "Rain that's a hazard right there" [Group 5, Participant 3]. The research team then asked participants how residential construction companies can help their workers be safe on the job site and the study participants had the following comments: "More training, and if [the workers] are not following directions, send them back home" [Group 2, Participant 6]. "The company should make sure all [worker] materials are prepared and ready to be used. [The materials] should not be damaged, no marks. [The materials have] to have been tested already to make sure we won't get hurt" [Group 2, Participant 9]. "Classes. You watch them videos, you soak it up" [Group 5, Interviewees]. "Companies can't keep you safe. It's up to you." [Group 6, Participant 1].

Following the questions about worksite safety, workers were asked to discuss the term near miss. All participants were first asked if they had heard the term near miss, of which many had not, they were then asked to describe what they believed the term meant to the best of their knowledge.

Table 1. Socio-demographic characteristics among temporary agency employees participating in the focus groups, May/June 2016 (n=46)

Socio-Demographic Characteristics	Total Sample n=46 [†]	Temporary Workers n=33 (76.7%) [†]	Payroll Tables n=10 (23.3%) [†]	P- value
Age				
21-29 year olds	13 (30.2)	8 (25.8)	3 (33.3)	0.496
30-39 year olds	7 (16.3)	4 (12.9)	3 (33.3)	
40-49 year olds	10 (23.3)	8 (25.8)	2 (22.2)	
50-59 year olds	10 (23.3)	8 (25.8)	1 (11.1)	
60 and older	3 (7.0)	3 (9.7)	0 (0.0)	
Gender				
Male	40 (93.0)	30 (90.9)	10 (100.0)	0.323
Female	3 (7.0)	3 (9.1)	0 (0.0)	
Race				
White	8 (21.6)	7 (25.0)	1 (11.1)	0.531
Black	23 (62.2)	16 (57.1)	7 (77.8)	
Other	6 (16.2)	5 (17.9)	1 (11.1)	
Ethnicity				
Hispanic	13 (36.1)	9 (32.1)	4 (50.0)	0.354
Non-Hispanic	23 (63.9)	19 (67.9)	4 (50.0)	
Educational Attainment				
Less than High School	9 (20.9)	6 (18.2)	3 (30.0)	0.613
High School / GED	18 (41.9)	15 (45.5)	3 (30.0)	
Greater than High School	16 (37.2)	12 (36.4)	4 (40.0)	
Marital Status				
Married	6 (14.6)	4 (12.9)	2 (20.0)	0.628
Divorced, Widowed or Separated	13 (31.7)	11 (35.5)	2 (20.0)	
Never Married/Member of Unmarried couple	22 (53.7)	16 (51.6)	6 (60.0)	

[†]Differences in sub-total population sample due to item non-response or missing

A few of the various definitions were: “[Someone] almost got hurt” [Group 1, Participant 4]. “A close encounter” [Group 2, Participant 9]. “A near miss is usually almost falling” [Group 3, Participant 3]. “[Someone] almost get[s] injured, but it’s like you don’t. It missed you that time” [Group 3, Participant 4]. “Near accident” [Group 3, Participant 2]. “They’re not paying attention” [Group 3, Participant 4]. “Pay more attention” [Group 5, Participant 3]. “A near miss can lead to an injury just by somebody not paying attention and running into my hammer” [Group 2, Participant 4]. A recurring theme during the focus group interviews was the concept that not paying attention results in a near miss or injury. Workers tended to define and identify near miss scenarios on construction sites by the level of attention being paid or the common sense being applied by the worker to their work. Injury tended to be viewed as an individual responsibility and burden rather than a preventable happenstance.

Collected data

Both audio files and baseline questionnaires required cleaning despite explicit instructions given to the workers and

the research team's best efforts at creating a conducive environment for focus group discussion. The shading design/format of the baseline survey proved to be difficult to read and understand and resulted in several participants accidentally skipping an entire question or portions of a question. Additionally, the physical layout of the temporary agency office's—the location where the focus groups were conducted—are open concept space and therefore ambient noise was difficult to control and eliminate. The transcription company used to transcribe the audio files, GMR transcription, was able to reduce background noise interference but there were still several seconds in the transcription that were inaudible. When analyzing the 1-page baseline questionnaire, illegible answers were coded with the value '88' and missing answers were left blank. These results suggest that additional conversations are to be had with supervisors and management in construction so that they are provided with an in-depth and proper understanding of what an ideal location for a focus group consists of and how we can collaborate to make it feasible for occupational health and safety research. When developing the near miss survey instrument, the research team did not use the shading design due to the challenges it presented in the first part of this pilot study and no questions were grouped together. Additionally, the number of participants originally allotted for when designing the study (i.e., 40 participants) was exceeded due to the lack of communication between the temporary agency management team and the research study team. In addition, the research team did not want to make any of the temporary construction workers feel uninvited by excluding them so they were allowed to join in the discussion. Dr Caban-Martinez used his faculty funds to pay for the incentive card provided to the extra workers who participated in the focus groups sessions.

PART 2: Near Miss Survey Instrument Data

For the second part of the FRAME study, qualitative data was collected from the near miss survey instrument. The survey instrument consisted of 7 sections, a total of 68 questions, and the question styles included multiple choice, fill in the blank, and ranking questions. The greatest challenge when administering the survey to the 250 construction workers was properly explaining how to answer the ranking questions. Study participants were asked to rank the options per the directions without repeating any of the numbers. Several of the study participants commented to the research team that some of the ranking question options were equally as meaningful and correct in their opinion and they therefore wanted them to be tied and assigned the same numerical representation. When the research team was presented with this



argument, they advised the worker to complete the survey as they felt to be most representative of their individual experience even if that meant assigning the same number to two or more options. Although the research team permitted this during data collection, when analyzing the data, the research team excluded the participant responses that assigned more than one option the same number. Each study participant's responses for the ranking questions, (i.e., numbers 42, 55, 62, 63, 67, and 68, were reviewed individually for repeating numbers and in a separate column assigned the number "1" for answering the questions correctly per the instructions (i.e., no repetition) or a number "2" when answered incorrectly. For the ranking questions: 197 out of 241 workers answered #42 correctly, 201 out of 241 workers answered #55 correctly, 195 out of 241 workers answered #62 correctly, 190 out of 241 workers answered

#63 correctly, 184 out of 241 workers answered #67 correctly, and 184 out of 241 workers answered #68 correctly. Future survey designs should eliminate ranking questions as they present significant difficulties.

Although the research team predicted survey length to be a potential obstacle since the survey consisted of over 60 questions, it was not the case and the study participants were able to complete the survey quickly during their breakfast and/or lunch break without being pressed for time.

Due to the length and complexity of the survey the data required cleaning. Once the research team agreed upon the data analysis plan, skeleton tables were created to present the findings and temporary and payroll employees were statistically compared. To best represent the ranking question data, the questions were analyzed by how often each answer option was ranked with the number “1” and the frequencies were then graphed.

B. CHALLENGES/AMENDMENTS TO STUDY DESIGN AND METHODS

CHALLENGES

The successful implementation of our FRAME pilot study was not without minor challenges. Composed of a diverse racial/ethnic worker population, construction sites in Miami required our study staff to translate and modify recruitment protocols to be culturally and linguistically competent. The languages spoken by the workers included Spanish, Creole, and English. Our team included Spanish and English speakers; therefore, those workers whom only spoke Creole were a bigger challenge during recruitment and might have been underrepresented in our sample. Future studies of South Florida construction workers warrant Creole-speaking capabilities by at least one of the study group members.

Our recruitment protocol for the focus groups was initially tested at the first temporary labor agency. To ensure that all workers filled out the 1-page baseline survey and met our inclusion criteria, we asked them to turn in the survey before sitting down for the focus group. The recruitment and study completion challenges faced in this first site—such as difficulty engaging workers in the discussion—allowed us to modify our communication style while adhering to our focus group script at the subsequent sites. Our focus group discussion tactics and methods were optimized and subsequently carried out successfully during the other focus group sessions.

For the second part of our study our recruitment methods differed due to the larger number of participants required—250 construction workers. Working in collaboration with Coastal Construction, our community partner, we were able to identify various sites consisting of Hispanic and non-Hispanic workers as well as temporary and payroll positions. The survey was handed out during the construction workers first break of the day, around 9:00 AM and they were able to complete the survey in its entirety during this time. Although a total of 250 surveys were collected, 9 of the participants did not reveal their age when handed the survey and had to be excluded from the data for not meeting the inclusion criteria. The goal of this study was to create a near miss survey instrument, and while the content is crucial in understanding this population’s work experience, so is the way in which questions are asked. The near miss survey instrument was a mix of multiple choice, fill in the blank, and ranking questions. Most of the surveyed individuals were not challenged by the survey and were able to answer the questions correctly by reading the directions, however, three of the ranking questions posed great difficulty to the study participants. Future survey designs for construction workers should abstain from including ranking questions due to the confusion they pose.

Half of the study staff conducted data collection and answered questions in Spanish, while the other half worked on the data collection and answered questions in English. A majority of participants preferred to complete the study survey in Spanish language. In the case that the worker was unable to read a question either due to a visual impairment or a time constraint, the study staff would read the question aloud to the study participant and fill the

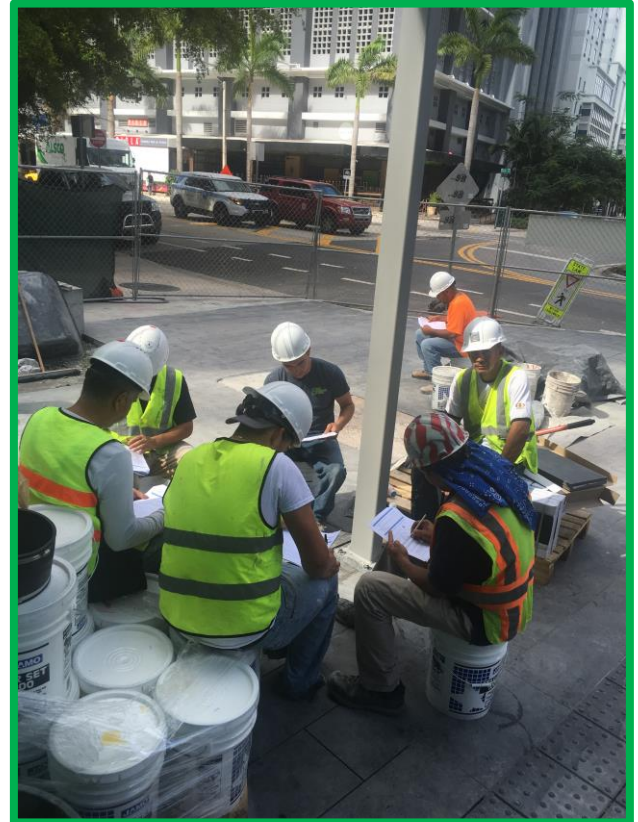


response according to the oral responses of each worker. The staff worked around the workers' schedules and made sure to assist in completing the survey.

Due to the large number of workers participating at each site, and the short amount of time they were allowed for study completion by their managers, we had to streamline the on-site process of survey collection and participant incentive distribution to be as efficient as possible. We used a foldable, portable table to create an assembly-line-like system, in which workers formed a single line and moved through different processing stages. The first stage included two study team members collecting and double checking the completion of the survey. The second stage included a team member distributing participant incentives, and the third stage included two study members collecting participant signatures for IRB petty cash reconciliation purposes. This system quickened the survey collection process and allowed us to complete the data collection for about 100 participants in close to 90 minutes.

A very important factor that led to our recruitment success was the collaboration with on-site Safety Officers. The Safety Officers identified optimal blocks of time with the entire construction crew in the mornings that allowed us to hand out the surveys and answer any questions in one place. This allowed us to recruit many more workers per site, as well as provided us with enough time to conduct data collection without taking much of the company's work time. This aspect is very important as the construction managers do not like to see their workers participating in the study during scheduled working time.

Safety managers were eager to collaborate in further studies, including other topics of construction site health and safety.



RECOMMENDATIONS

We would recommend the near miss survey instrument be modified to exclude ranking questions and only contain multiple choice and fill in the blank response options. Additional information should be provided to managerial and supervisory staff about the study and an information session should be held with said individuals before data collection is set to take place. This information session will allow the study team to properly answer any unanswered questions and it will provide an opportunity to run through the logistics of the study in their entirety. It is imperative that the safety supervisors and managers know the duration of time needed to complete the survey, which protects the study participants from missing valuable work time.

C. RESULTS/ DISCUSSION

After analyzing the data collected from this near miss survey instrument, there are three main domains of discussion.

SOCIO-DEMOGRAPHICS CHARACTERISTICS

Of the 250 construction workers who participated in the study, 9 participants were under 21 years old and excluded from the study, therefore only 241 people are included in our analysis. The majority of the study sample were male (95.85%), white (51.87%), and Hispanic (64.32%). Most of them were between the ages of 30-49 years old. Most of them are non-smokers (59.34%), overweight (58.09%), and have high school or higher degrees (76.76%). There are no statistical differences in age, gender, race, ethnicity, education, smoking status,

alcohol consumption, BMI, or acculturation between temporary workers and payroll workers. More payroll workers are married than temp workers (47.02% vs. 28.38%). In general, payroll workers make more money than temporary workers (48.65% temp vs. 20.53% payroll for under \$11,999, and 8.11% temp vs. 33.77% payroll for more than \$30,000). Additionally, a greater number of payroll workers reported having health insurance when compared to temporary workers (56.95% vs. 39.19%).

Table 1. Socio-demographic among temporary and full-time workers employed at residential construction sites in South Florida, June 2016 (n=241)

Socio-Demographic Characteristics	Total Sample N=241	Temporary Workers N=74 (30.7%)	Payroll Tables N=151 (62.7%)	P-value
Age				
21-29 years old	42 (17.43%)	15 (20.27%)	27 (17.88%)	0.433
30-39 years old	74 (30.71%)	23 (31.08%)	45 (29.80%)	
40-49 years old	62 (25.73%)	17 (22.97%)	41 (27.15%)	
50-59 years old	46 (19.09%)	11 (14.86%)	31 (20.53%)	
60 and older	8 (3.32%)	3 (4.05%)	4 (2.65%)	
Gender				
Male	231 ((95.85%)	69 (93.24%)	148 (98.01%)	0.076
Female	6 (2.49%)	4 (5.41%)	1 (0.66%)	
Race				
White	125 (51.87%)	35 (47.30%)	82 (54.30%)	0.423
Black	76 (31.54%)	27 (36.49%)	43 (28.48%)	
Other	15 (6.22%)	6 (8.11%)	8 (5.30%)	
Ethnicity				
Hispanic	155 (64.32%)	47 (63.51%)	98 (64.90%)	0.382
Non-Hispanic	80 (33.20%)	25 (33.78%)	49 (32.45%)	
Educational Attainment				
Less than High School	55 (22.82%)	23 (31.08%)	28 (18.54%)	0.051
High School / GED	120 (49.79%)	37 (50.00%)	77 (50.99%)	
Greater than High School	65 (26.97%)	14 (18.92%)	46 (30.46%)	
Smoker Status				
Current	67 (27.80%)	20 (27.03%)	44 (29.14%)	0.598
Former	18 (7.47%)	3 (4.05%)	13 (8.61%)	
Never	143 (59.34%)	47 (63.51%)	87 (57.62%)	
Alcohol Consumption				
More than 3 to 4 times a week	31 (12.86%)	12 (16.22%)	19 (12.58%)	0.444
1-2 times a week	75 (31.12%)	17 (22.97%)	53 (35.10%)	
1-3 times a month	52 (21.58%)	18 (24.32%)	32 (21.19%)	
Less than once a month	79 (32.78%)	26 (35.14%)	44 (29.14%)	
Worker Height and Weight Metrics				
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>	
Height (Inches)	68.08 (3.96)	67.65 (4.60)	68.43 (3.60)	0.1996
Weight (Pounds)	178.1 (29.60)	172.3 (25.50)	180.5 (30.95)	0.0577
Body Mass Index (BMI)				
Underweight	3 (1.24%)	0 (0.00%)	3 (1.99%)	0.172
Normal Weight	64 (26.56%)	24 (32.43%)	38 (25.17%)	
Overweight	96 (39.83%)	29 (39.19%)	63 (41.72%)	
Obese	44 (18.26%)	8 (10.81%)	30 (19.87%)	
Marital Status				
Married	99 (41.08%)	21 (28.38%)	71 (47.02%)	0.030
Divorced, Widowed or Separated	56 (23.24%)	24 (32.43%)	29 (19.21%)	

Never Married / Member of Unmarried couple	85 (35.27%)	29 (39.19%)	50 (33.11%)	
Individual Income				
Less than \$11,999	76 (31.54%)	36 (48.65%)	31 (20.53%)	
\$12,000 – \$29,999	102 (42.32%)	29 (39.19%)	68 (45.03%)	0.000
More than \$30,000	59 (24.48%)	6 (8.11%)	51 (33.77%)	
Has Health Insurance				
Yes	120 (49.79%)	29 (39.19%)	86 (56.95%)	
No	114 (47.30%)	42 (56.76%)	62 (41.06%)	0.049
Acculturation Measure (PAS)				
PAS3 < 0.5	85 (35.27%)	24 (32.43%)	58 (38.41%)	
0.5 ≤ PAS3 < 3.5	37 (15.35%)	16 (21.62%)	16 (10.60%)	0.093
PAS3 ≥ 3.5	68 (28.22%)	17 (22.97%)	48 (31.79%)	

% may not add up to 100% because of rounding and missing data; SD=standard deviation

WORK AND JOB CHARACTERISTICS

Questions regarding their work and job characteristics were asked which included their daily tasks, training received, tools provided, union participation, and workplace exposures. On average, 35.68% participants reported ever being employed by a temporary agency, of which 55.41% are currently temporary workers and 27.15% are currently payroll workers. Assigned work tasks did not differ between temporary and payroll workers, except for the task listed as “clean up construction site” where 59.46% of temporary workers completed this task frequently versus 34.44% of workers on payroll. This finding is not surprising since most temporary workers are not skilled in a trade and are asked to provide cleaning services. Payroll workers are in general more likely to be provided tools (60.93% vs. 48.65% every time), and they are less likely to lift more than 100 pounds in their work (33.77% vs. 41.89%).

Table 2. Work and Job characteristics among temporary and full-time workers employed at residential construction sites in South Florida, June 2016 (n=241)

	Total Sample N=241	Temporary Workers N=74 (30.7%)	Payroll Tables N=151 (62.7%)	P-value
Work and Job Characteristics				
Ever Employed by Temp Agency				
Yes	86 (35.68%)	41 (55.41%)	41 (27.15%)	0.000
No	133 (55.19%)	28 (37.84%)	97 (64.24%)	
Member of Union				
Yes	17 (7.05%)	3 (4.05%)	14 (9.27%)	
No	212 (87.97%)	67 (90.5%)	133 (88.08%)	0.410
Level of OSHA Training				
10-Hour	171 (70.95%)	55 (74.32%)	110 (72.85%)	0.8140
30-Hour	46 (19.09%)	14 (18.92%)	31 (20.53%)	0.7766
Other	10 (4.15%)	3 (4.05%)	4 (2.65%)	0.5685
Tasks Completed Frequently At Site				
Load, unload, identify building materials, machinery, & tools	136 (56.43%)	41 (55.41%)	88 (58.28%)	0.6823
Clean up construction site	104 (43.15%)	44 (59.46%)	52 (34.44%)	0.0004
Install barricades	36 (14.94%)	13 (17.57%)	21 (13.91%)	0.4714

Demolition (hand and by means of mechanical devices)	50 (20.75%)	20 (27.03%)	27 (17.88%)	0.1128
Provide assistance to equipment operators	28 (11.62%)	8 (10.81%)	17 (11.26%)	0.9201
Operate heavy equipment	23 (9.54%)	6 (8.11%)	14 (9.27%)	0.7733
Assist in concrete or asphalt installations	30 (12.45%)	11 (14.86%)	18 (11.92%)	0.5358
Disposing of waste	71 (29.46%)	26 (35.14%)	39 (25.83%)	0.1479
Workers tools Provided at Worksite				
Never or Almost Never	33 (13.69%)	14 (18.92%)	16 (10.60%)	
Sometimes	65 (26.97%)	20 (27.03%)	42 (27.81%)	0.030
Every time	135 (56.02%)	36 (48.65%)	92 (60.93%)	
Tenure with Construction Site and Industry	Mean (SD)	Mean (SD)	Mean (SD)	P-value
Months with Temp Agency	48.30 (67.21)	60.22 (87.22)	39.41 (39.14)	0.3114
Months in Construction Industry	80.51 (93.49)	65.37 (81.67)	84.78 (94.32)	0.3580
Days at Current Job Site	199.7 (271.1)	134.6 (158.1)	241.4 (309.7)	0.0092
Time spent in Workplace Exposures				
Hands placed under knee-level (1 to 4)	2.24 (1.26)	2.34 (1.25)	2.22 (1.26)	0.5578
Twisting (1 to 4)	2.04 (1.18)	2.28 (1.14)	1.94 (1.19)	0.1065
Neck bent forward or backward (1 to 4)	2.21 (1.23)	2.21 (1.18)	2.26 (1.24)	0.8117
Knee Bending (1 to 4)	2.25 (1.22)	2.41 (1.19)	2.24 (1.25)	0.3922
Arms raised above head (1 to 4)	2.21 (1.22)	2.4 (1.18)	2.16 (1.23)	0.2544
Intense / Awkward hand use (1 to 4)	2.38 (1.28)	2.6 (1.28)	2.35 (1.29)	0.2913
Frequency of Lifting Heavy Loads				
Lifting 30 lbs (1 to 5)	2.46 (1.17)	2.55 (1.13)	2.43 (1.15)	0.4659
Lifting 50 lbs (1 to 5)	2.20 (1.11)	2.26 (1.00)	2.21 (1.14)	0.7607
Level of physical demand in past 30 days				
Level of physical demand (1-5)	3.21 (1.10)	3.07 (1.00)	3.30 (1.10)	0.1352
Ever lift more than 100 lbs				
Yes	86 (35.68%)	31 (41.89%)	51 (33.77%)	0.014
No	115 (47.72%)	26 (35.14%)	82 (54.30%)	

% may not add up to 100% because of rounding and missing data; SD=standard deviation

NEAR MISS AND INJURY EXPERIENCES

In general, temporary workers and workers on payroll have similar perceptions of the term near miss, and have experienced and/or witnessed similar number of near miss accidents. Significantly more workers on payroll perceive “slipping on a ladder wrung” (33.77% vs. 20.27%), and “Improperly operating heavy-duty machinery” as near miss scenario (19.87% vs. 8.11%). Since workers on payroll are usually skilled workers or have spent a greater amount of time on their current jobsite, they are more likely to work from heights and operate machinery. Additionally, payroll workers are significantly more likely to report a near miss if the person got injured (81.46% vs. 64.86%).

When asked to rank definitions for the term “near miss”, 32.49% of the sample selected “almost being hurt or injured” as the most representative definition (Appendix B, Figure 1). The surveyed workers believed additional OSHA training (61.16%) would be most helpful in properly training workers how to identify near misses and they felt most comfortable reporting near miss incidents in person to a safety supervisor (Appendix B, Figures 2, 3, and 4). Lastly, the surveyed workers identified slipping on water as the greatest risk to falls as well as the most common near miss scenario (Appendix B, Figures 5 and 6).

Table 3. Near Miss and Injury experiences among temporary and full-time workers employed at residential construction sites in South Florida, June 2016 (n=241)

	Total Sample N =241	Temporary Workers N=74 (30.7%)	Payroll Tables N=151 (62.7%)	P- value
Work and Job Characteristics				
Worker ever heard term “near miss”				
Yes	152 (63.07%)	44 (59.46%)	99 (65.56%)	0.792
No	72 (29.88%)	24 (32.43%)	41 (27.15%)	
Scenarios that describe “near misses”				
Not wearing Personal Protective Equipment (PPE)	80 (33.20%)	21 (28.38%)	56 (37.09%)	0.1959
Tripping or stumbling over obstacles	132 (54.77%)	39 (52.70%)	84 (55.63%)	0.6787
Uncapped rebar	50 (20.75%)	14 (18.92%)	33 (21.85%)	0.6108
Slipping on a ladder wrung	72 (29.88%)	15 (20.27%)	51 (33.77%)	0.0366
Not locking or fastening safety harness equipment when working from heights	55 (22.82%)	11 (14.86%)	39 (25.83%)	0.0631
Lack of proper signage	58 (24.07%)	12 (16.22%)	40 (26.49%)	0.0859
Unmarked/uncovered hazards	71 (29.46%)	16 (21.62%)	49 (32.45%)	0.0922
Being impaired or under the influence on the jobsite	36 (14.94%)	8 (10.81%)	25 (16.56%)	0.2524
Headphones volume too loud while working	41 (17.01%)	11 (14.86%)	26 (17.22%)	0.6545
Impairment of any of the five sense	36 (14.94%)	8 (10.81%)	23 (15.23%)	0.3660
Dehydration—lack of water bottles on a jobsite	58 (24.07%)	13 (17.57%)	40 (26.49%)	0.1384
Improperly operating heavy-duty machinery	41 (17.01%)	6 (8.11%)	30 (19.87%)	0.0238
Improper transportation of materials	52 (21.58%)	11 (14.86%)	38 (25.17%)	0.0786
Poor communication	70 (29.05%)	23 (31.08%)	42 (27.81%)	0.6115
Lack support or team work when doing heavy lifting	58 (24.07%)	13 (17.57%)	40 (26.49%)	0.1384
An object falling from a height and almost hitting a person	95 (39.42%)	28 (37.84%)	60 (39.74%)	0.7841
Worker ever experienced a “near miss”				
Yes	119 (49.38%)	34 (45.95%)	81 (53.64%)	0.151
No	100 (41.49%)	30 (40.54%)	60 (39.74%)	
Number of near misses experienced by worker				
1-2 times	50 (42.02%)	16 (47.06%)	32 (39.51%)	0.900
3-6 times	34 (28.57%)	9 (26.47%)	24 (29.63%)	
More than 7 times	28 (23.53%)	7 (20.59%)	20 (24.69%)	
Ever witnessed a “near miss”				
Yes	116 (48.13%)	29 (39.19%)	82 (54.30%)	0.165
No	102 (42.32%)	37 (50.00%)	56 (37.09%)	
Number of near misses witnessed by worker				
1-2 times	67 (57.76%)	14 (48.285)	50 (60.98%)	0.412
3-6 times	23 (19.83%)	6 (20.69%)	17 (20.73%)	
More than 7 times	12 (10.34%)	5 (17.24%)	6 (7.32%)	
How many nears misses occurred on current jobsite				
None	110 (45.64%)	31 (41.89%)	69 (45.70%)	0.732

1-2 times	78 (32.37%)	27 (36.49%)	46 (30.46%)	
3-5 times	25 (10.37%)	6 (8.11%)	19 (12.58%)	
6-9 times	10 (4.15%)	4 (5.41%)	6 (3.97%)	
More than 9	6 (2.49%)	3 (4.05%)	3 (1.99%)	
Near misses that result in injury at current jobsite				
Frequently	35 (14.52%)	10 (13.51%)	23 (15.23%)	
Rarely or Occasionally	137 (56.85%)	45 (60.81%)	87 (57.62%)	0.905
Never	63 (26.14%)	18 (24.32%)	37 (24.50%)	
Ever reported a near miss at current job site				
Yes	55 (22.82%)	18 (24.32%)	34 (22.52%)	
No	185 (76.76%)	56 (75.68%)	116 (76.82%)	0.752
Knows how to report near miss at current job site				
Yes	162 (67.22%)	49 (66.22%)	105 (69.54%)	
No	77 (31.95%)	25 (33.78%)	44 (29.14%)	0.494
Are near misses a leading contribution to injuries				
Agree	151 (62.66%)	47 (63.51%)	97 (64.24%)	
Disagree	40 (16.60%)	10 (13.51%)	28 (18.54%)	0.648
Undecided	42 (17.43%)	14 (18.92%)	22 (14.57%)	
Who is most responsible for near miss at job site				
The individual who got injured	60 (24.90%)	23 (31.08%)	31 (20.53%)	
Other persons involved in the event (i.e. co-workers)	26 (10.79%)	4 (5.41%)	21 (13.91%)	
Supervisors/ Management (i.e. safety supervisors, foremen)	40 (16.60%)	11 (14.86%)	27 (17.88%)	0.205
All are equally responsible	110 (45.64%)	34 (45.95%)	69 (45.70%)	
Self-efficacy at identifying near miss				
Yes	194 (80.50%)	57 (77.03%)	127 (84.11%)	
No	37 (15.35%)	16 (21.62%)	17 (11.26%)	0.066
Training in near misses supports reporting them				
Yes	136 (56.43%)	41 (55.41%)	90 (59.60%)	
No	56 (23.24%)	13 (17.57%)	35 (23.18%)	0.357
How likely training will improve near miss reporting				
Very likely	151 (62.66%)	45 (60.81%)	100 (66.23%)	
Somewhat likely	31 (12.86%)	13 (17.57%)	14 (9.27%)	0.283
Not likely	17 (7.05%)	6 (8.11%)	10 (.62%)	
Report a near miss if person did NOT get injured				
Yes	163 (67.63%)	46 (62.16%)	106 (70.20%)	
No	55 (22.82%)	19 (25.68%)	33 (21.85%)	0.456
Report a near miss if person did get injured				
Yes	183 (75.93%)	48 (64.86%)	123 (81.46%)	
No	45 (18.67%)	20 (27.03%)	22 (14.57%)	0.033
Report a near miss if person experienced severe injured, resulting in an INABILITY to continue working				
Yes	199 (82.57%)	60 (81.08%)	126 (83.44%)	
No	32 (13.28%)	9 (12.16%)	20 (13.25%)	0.495
Ever reported hazardous working conditions, injuries, or other complaints to a supervisor on a construction site				

Yes	162 (67.22%)	48 (64.86%)	108 (71.52%)	0.309
No	79 (32.78%)	26 (35.14%)	43 (28.48%)	
If provided incentive, would report near miss				
Yes	192 (79.67%)	59 (79.73%)	120 (79.47%)	0.259
No	44 (18.26%)	15 (20.27%)	26 (17.22%)	
If provided incentive, would report unsafe working conditions				
Yes	208 (86.31%)	64 (86.49%)	133 (88.08%)	0.507
No	31 (12.86%)	10 (13.51%)	16 (10.60%)	
If provided incentive, would report dirty work environment				
Yes	204 (84.65%)	63 (85.14%)	129 (85.43%)	0.929
No	33 (13.69%)	10 (13.51%)	19 (12.58%)	

% may not add up to 100% because of rounding and missing data; SD=standard deviation

D. FUTURE IMPLICATIONS

This 6-month pilot study has provided our research team with the formative work to begin to understand how temporary and minority workers think about “near miss” experiences at a construction site. Qualitative data collected as part of this study suggests that temporary workers think about near misses as individual worker responsibilities where the worker should be cognizant of their work surroundings. The worksite-based near miss survey developed in this pilot study further supported this observation in a larger group of temporary and full-time staff of workers. Findings from this study also suggest that temporary workers do not receive adequate orientation, training and tools to accomplish the tasks assigned to them on their worksite. While many of the temporary workers had completed general OSHA-10 training, the workers frequently cited a lack of orientation and training on their specific site. As a next step, we recommend the development of a combination formal reporting system for near misses. Workers indicated that a worksite-based reporting system would be useful in reporting and tracking near miss on a site. Active surveillance of near misses could be an early warning system of potentially severe workplace injuries. Data from this pilot study will be leveraged by the UM research team to submit a large competitive NIOSH R21 application to study near misses and injuries in temporary construction workers.

E. PUBLICATIONS AND STUDENT TRAINING

As of the date of this second deliverable report, the FRAME research team has not yet presented the preliminary findings from this pilot project. The research team plans to present the findings to our construction industry partners, at the upcoming annual Florida Occupational Injury and Illness Coalition meeting, and at a scientific conference in the upcoming year.

A scientific abstract will be submitted for presentation at the 144th American Public Health Association Annual Meeting in Denver, CO to be held October 29 - November 2, 2016. Additionally, a scientific manuscripts based on the data collected in this pilot project is in preparation by Katerina Santiago under the supervision of Dr. Alberto J. Caban-Martinez. Lastly, the FRAME pilot project supported the training of four graduate public health students (i.e. Katerina Santiago, Samuel Huntley, BreAnne Young, and Charles Chen) in occupational health and safety.