

Safety Training for Hispanic Logging Workers in the Southeastern United States*

Brandon S. O'Neal¹, Robert M. Shaffer² and Robert B. Rummer³

¹Graduate Research Assistant and ²Charles Nettleton Professor

Department of Forestry, Virginia Tech, Blacksburg, VA

³Research Scientist, USDA Forest Service, Southern Research Station, Auburn, AL

Abstract

Hispanic (Spanish-speaking) workers make up a significant and increasing segment of the logging industry workforce in the Southeastern United States. While the overall logging injury rate in the U.S. has decreased over the past 10 years, the fatality rate for logging remains excessively high, justifying logging's rank as the country's most hazardous occupation. At the same time, recent injury rates in the construction and agriculture industries have been found to be significantly higher for Hispanic workers than for non-Hispanic workers. Some safety experts believe this is likely a result of ineffective safety training due to language difficulties. Thus, this study was undertaken to assess the status of safety training currently being provided to Hispanic workers in the logging industry in the Southeastern U.S. Study objectives were (1) to determine the current percentage of Hispanic workers in the region's logging workforce, and (2) to determine the safety training presently being provided to these workers. Study methods included surveying nearly 2000 logging operations across the South, and conducting in-depth interviews with 40 loggers who employ Hispanic workers.

1. INTRODUCTION

Hispanics are becoming an increasing part of the U.S. private industry labor force, with approximately 17.5 million Hispanics in the workforce as of the end of 2004 (DOL 2004). In 2003, foreign-born workers made up about 14 percent of the U.S. civilian labor force age 16 and over, and of that 14 percent, 48 percent were Hispanic or Latino (BLS (2) 2004). They fill many low-skilled jobs that Americans cannot or do not want to perform (Krikorian 2004). Hispanics (non-college educated) in the U.S. labor force primarily enter the country as seasonal migrant workers (guestworkers) through labor contractors, and work under either an H2A or H2B visa. There are also a large number of Hispanics who are working in the U.S. as illegal immigrants.

A report released by the Pew Hispanic Center concludes that for nearly a century now the U.S. has relied on Mexican migrant workers to fill domestic labor shortages in nearly every area of U.S. commerce (Lowel and Suro 2002). The sectors that Spanish-speaking workers (SSWs) tend to fill usually involve labor-intensive/low paying work and are related to the agriculture or construction industry (DOL 2004). In the farming, fishing, and forestry occupations alone, almost one in every three employed were Mexicans (Grieco and Ray 2004).

The safety of SSWs is becoming a concern due to their high numbers in U.S. private industry. The number of fatal work injuries involving Hispanics or Latino workers was on a steady rise from 1995-2002 (BLS (2) 2003). Although fatalities were lower for Hispanic workers for the first time in seven years in 2002, they still experience a slightly disproportionate

* The 29th Council on Forest Engineering Conference. Coeur d'Alene, Idaho, July 30-August 2, 2006. W. Chung and H.S. Han, editors. pp. 503-512.

share of work related deaths, injuries, and illnesses (DOL 2004). In 2000 and 2001, deaths among Hispanic workers were rising by 12% and 10%, respectively, while overall workplace fatalities were falling (DOL 2004). This is especially evident in the construction industry where Hispanic workers represent about 18% of the workforce while accounting for 21% of deaths on the job (DOL 2004). In 2003 Hispanic or Latino workers accounted for 14% of the total fatal occupational injuries (BLS 2003). This trend can also be seen in nonfatal injuries. In 2002, Hispanics made up 10.9% of the private industry work force, yet they accounted for 12.5% of the nonfatal injuries or illnesses that involved days away from work (EEOC (1) 2002, BLS 2004). This can be compared to blacks, the largest minority group in private industry, who accounted for 13.9 of the private industry work force and only 8% of the nonfatal injuries or illnesses that involved days away from work (EEOC (2) 2002, BLS 2004).

Recently, many professionals whose work routinely brings them in contact with logging operations in the Southeastern U.S. have reported observing a dramatic increase in the number of Hispanics being employed throughout the region's logging businesses (Shaffer 2004). An increase in the number of Hispanics in the southern logging industry brings concern because of the danger and safety issues that coincide with the industry. In 1996 logging was the second most dangerous occupation in the U.S. (FRA 2002). From 1996 to 1998, 321 loggers died in the U.S. from injuries received in a job-related accident – the highest fatality rate for any industry during that period (FRA 1999). In the 1996-1997 fiscal year the southern forest region accounted for 49% of the OSHA-investigated logging fatalities (FRA 2002). In 1996 the U.S. Bureau of Labor Statistics reported an injury rate of 8.7 per 100 workers per year in the logging industry, while in 2001 the rate was 6.4 injuries per 100 workers per year (FRA 2000). In mechanized logging operations in the U.S. South, injury rates have decreased from 10 injuries per 100 workers per year in 1996 to 4.9 in 2003 (Roberts and Shaffer 2004). Yet, even with the recent reductions in injury rates logging workers still have a fatality rate of 131.6 per 100,000 employed, more than five times that of a construction laborer (BLS (2) 2003).

Industry experts agree that the recent reduction of logging injuries has been primarily due to: (a) reduced exposure to manual chainsaw delimiting as more loggers purchase and use mechanical delimiting devices, and (b) increased industry-wide emphasis on logging safety training (Shaffer and Roberts 2001). To keep reduced fatalities and injuries in the logging industry it is important that safety training be continued, or expanded, in a manner and form that will effectively reach all logging employees, including those whose primary language is Spanish.

In response to the aforementioned concerns, this study was undertaken to assess the status of safety training currently being provided to Hispanic workers in the logging industry in the Southeastern U.S. The study objectives were (1) to determine the current percentage of Hispanic workers in the region's logging workforce, and (2) to determine the safety training presently being provided to these workers.

2. METHODS

The study area for this project is the Southeastern United States. This is an area that starts at Virginia and, moving southwest, ranges as far south as the Gulf Coast and as far west as Oklahoma and Texas.

Data for the study was collected through two methods. The first set of data was collected through on-site surveys performed by three of the largest WCI providers for the logging industry

in the Southeastern U.S. The participating WCI carriers were Davis-Garvin, Inc. of Columbia, SC, Amerisafe Inc. of Baton Rouge, LA, and Forestry Mutual of Raleigh, NC. Field agents for the three WCI carriers conducted the surveys of their insured logging operations within the study area during the summer of 2005. The surveys took place during the field agent's routine safety inspection visits to the logging operations which they perform year-round. The surveys recorded three observations for each logging crew visited: (1) the state and geographic region of the operation, (2) the total number of employees on the logging crew, and (3) the total number of Hispanics (Spanish speaking) on the logging crew.

The second data set for this study comes from interview questionnaires completed by selected sample logging operations that are currently employing one or more SSWs. Sample logging operations were purposely selected from a representative group of logging business owners who employ Hispanics. This task was carried out by Virginia Tech researchers and project cooperators who identified logging business owners employing Hispanics, and conducted interviews with them or provided the business owners with the questionnaire through correspondence. All questionnaires were completed during late summer and early fall of 2005. The questionnaire collected information regarding the current methods of safety training for Hispanics, as well as the respondents opinions of the most effective methods.

3. RESULTS

3.1 Survey

There were 1890 logging operations surveyed for this study. These crews collectively employed 11,525 total employees, of which 388 were identified as Spanish-speaking (Table 1). Thus, Hispanics represent 3.37% of the logging workforce in the study area.

Table 1. Survey results by region and state.

REGION	STATE	CREWS	EMPLOYEES	HISPANICS
Atlantic	Virginia	136	666	21
	North Carolina	291	1386	97
	South Carolina	89	620	7
	Tennessee	101	546	0
Eastern Gulf	Georgia	281	1508	19
	Florida	11	47	10
	Alabama	169	901	6
	Mississippi	151	953	10
Western Gulf	Louisiana	163	1368	0
	Arkansas	400	2720	185
	Oklahoma	44	452	18
	Texas	54	358	15
TOTAL	Southeastern U.S	1890	11525	388

The total employee sample size was compared to the estimated total logging employee workforce in the study area of 34,507 (BLS 2004c), providing a sample of 33.4% of the total population (Table 4). Taking into account the large sample size and using a confidence level of 99%, this data produces a confidence interval of < 0.35 for the percentage of Hispanics in the Southeastern logging workforce. According to Bureau of Labor Statistics population data we can be 99% confident that the percentage of Hispanics in the Southeastern logging workforce falls between 3.05% and 3.75%. Thus, the current population of SSWs in the Southeastern logging industry is 1162, ranging between 1051 and 1293 workers.

Of the 1890 operations surveyed, 192 of them employed one or more Hispanic. This represents approximately 10% (10.16%) of the sample crews, which is a significantly higher statistic than the Hispanic population percentage in the Southeastern logging industry (3.37%) (Table 2). This data also reveals that of the 192 crews with 1 or more SSW, the average number of SSWs per crew is 2.02.

Table 2. Demographic statistics by sub-region.

<u>REGION</u>	<u>CREWS</u>	<u>PERSONNEL</u>	<u>HISPANICS</u>	<u>%</u>	<u>CREWS W/HISPANICS</u>	<u>%</u>
Western Gulf	661	4898	218	4.45%	108	16.34%
Eastern Gulf	612	3409	45	1.32%	22	3.59%
Atlantic	617	3218	125	3.88%	62	10.05%
TOTAL	1890	11525	388	3.37%	192	10.16%

3.2 Questionnaire

A total of 41 questionnaires were collected from logging crews in eight Southern states. The total number of employees working for the sample logging business owners (respondents) was 582, with 179 of them Spanish-speaking. The average respondent employed 14 workers of which four (29%) were Spanish-speaking. The median respondent employed ten workers of which two (20%) were Spanish-speaking. The average respondent had employed for 6.7 years, while the range was from less than 1 year to 20 years. The median employment time for Hispanics was six years. More than one-half (63%) of the Hispanics on these crews had previous logging experience before entering their current job. Of all respondents, four (10%) did not provide their Hispanic workers with safety training, and 44% had Hispanics injured on the job.

Respondents were asked to rate different methods of safety training on their effectiveness for training Hispanics (Figures 1-6). Using "hands-on" demonstration training, where the worker observes a safe operating practice and then tries it himself, was considered the most effective way to train Hispanics by 73% of the respondents (Figure 1). This was also the only method that no respondents believed would definitely not be effective. Showing American-made safety videos with Spanish subtitles appearing at the bottom of the screen was considered the least effective way to train Hispanics, with only 8% of the respondents believing it was definitely effective (Figure 2). This method also had the highest percentage of respondents (13%) believing it was definitely not effective. Using a bi-lingual SSW to interpret a tailgate safety meeting at the landing and attending local safety training programs presented by a Spanish-speaking safety instructor were the next two most effective methods of training Hispanics, with

59% and 54% of respondents, respectively, believing they would be definitely effective methods (Figures 3&4). The last two suggested methods, using safety brochures and manuals printed in Spanish and using pictures and diagrams rather than text in safety brochures, were not believed to be highly effective, with only 43% and 33% of the respondents, respectively, believing them to be definitely effective (Figures 5&6).

When looking at the potential effectiveness of each training method (definitely effective + probably effective) the results are similar. The order of greatest to least potentially effective training method is as follows (along with the percentages of respondents classifying the method as definitely effective or probably effective);

1. (97%) Using "hands-on" demonstration training where the worker observes a safe operating practice and then tries it himself.
2. (87%) Using a bi-lingual Hispanic to interpret a "tailgate" safety at the landing to his co-workers.
3. (87%) Attending local safety training programs presented by a Spanish-speaking safety instructor.
4. (85%) Using safety brochures and manuals printed in Spanish.
5. (76%) Using pictures and diagrams rather than text in safety brochures.
6. (56%) Showing American-made safety videos with Spanish subtitles.

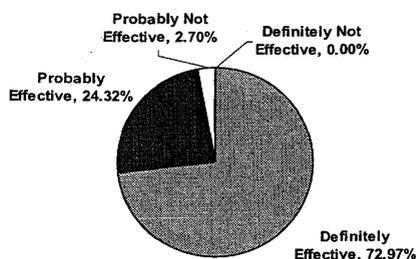


Figure 1. Effectiveness of using "hands-on" demonstration training where the worker observes a safe operating practice and then tries it himself.

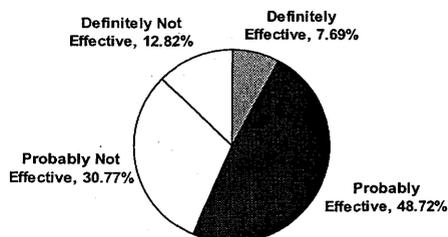


Figure 2. Effectiveness of showing American-made safety videos with Spanish subtitles appearing at the bottom of the screen.

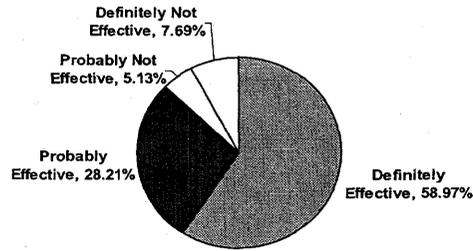


Figure 3. Effectiveness of using a bi-lingual Hispanic worker to interpret a "tailgate" safety at the landing meeting to his co-workers.

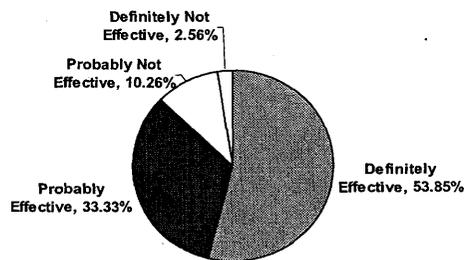


Figure 4. Effectiveness of attending local safety training programs presented by a Spanish-speaking safety instructor.

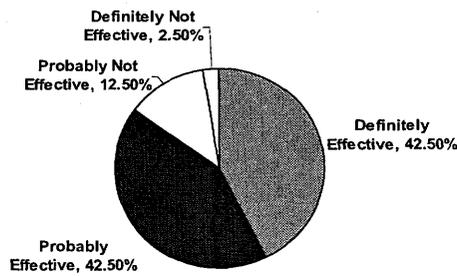


Figure 5. Effectiveness of using safety brochures and manuals printed in Spanish.

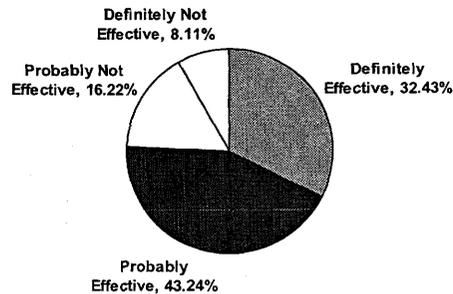


Figure 6. Effectiveness of using pictures and diagrams rather than text in safety brochures.

A brief explanation was given by the respondents who provide safety training for their Hispanic workers describing the safety training method(s) they are currently using.

Few respondents used more than one method such as holding monthly "tailgate" safety meetings and using an interpreter, while most respondents only used one method of safety training such as only having safety meetings or sending their Hispanic workers to formal logger training programs. The following is a break-down of the different kinds of training provided by the respondents for their Hispanic workers;

- 23% use only hands-on/demonstration type training
- 14.5% use only safety meetings
- 14.5% only talk about safety in a general sense or when needed
- 12% use only an employee or hired translator/interpreter
- 12% use only third party training programs (SFI, SHARP, Insurance Co.)
- 9% use only Spanish materials
- 3% use only safety brochures with pictures
- 12% use a combination of the previously listed methods

4. DISCUSSION

4.1 Survey

Reasons for the relatively low population of Hispanics in the logging industry may be explained by two factors. First, professionals who are regularly in contact with logging operations in the Southeast have noticed an increase in the number of Hispanics on logging crews only in the past few years (Shaffer pers com 2004). This coincides with questionnaire data that shows 49% of the respondents have employed their Hispanic workers for 5 years or less. Thus, the number of Hispanics has only recently begun to rise to considerable numbers, but overall it is still relatively low.

The second factor may be attributed to the H2B visa cap. Presently, the maximum amount of H2B visas that can be issued is 66,000. Recently, this number has been reached early in the fiscal year, leaving many employers without the much needed immigrants to fill manual labor jobs in the non-agricultural work sector (Murphy 2004). Since (Spanish-speaking) immigrants in the logging industry can only work legally under an H2B visa, this may be a limiting factor to the number of Hispanic workers that can be acquired to fill the needs of the industry.

These factors lead to 3 conclusions about the population of Hispanics in the Southeastern U.S. logging industry: (1) Only recently has the population of Hispanics begun to accumulate in high enough numbers to make them a substantial labor source for the logging industry, (2) The H2B visa is potentially an influential factor in limiting the number of Hispanics in the industry, and (3) The current population has the potential to increase in the future, more-so if the H2B visa cap is removed or expanded.

A critical statistic regarding the Hispanic population is the percentage of all operations with one or more Hispanic. Ten percent of the surveyed crews employed a Hispanic. These crews are all subject to dealing with the necessity of providing effective safety training to account for the language barriers between employers and employees, even if they only employ one Hispanic. This percentage is over three times greater than the entire Hispanic workforce

percentage, and shows that there are few logging crews that are predominantly Hispanic and many crews with only one or two Hispanics. The 192 operations in the survey that employed Hispanics averaged two per crew.

4.2 Questionnaire

The average and median employment time of Hispanic logging workers was seven and six years, respectively. This would put the average starting employment date for most Hispanics around 1999 or 2000, which is towards the end of the large Hispanic population growth in the South (Kochhar et al. 2005). A possible explanation for not having shorter average employment time is the fact that the H2B visa cap has been reached early in the fiscal year since 2003 (Ferrier 2004, Murphy 2004, Siskind and Ballentine 2003). This would limit the availability of new Hispanics in the logging industry, since the H2B is the only legal visa that a migrant worker can obtain to work on a logging job.

Hands-on training ranked as the most effective method for training Hispanics. This was the only non-resource based training method that was listed. It involved no spoken or written communication, only physical demonstration of a safe operating practice with the Hispanic worker then trying to repeat the practice. The use of a bi-lingual Spanish-speaking workers or attending local safety training programs presented by Spanish-speaking instructors were the next two most effective methods for training Hispanics. This approach is popular in the construction industry where many organizations are creating and using methods such as this to train their Hispanic workers (Brooks 2003, OSHA 2002, Ceniceros 2001). Even though the use of hands-on training is favored by the respondents as the best approach to safety training, it might not be effective without the use of a bilingual employee/translator. This is due to the fact that an employer is required by OSHA to relay safety training to their employees in a method they understand. To find out if a Hispanic understands a safety training method taught through hands-on training, a bilingual employee/translator would be needed to translate any questions or comments.

The three methods for training Hispanics through written or visual communication were rated the least effective. This could be due to the low education levels of foreign-born Latinos; 62% have less than a high school education (Kochhar et al. 2005). Low education levels could relate to low literacy levels which would make written safety training materials and videos with Spanish subtitles difficult to understand. Other studies identify education and literacy levels of Hispanics as specific issues of concern when conducting safety training (Anonymous 2003, Elkind et al. 2002).

Respondent's opinions of the best way to train Hispanics were similar to the actual methods used by the respondents. The majority of respondents used only hand-on/demonstration type training, while a large percentage also used an employee or hired translator/interpreter to conduct safety training. Interestingly, 29% of respondents used only safety meetings or only talked about safety in a general sense or when needed. These methods use no aides designed for training Hispanics, and therefore, the effectiveness of these methods must be questioned. Another interesting note is that only 12% of the respondents use a combination of any of the previously mentioned training methods. It would be logical to assume that a combination of training methods would be beneficial on crews with more than one Hispanic worker since each one may have a different level of education and English comprehension. A combination of different training methods is the approach that OSHA and the Hispanic Contractors of America

Inc. (HCA) used when they formed an alliance to promote safe and healthful working conditions for Hispanic construction workers (OSHA 2002).

5. ACKNOWLEDGEMENTS

Partial funding for this study was provided by the U.S.D.A. Forest Service Forest Operations Research Unit at Auburn, AL. Study cooperators included members of the Forest Resources Association's Southwide Logging Safety Committee, Davis-Garvin Agency, Inc., Amerisafe Corp., Forestry Mutual, Inc., Georgia-Pacific Corp., South Carolina Timber Producers' Association, Manry-Rawls Agency, Inc., and Potlatch Corp.

6. LITERATURE CITED

- Anonymous. 2003. Safety Pros Share Proven Tricks for Training Spanish-Speaking Workers. IOMA's Safety Director's Report 3 (7); 2-4.
- Brooks, Roger Jr. 2003. Lost in the Translation. Occupational Health and Safety 72 (12); 49-51.
- Bureau of Labor Statistics (BLS). 2003. Fatal occupational injuries by worker characteristics and event or exposure, all United States, 2003. From BLS internet database at: www.bls.gov.
- Bureau of Labor Statistics (BLS). 2003(2). Census of Fatal Occupational Injuries, 2003 data: Information on deadly work hazards. From BLS internet database at: www.bls.gov.
- Bureau of Labor Statistics (BLS). 2004. Lost-worktime injuries and illnesses: characteristics and resulting days away from work, 2002. March 25, 2004 From BLS internet database at: www.bls.gov
- Bureau of Labor Statistics (BLS). 2004(2). Labor Force Characteristics of Foreign-Born Workers in 2003. December 1, 2004. From the BLS internet database at: www.bls.gov.
- Bureau of Labor Statistics (BLS). 2004. Lost-worktime injuries and illnesses: characteristics and resulting days away from work, 2002. March 25, 2004 From BLS internet database at: www.bls.gov/iif/home/htm.
- Ceniceros, Roberto. 2001. Safety Efforts Crossing Cultural Lines. Business Insurance, (Chicago) 35 (43); 10-11.
- Department of Labor (DOL). 2004. John Henshaw Remarks. DOL-OSHA Hispanic Safety and Health Summit. Orlando, Florida. July 22, 2004.
- Elkind, P.D., K. Pitts, and S.L. Ybarra. 2002. Theater as a mechanism for increasing farm health and safety knowledge. American Journal of Industrial Medicine 42 (S2); 28-35.
- Equal Employment Opportunity Commission (EEOC (1)). 2002. Occupational Employment in Private Industry by Race/Ethnic Group/Sex, and by Industry, United States 2000-2002. From EEOC internet database at: www.eeoc.gov.
- Equal Employment Opportunity Commission (EEOC (2)). 2002. Aggregate Report SIC 241: Logging 2000-2002. From EEOC internet database at: www.eeoc.gov.
- Ferrier, Antonia (contact). 2004. Maine Congressional Delegation Urges Labor Secretary Chao to Grant Canadian Loggers Entry to U.S. on H2a Visas. News release – Olympia Snow, U.S. Senator for Maine.

- Forest Resources Association (FRA). 1999. National logging and wood fiber transportation fatalities for 1996-1998. Tech. Rept. 99-A-12. FRA, Rockville, MD. 26pp.
- Forest Resources Association (FRA). 2000. Injury rates for feller-buncher/grapple skidder operations. Tech. Release. 00-R-2. FRA, Rockville, MD.
- Forest Resource Association (FRA). 2002. Logging Fatalities Investigated by OSHA: 1996-1997. Tech Release. 02-R-30. FRA, Rockville, MD. 2pp.
- Grieco, Elizabeth, and Brian Ray. 2004. Mexican Immigration in the U.S. Labor Force. Migration Policy Institute. March 1, 2004.
- Kochhar, Rakesh, R. Suro, and S. Tafoya. 2005. The New Latino South: The Context and Consequences of Rapid Population Growth. Pew Hispanic Center Report. July 26, 2005.
- Krikorian, Mark. 2004. Flawed Assumptions Underlying Guestworker Programs. Center for Immigration Studies. From the CIS website at: www.cis.org
- Murphy, Edward D. 2004. System Gives Southern States the Edge on Work Visas. Press Herald. Portland, Maine. Date unknown.
- Occupational Safety and Health Administration (OSHA). 2002. Hispanic Contractors Form Alliance: Goal to Reduce Construction Deaths Among Spanish-Speaking Workers. OSHA Trade News Release. March 5, 2002.
- Roberts, T. and R.M. Shaffer. 2004. 2003 injury rate for mechanized logging operations in the South. Forest Operations Review 7(1):23-24.
- Shaffer, R.M. and T. Roberts. 2001. Injury rates dropping on mechanized logging operations in the South. Forest Resources Association Technical Release No. 01-R-12, 2pp.
- Shaffer, R.M. 2004. *Personal contact* with forest industry procurement foresters, Worker's Compensation Insurance providers' field agents, and logging equipment manufacturer's field staff.
- Siskind, Gregory, and A. Ballentine. 2003. The ABCs of Immigration – H-2A Visas for Temporary Agricultural Workers and H-2B Visas for Temporary Nonagricultural Workers. Immigration Daily. November 11, 2003.