

# Workers Head Protection Preferences in Construction

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Head injuries are one of the most common ways workers are injured on a construction site, but head protection has not evolved over the last few decades. A new style of head protection, a safety helmet is being introduced to better protect workers, but the new style has not been widely adopted. A survey was conducted to determine workers preferences when choosing head protection and 31 responses were collected. 68% of the respondents currently wear a safety helmet, but 60% of the respondents would choose a traditional helmet if given the choice. 73% workers with more than 5 years of experience preferred a traditional helmet, while 50% of the workers with less than 5 years of experience preferred a safety helmet. The respondents made it clear that comfort was the most important feature to them when they choose head protection. The appearance of head protection was not the most important factor to the more experienced workers, but some respondents voiced that they do not understand why the design needs to change. Helmets are still very new to construction workers on the west coast, but with more companies introducing the helmets on jobsites, workers will gain a wider acceptance for them.

**Key Words:** Safety, Hard Hat, Helmet, Construction, Head Protection

## Literature Review

Construction job sites are inherently dangerous due to the number of workers, large equipment, and materials on site simultaneously. Because construction projects are very congested, it is extremely important for workers to wear the proper protective equipment to keep them safe and avoid injuries. Between years 2016-2019, the number of fatalities in the construction industry were 1034, 1013, 1038, 1102 (Industries at a Glance, 2015). These numbers are alarming as they are trending in the wrong direction, so it is important to understand what can be done to reverse this trend. Analyzing the most common injuries in the construction industry from 2003 to 2010, traumatic brain injuries account for about 25% of construction fatalities and 24% of all occupational traumatic brain injury fatalities. Falls in the construction industry accounted for more than half of traumatic brain injuries. Other causes for traumatic brain injuries (TBIs) include vehicle-related collision, slips, and falling objects (Hecht, Kleegeer, 2017) From this data, it is apparent that head injuries are a large portion of construction injuries even though workers are required by OSHA to wear head protection when

performing construction activities. According to OSHA standard number 1926.100(a), employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets (1926.100 - Head protection)

### *Construction Hard Hat Background*

Construction hard hats have been around for just about a hundred years. In the early 1900s, a family by the last name Bullard, started to manufacture leather caps to protect miners from falling objects. (History of the Hard Hat)

These protective hats evolved into aluminum helmets in the 1930's, but since aluminum is a great conductor of electricity, it caused great risk of electrocution. In the 1940's, the hard hats were redesigned to be fiberglass with three ribs, and the hats were redesigned again to use thermoplastics as this material was more cost effective than fiberglass. In 1982, the global construction company Betchel felt that these hard hats did not have proper adjustability and so a ratchet strap was incorporated into the hard hat. Today there are many different types of hard hats to choose from and they all must meet specific safety standards to be approved for use on a jobsite. OSHA required that the hard hat must meet the American National Standards Institute ANSI Z89.1 standards of 1997, 2003, and 2009 or be equivalent or better (Hard Hat Requirements). These standards include the types and classes of hard hats for different hazardous construction activities, the performance requirements for impact, penetration, and electrical shock, and the testing requirements to prove that the helmet passes the OSHA regulations.

### *Hard Hat Type and Class*

Hard hats are classified by impact type and electrical class. The first type of hard hat is type I, which consists of a full brim, a shell and a suspension system that is designed to protect workers from a blow only to the top of the head. The second type of hard hat is type II hard hats which are designed to protect a worker from a blow to the top or the side of the head. These hard hats are also designed to protect workers from electrical hazards and are categorized into three different electrical categories, class E, class G, and class C. Class E hard hats are designed to protect a worker from high-voltage situations and can withstand 20,000 volts. A class G hard hat is what a general hard hat is rated, and it is designed to withstand 2,200 volts which protects a worker from low voltage hazards. Class C hard hats have no electrical protection (New ANSI/ISEA Standard for Head Protection Technical Bulletin). Refer to figure 1 below to see a general-purpose type I hard hat.

Many construction workers wear a general-purpose front brim or full brim hard hat. These hard hats are considered type I, class E hard hats as they protect workers from electrical hazards of up to 20,000 volts. These hard hats are non-vented with a brim to protect workers from sun exposure and reduce glare. These hard hats do not have a chinstrap and are prone to falling off when working at heights, bending over, or if a worker were to slip, but an adjustable ratchet system allows workers to securely fasten the hard hat to the size of their head. The shell of these hard hats is made from polyethylene and have a suspension system designed to protect the head from falling objects and direct impact of the head, but do not have any lateral protection. Other variations of these hard hats include front brim and full brim hard hats with vents to allow air to enter the hard hat to dissipate heat. These hard hats are rated as type I, class C and do not protect workers from electrical hazards as the vents allow a direct path for electrical arcing (Hard Hats and Helmets, 2021) Although these hard hats pass the requirements and standards that OSHA requires, they have a tendency to fall off before impact during a slip, trip or fall hazard causing it to have little value to the worker. Additionally, these hard hats do

not protect a worker from any strikes to the front, side, or back of the head because they are not designed with a high-density foam liner on the inside of the shell. These hard hats have not been reinvented or redesigned to account for these issues, so some companies have switched to using helmets with a chinstrap.

### *Safety Helmets*

Most workers prefer general-purpose hard hats with a brim as the industry has been using them for decades, however a new style of head protection, a helmet with a strap, is starting to emerge as a safer and better option. Kask, an Italy based company, specializes in developing, designing, and manufacturing safety helmets who originally started designing helmets for cycling, rock climbing, skiing/snowboarding, and equestrian sports, recently started manufacturing safety helmets for construction. Companies that have started using them include general contractors such as Skanska, Clark, and Turner. The two style of helmets that are mostly used in construction include the Kask Super plasma helmet and the Kask Zenith helmet. Both helmets are made from an expanded polystyrene system (foam) inner shell which helps protect the head from the front, side, top and back of the head. The Kask Super plasma helmet is rated as a type I, class C helmet, but passed ANSI type II testing protocols. This helmet is vented making it classified as a type C helmet because making it conductive because it does not protect a worker against electrical hazards, but the vents allow for a more breathable and comfortable helmet in high temperature conditions. The Kask Zenith helmet is classified as a type I, E helmet as it protects workers from electrical hazards up to 20,000 volts, and there is no ventilation on this helmet. Like the Kask super plasma helmet, the Zenith also was tested under ANSI type II protocol and passed the impact test (Assessing Next-Generation Construction Helmets, 2018). Refer to figure 1 below to see a KASK Zenith helmet.

Although Kask helmets are not the only brand that construction companies are using, the design and materials used to construct these new helmets are all very similar. Clark Construction is a leader in the industry, and they are leading by example, requiring all their employees to wear the new Kask helmet. Seth Randall, Division Safety Manager for Clark stated that Clark decided to require the new helmets after a few incidents opened their eyes and they felt that they needed to better protect their workers. Randall also said, “We’ve already seen positive results in a couple of incidents that have occurred, that the helmets have potentially saved an employee from any type of head trauma.” (Will Helmets Replace the Construction Hard Hat?)

### *Challenges of Introducing Safety Helmets*

Introducing new helmets has some challenges associated with it. First, hard hats have not changed for 50 years and construction workers in the industry are reluctant to a new design. The new helmet has a much different look and feel than a traditional hard hat, and many workers who have been in the industry for a long time do not want to change what they have been doing for years. Randall, Division Safety Manager for Clark stated, “It’s a different type of fit, and some people prefer one or the other, but we are getting positive feedback about the fit.” Randall stated that it was not easy to introduce the new helmets but as workers wore the helmet, a lot of them liked the fit more than they expected (Will Helmets Replace the Construction Hard Hat?) Skanska also reported that workers were hesitant about the new design and added that workers use their hard hats as a symbol of hard work and stickers represent the amount of projects, they have been a part of (Assessing Next-Generation Construction Helmets, 2018). Another challenge was the cost of the new helmet. A traditional V-guard helmet costs a company around \$20 each. The Kask helmets are around \$100 for a company to order with a logo printed on it. Randall explains that cost should not cause companies to not invest in these new helmets

adding that an injury is a much greater cost than the cost of a new helmet. In the end the safety of a worker outweighs any of the challenges that these companies have run into, and they understand that which is why they have started to require the new helmet on their projects.



Figure 1 – Hard Hat Types

## Methodology

The methodology for this project consisted of an anonymous survey that was created in Microsoft Forms and distributed by email to the Construction Management Advisory Council (CMAC) at California Polytechnic State University (Cal Poly) and 9 recent Cal Poly graduates who are project engineers at different companies in California. The survey consisted of 20 questions and was sent out over a 2-week period. The main purpose of the survey was to gain more knowledge about construction worker's preferences on the new safety helmets compared to traditional hard hats. This survey collected quantitative data that will be analyzed to determine the workers opinion on the new safety helmets. Qualitative data was also collected to understand the demographics of the respondents. The questions were as follows:

1. What is your job title?
2. What type of company do you work for?
3. How long have you been in the industry?
4. On average, how often do you wear head protection?
5. Of the days you wear a head protection, how many hours do you wear it?
6. What kind of head protection do you currently wear?
7. Have you ever worn a helmet style hardhat with a chin strap?
8. Do you have an option on the head protection that you use or does your company require a specific style of head protection equipment?
9. If you were able to choose the type of head protection you wore, which do you prefer?
10. If you do not currently wear a new helmet hard hat with a strap, please rank your reasons below. (1 = the most important, 5 = least important) If you currently wear a helmet with a chinstrap, please skip this question.
11. In regard to the question above, please list any other reasons that you do not wear the new helmet with a strap.
12. Please rank the hard hat features that are most important to you when selecting a hard hat (1 = the most important, 5 = least important)

13. Regarding the question above, are there any other features that are important to you when choosing head protection? If so, what are they?
14. Identify how much you agree with each of the statements regarding traditional hard hats.
15. Identify how much you agree with each of the statements regarding helmets with a strap.
16. Does the appearance of the new helmets have an impact on whether you would wear a helmet with a strap?
17. Have you ever witnessed a worker's hard hat fall off due to a trip, slip, or fall hazard?
18. Do you believe that chinstraps on construction helmets are necessary?
19. Fill in the blank: When compared to a traditional hard hat, does your helmet with a strap need to be adjusted\_\_\_\_\_?
20. In regard to question 19 above, does adjusting your hard hat affect your ability to use both hands when working?

### *Survey Demographics*

The first five questions aim to learn about the demographics of the respondents of the survey. These questions ask what the respondents job title is, what kind of company they work for, how long they have been in the industry, how often they wear a hard hat or safety helmet, and how long they wear it per day. These questions allow an individual to interpret who the respondents are to better understand the answers to the following questions in the survey. To increase the credibility of the responses, it is important to get responses from multiple different types of workers varying from project executives to field personnel. This will help understand how often a worker wears a hard hat or safety helmet and the types of work that they are performing while wearing the two types of head protection. It is also important to know how long the workers have been in the industry to know if there are differing views based on the experience level of the workers.

### *Head Protection Preferences*

For questions six to eleven, the objective of the questions is to learn what kind of head protection workers currently use and to gain an understanding of the workers knowledge and experience wearing safety helmets. The more respondents who currently wear a safety helmet or have tried wearing the safety helmets will help gain quality responses that are reliable when comparing the two types of head protection. This section also asked workers what kind of head protection they prefer if given a choice and what the main reasons were for not wearing the new safety helmet if they do not currently wear it.

### *Comparing Important Features of Safety Helmets versus Hard Hats*

Questions twelve to fifteen use ranking systems and likert scales to determine what is most important to the workers when choosing a hard hat or a safety helmet. These questions allowed the workers to rank what features on a hard hat are most important to the workers and a free response question to allow the workers to add any additional features that they feel are important. There are also questions regarding hard hats and helmets in certain work scenarios and the respondents were able to answer how much they agree or disagree with the statements.

### *Need for Safety Helmets*

The last five questions ask the respondents a series of yes or no questions and one question regarding how often workers must adjust their head protection. These questions were included to understand how workers feel about the need for safety helmets on a jobsite. There is a question regarding the appearance of the helmet, the chin strap of the helmet, and a question asking if the workers have ever seen a hard hat fall off a worker due to a trip, slip, or fall hazard. These questions will help better understand if construction workers feel that safety helmets are necessary to help mitigate these issues.

## Results

The survey received 31 different responses from a variety of companies and demographics. Of the 31 respondents, 5 were project executives, 5 were superintendents, 11 project engineers, 2 field engineers, 1 safety manager, 1 project manager, 1 foreperson, 1 VDC manager, an area manager, a COO, a director of construction, and a craftsperson. There is a variety of positions represented from the survey results, but the majority are on the management side of things with a few respondents in the field. Of the 31 respondents, 27 worked for a general contractor. There were two respondents from a civil contractor, one from a concrete subcontractor, and one from “other subcontractor”. Question three asked how long the worker has been in the industry, and 6 out of 30 responded less than 1 year and 10 people said 1-5 years. Roughly 52% had 5 or less years in the industry, however 6% of people had 6-10 years of experience, 3% had 11-21 years of experience, 23% of the workers had 21-30 years of experience, and 16% had 30 plus years of experience in the industry. Although there were a lot of respondents with minimal experience, there was still a solid percentage of respondents that had 20+ years of experience. Refer to figure 2 below.

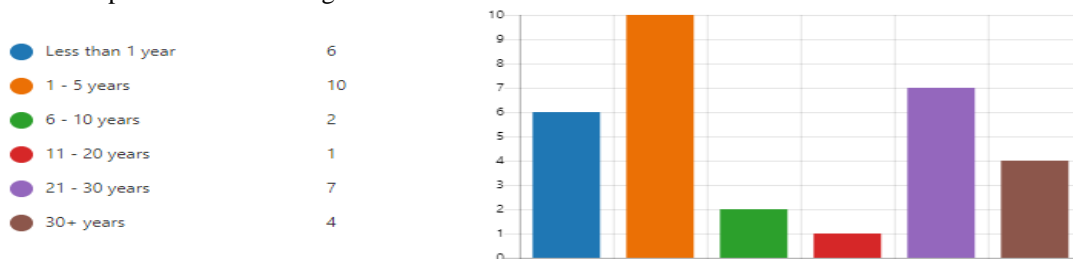


Figure 2 – How long have you been in the industry?

18 people responded that they wear head protection every day, 4 responded 1-2 days a week, 4 responded 3-4 days a week, and 5 responded less than 5 days a month. Of these days that the worker wears head protection, 14 people responded 1-2 hours a day. 9 people said they wear head protection 3-4 hours a day, 5 responded 5-6 hours a day and 3 people wore head protection 7-10 hours a day. Most of the responses are between 1-4 hours a day and 26% where it for more than half of the workday.

Then next question asked what kind of head protection the respondents currently wear and 10 workers responded a traditional hard hat while 21 said a safety helmet. The follow up question was whether the respondent has ever worn a helmet with a chinstrap and 22 out of 31 respondents had worn one before while 9 respondents had never worn a safety helmet. 7 respondents said that they had an option of the type of head protection they wore and 24 said that their company provides their head protection. When asked what type of head protection a worker would choose if given the choice, 18 responded traditional hard hat and 12 responded a safety helmet. One person did not respond.

Question 10 was a likert scale question asking the workers to rank the reasons that they do not currently wear a helmet from the most important reasons why to least important reasons. The top response was “I dislike the look of the new helmet” and was the top choice for 50% of the responses. The most common 2<sup>nd</sup> choice was “it is uncomfortable” with 44% of people choosing this as the second most important reason. “I have never tried wearing the new helmet” was ranked third the most with 63% of the responses ranking it the third reason. 50% of respondents ranked “I have never tried wearing the new helmet” as the 4<sup>th</sup> most important reason. The least important reason for the workers was “no reason” as 50% of respondents ranked it as the least important reason. See figure 3 below.

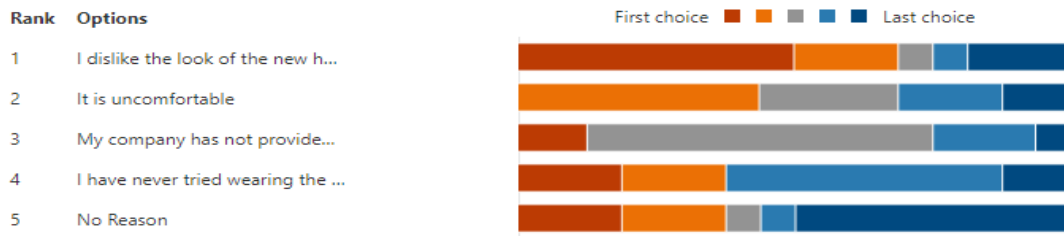


Figure 3 - If you do not currently wear a new helmet hard hat with a strap, please rank your reasons below. (1 = the most important, 5 = least important) If you currently wear a helmet with a chinstrap, please skip this question.

Respondents were given the option to add any additional reasons why they do not currently wear a helmet and 8 people add responses. One respondent said that they prefer the breathability of a traditional hard hat. Another respondent added that the chinstrap can feel restricting especially when worn with a mask. Another person said that the visor on the safety helmet fogs up at times and they prefer traditional safety glasses. Another respondent stated “I think the chinstrap hardhat provides greater protection in the event of a fall and drastically less protection in nearly every other regard. The brim of the old-style hardhat is there to deflect things falling on your head, the new style lacks that.”

Respondents were also asked to rank the hard hat features that are most important to them when selecting head protection. The answer that was ranked the most important was “comfort/fit” with 58% of people choosing this as the most important feature. The feature that was ranked 2<sup>nd</sup> most important was safety rating with 32% of people ranking it as the second most important feature. The third most important feature to the respondents was slip between the last three options, but the most common answer for the 3<sup>rd</sup> most important feature was “adjustability” with 32% of the responses ranking it third. The 4<sup>th</sup> most important response was “appearance” with 39% of respondents ranking it 4<sup>th</sup>. Sun protection/brim was ranked relatively evenly with around 27% of respondents ranking it as the 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> most important option. Please refer to figure 4 below.

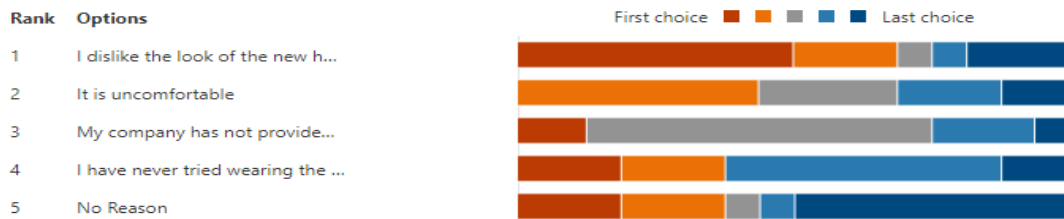


Figure 4 - Please rank the hard hat features that are most important to you when selecting a hard hat (1 = the most important, 5 = least important)

Workers were asked to add any other important features to them when choosing a hardhat. Multiple people stated that eye protection that does not fog up was a key feature. Other responses included visibility, comfort, large brim for sun protection, side impact and electrical resistance, and having a hard hat that is not bulky and cumbersome.

The next two questions asked respondents to identify how much they agree with statements about hard hats and helmets. See figure 5 and 6 for the results.

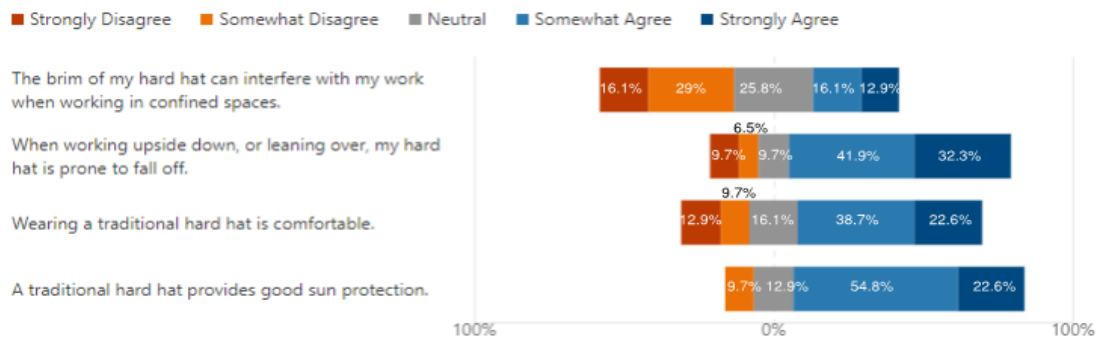


Figure 5 - Identify how much you agree with each of the statements regarding traditional hard hats.

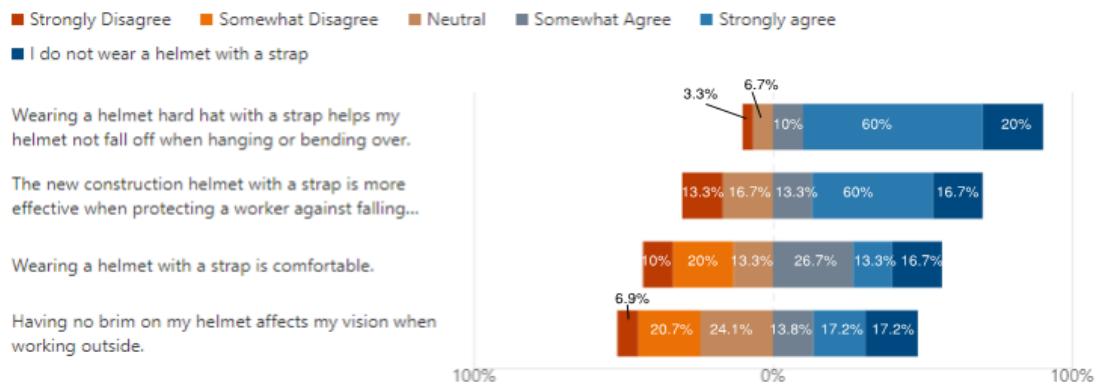


Figure 6 - Identify how much you agree with each of the statements regarding helmets with a strap.

Respondents were also asked if the appearance has an impact on whether they would wear a helmet with a strap. 32% of respondents answered “Yes, I do not like the new design”, 39% of people responded “No, I do not mind the new design”, and 39% of people answered, “I have no opinion”.

Workers were then asked if they have ever witnessed someone’s hard hat fall off due to a slip trip and fall and 68% of respondents answered “Yes” while 32% answered “No”. Workers were then asked if they believe that chinstraps are necessary on a construction helmet. 55% of respondents answered “No” while 45% answered “Yes”.

Workers were also asked if they adjust their helmet and strap more or less compared to a traditional hard hat. 2 respondents answered, “much more”, 4 answered “more”, 14 responded “not more or



less”, 2 responded less, 4 answered much less, and 5 answered “I do not wear a helmet with a strap. The last question asked if this affected the workers ability to use both hands while working. 77% of respondents answered “no” while 23% of people responded “yes”.

## Analysis

For this data to be valuable it was important to receive responses from various types of workers in the construction industry with differing years of experience to understand what preferences different demographics have. There were 11 different types of workers who answered ranging from Project Executives and COOs to craftspeople and forepeople. The most popular positions included Project Executives, Superintendents, and Project Engineers. The majority of the respondents worked for a general contractor and more than half had 5 or less years of experience, which means that the survey will heavily favor the perceptions of younger workers, but there were still 12 people who had over 10 years of experience so older workers were still represented well. Almost 60% of respondents wore head protection every day and 68% of the respondents currently wear a safety helmet with a strap. It was important to get responses from people with experience wearing the new helmet and responses from people who do not currently wear a helmet so that the two experiences could be compared. This data gives the survey credibility and value to the other questions as it is apparent that many workers wear a helmet. The survey found that 60% of respondents would choose a traditional hard hat over a safety helmet if given the option. Looking at the demographics of the answers, 11 out of 15 people who had been in the industry for over 5 years preferred a traditional hard hat over a safety helmet even though 9 of the 15 people currently wear a helmet with a strap. A foreperson with over 30 years of experience stated, “I have worn traditional hard hats for over 30 years and have never had any issues. Why do people insist on trying to change or fix something there's nothing wrong with?” The older workers with more experience in the industry do not like the new style of helmet and if given the choice they would choose a hard hat, because they have been using this style their whole career and do not see the need for change. Younger workers with 5 years or less of experience felt differently. 50% of respondents in this group responded that they would choose a helmet with a strap and 50% stated they would choose a traditional hard hat. 12 out of 16 respondents with less than 5 years of experience currently wear a helmet with a strap. The younger workers with less experience were more willing to adopt change and accept the new helmet style.

Features that a hard hat has can greatly impact what kind of head protection a worker chooses. Comfort and safety rating were the most important features when workers were selecting head protection as well as having a brim and sun protection. The respondents were able to comment and additional features that they felt were important to them. Of the comments comfort and sun protection were the most common answers. Some workers also expressed their concern about the visor on the new helmets fogging up and they prefer safety goggles that are less likely to fog. Another feature that one respondent felt was important when choosing a hard hat was side impact protection. This respondent currently wears a helmet responded that he would choose to wear a traditional hard hat if given the choice. The workers also were asked if the appearance impacts their choice on head protection. Of the workers with 5 or less years of experience, 5 people responded that they dislike the new design, 6 responded that they do not mind the new design, and 5 responded that they have no opinion. Comparing this to the more experienced respondents, only 3 people said that they dislike the design, 6 said that they do not mind the new design, and 5 said that they have no opinion. From this data, less experienced workers put more importance in the appearance of the head protection that they

use. This is less important to the more experienced workers as 11 of the 14 respondents said they did not mind the new design or that they had no opinion on it. The resistance to change is most likely because the workers with more experience do not want to change what they have been doing for their whole career. They have worn a traditional hard hat and do not see a need to change the design. The survey results also showed that only 45% of people believed that chinstraps should be required on a jobsite and 55% do not believe they need to be. Of the 45% of people who believed that chinstraps should be required on a jobsite, every respondent answered that they currently wear a helmet with a strap and 77% of people who responded that they should be required had witnessed a worker's hard hat fall off due to a slip, trip, or fall. The people who support requiring chinstraps have already been wearing them and this may be why they believe that they need to be required. 7 of the 17 people who opposed requiring chinstraps currently wear a traditional hard hat and 10 people currently wear a helmet with a chinstrap. People who have not been required to wear a chinstrap were less likely to believe that they needed to be required. Some people who currently wear a helmet with a chinstrap also opposed the idea. Even though workers wear the chinstrap, 30% of respondents believed that the chinstrap was uncomfortable which may be why the respondents opposed the requirement.

## **Conclusion**

Anytime there is change, there will be opposition to the change. In the construction industry, workers have started to adopt new safety helmets that are design to better protect a worker. The new helmets are designed with a foam inner shell which helps protect the head from the front, side, top and back of the head, but the new design has a drastically different look than a traditional hard hat. The survey results are meant to aid in understanding the preferences of construction workers when choosing head protection. This data can used by executives and company leaders to determine what is important to their workers when selecting head protection and how workers feel about adopting newly engineered safety helmets with a strap. The data found that the majority of construction workers would choose a traditional hard hat over a safety helmet if given the choice. The less experienced workers were more willing to accept the new style of safety helmet and the more experienced workers were less inclined to accept this new style. Although many workers are still opposed to the new helmet, the helmets are still very new to construction workers on the west coast. With more companies introducing the helmets on jobsites, workers will gain a wider acceptance for them. Change takes time, but in the end, company leaders need to do what is best for the safety of their employees whether they like the design or not.

## **Future Research**

Future research will have to be done to reach a greater audience so that the data can be interpreted on a large scale. The more feedback that company leaders get will help them understand how their employees and employees from other companies feel about the new safety helmets. Getting responses from more field workers will also add valuable data. Companies can also let the workers try the helmets on and use them for a day to see how they feel about them. Overall, workers need to be introduced to the new style of helmet to know how they feel about them.

## References

- 1926.100 - Head protection. | Occupational Safety and Health Administration. [www.osha.gov](http://www.osha.gov). Accessed May 14, 2021. <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.100>
- Assessing Next-Generation Construction Helmets Skanska's Advancement in Head Protection Pilot Program Current Status.; 2018. Accessed May 15, 2021. <https://www.usa.skanska.com/49a462/siteassets/who-we-are/sustainability/safety/skanska-head-protection-white-paper.pdf>
- Hard Hats and Helmets - Grainger Industrial Supply. [Grainger.com](http://Grainger.com). Published 2021. <https://www.grainger.com/category/safety/head-protection/hard-hats-and-helmets>
- Hard Hat Requirements | OSHA & ANSI Standards | Graphic Products. [www.graphicproducts.com](http://www.graphicproducts.com). <https://www.graphicproducts.com/articles/osha-ansi-hard-hat-requirements/>
- History of the Hard Hat. [www.bullard.com](http://www.bullard.com). Accessed May 28, 2021. <https://www.bullard.com/history-of-the-hard-hat>
- Industries at a Glance: Construction: NAICS 23. [Bls.gov](http://Bls.gov). Published October 29, 2015. <https://www.bls.gov/iag/tgs/iag23.htm>
- Number and rate of fatal work injuries, by industry sector. [Bls.gov](http://Bls.gov). Published 2018. <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/number-and-rate-of-fatal-work-injuries-by-industry.htm>
- OSHA. Commonly Used Statistics | Occupational Safety and Health Administration. [Osha.gov](http://Osha.gov). Published 2017. <https://www.osha.gov/data/commonstats>
- Traumatic Brain Injuries in the Construction Industry. Hecht, Kleeger & Damashek, P.C. Published August 28, 2017. Accessed May 28, 2021. <https://lawyer1.com/blog/traumatic-brain-injuries-construction-industry/>
- New ANSI/ISEA Standard for Head Protection Technical Bulletin. Cooper Safety. Accessed May 15, 2021. <https://www.coopersafety.com/pub/media/literature/fc28a459-1d4c-49da-89ca-de1a75ca99c2.pdf>
- Will Helmets Replace the Construction Hard Hat? | United Rentals. [www.unitedrentals.com](http://www.unitedrentals.com). Accessed May 29, 2021. <https://www.unitedrentals.com/project-uptime/safety/will-helmets-replace-construction-hard-hat#/>