Reducing Opioid Deaths–Naloxone Training and Distribution to SMART MAP Program Participants

Chris Carlough, Aldo Zambetti, Ed Robison, Jeffrey Bradley, Ben Court

Sheet Metal Air Rail Transportation (SMART) Union
Sheet Metal Occupational Health Institute Trust (SMOHIT)

February 2025

CPWR THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

Addressing Suicide and Opioid Risks in Construction: CPWR's Approach

Construction workers in the United States face a mental health crisis: their suicide rates are twice the national average and they account for over one in six opioid overdose deaths.

CPWR is leading a *Research and Action Agenda on Suicide, Mental Health and Opioids* focusing on three objectives:

1. **Tackling Root Causes:** Addressing upstream, work-related factors that contribute to mental health struggles and substance use.
2. **Breaking Down Barriers:** Ensuring workers have access to essential treatment and recovery resources
3. **Enhancing Support Systems:** Strengthening services, programs, and policies to support workers facing mental health and substance use challenges.

CPWR partners with North America's Building Trades Unions (NABTU), fourteen international union representatives, employers, building trades council representatives, insurers, and government partners to share successful strategies for preventing suicide and opioid deaths, address common challenges, and put knowledge into action through training, health programs, member services, and communications. Subscribe to our free quarterly newsletter REASON (Resources and Effective programs Addressing Suicide and Opioids Now) for updates and materials.

CPWR funded five small studies to advance knowledge and action on suicide prevention and opioid overdose. This report highlights one such study.

 CPWR is the research and training arm of NABTU. Production of this document was supported by the Pharmaceutical Research and Manufacturers of America ("PhRMA"), a 501(c)(6) trade association. The contents are solely the responsibility of the authors and do not necessarily represent the official views of PhRMA.

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Editor: Christopher Rodman

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Abstract

Construction workers have been hit hard by the U.S. opioid epidemic [1] [2] [3] [4]. To help tackle this issue, the Sheet Metal Occupational Health Insurance Trust (SMOHIT) piloted a naloxone training and distribution program through their Sheet Metal Air Rail Trust Union Member Assistance Program (SMART MAP) classes at Joint Apprenticeship Training Committee (JATC) training centers. The pilot, conducted at training facilities in California, Illinois, and New York, trained over 100 workers to recognize opioid overdose symptoms, respond effectively in overdose emergencies, and administer naloxone. Participants received two doses of naloxone, while training centers were supplied with doses in proportion to their local union's membership size. SMOHIT also set up a webpage where members can request additional doses as needed. Surveys conducted before and after the training revealed increases in participants' knowledge, confidence and willingness to use naloxone, along with reduced stigma toward the medication and individuals experiencing overdoses. The pilot's success prompted SMOHIT to expand the program to all SMART MAP trainings conducted in 2024, where nearly 4000 doses were handed out to SMART members and contractors, ensuring this lifesaving education becomes a standard offering.

Key findings

After workers completed the naloxone training program:

- Over 80% of trainees reported they were likely to carry naloxone after the training, compared to only 16% who reported carrying it before the training.
- Nearly all trainees felt at least moderately familiar with recognizing the signs and symptoms of an opioid overdose, a significant improvement from 33% in the pre-training survey.
- Confidence in responding to an overdose emergency increased dramatically, with more than 80% feeling very confident post-training, compared to less than half before the training.
- Over 90% of trainees reported being at least somewhat comfortable reviving someone experiencing an opioid overdose, up from approximately 40% pre-training.
- Nearly all trainees felt at least moderately confident in explaining naloxone to others, compared to about 40% pre-training.

Introduction

The construction industry has been hard hit by the U.S. opioid epidemic [1] [2] [3] [4]. As early as 2018 it was reported that construction workers in Ohio and Massachusetts were 6-7 times more likely to die of an opioid overdose than the average worker [2]. Recently, it was shown that in 2022 one in six people who died from in an overdose were employed in the construction industry [3]. But a positive trend has been observed at this same time—overdoses peaked nationally between 2021 and 2022 and reduced slightly in 2023 [4]. In keeping with this momentum, the Sheet Metal Occupational Health Institute Trust (SMOHIT) proposed to create a naloxone training and distribution pilot program as an intervention for stopping opioid overdose deaths in the industry. The goals of this training were to increase awareness of naloxone and its effectiveness in reversing opioid overdose, to train workers in administering naloxone in the event of an overdose emergency, to distribute two doses of naloxone to each trained worker, and to distribute doses to the JATC training sites.

This project, led by representatives from SMOHIT Sheet Metal, Air, Rail and Transportation (SMART) workers Member Assistance Program (MAP), piloted widescale training and distribution of naloxone nasal spray in three local unions across the U.S.

1. West-SMART Local 104-San Francisco, CA with an active membership of approximately 7000 building trade sheet metal workers representing four separate JATC training centers.

2. Midwest- Various SMART local unions in Illinois with an active membership of approximately 5000 building trade sheet metal workers representing eight separate JATC training centers.
3. East-SMART Locals 28 and 137-New York City with an active membership of approximately 4000 building trade sheet metal workers representing four separate JATC training centers.

The study leaders proposed **three aims** for this project:

AIM 1: Deliver Naloxone training at each of the local unions to increase awareness of opioids; decrease the stigma associated with opioids and naloxone and teach trainees to administer naloxone. Administer pre- and post-training surveys to trainees to assess learning objectives and outcomes. The naloxone training included:

- An informed consent in the pre-training survey which explained the risks of naloxone administration which allowed trainees to opt out (see appendix A for details).
- Recognizing the signs and symptoms of an opioid overdose.
- Proper techniques for administering naloxone nasal spray.
- Effective responses to an opioid overdose emergency.
- What to expect when administering naloxone.

AIM 2: Distribute Naloxone nasal spray at no cost to the unions or JATC training centers. Give each trainee two doses of naloxone for emergency use on or off jobsites. Provide additional doses to the training centers proportional to their size to allow for redistribution as needed.

AIM 3: Establish a naloxone distribution platform through the SMART website, enabling members to access naloxone as necessary. Please refer to the appendix for a detailed rendering of the SMART webpage.

Methods

Training centers were selected for the pilot program based on their involvement in delivering SMART MAP trainings. This approach allowed the Narcan training to be seamlessly integrated into already-scheduled training, reducing delivery costs. Trainers were already on-site, so only the extra time to teach the course and resources to distribute Narcan were necessary. There were not extra costs associated with travel or accommodations. Study leaders chose training centers from the East Coast, Midwest, and West Coast (New York, Illinois, and California) to ensure representation of SMART regions nationwide. Students were chosen based on their being enrolled in SMART MAP trainings already being held at those training centers. SMOHIT study leaders reported that those who enroll in the SMART MAP trainings are interested in learning how they can help their fellow workers, which was another factor in why the naloxone training was included as an add-on to the SMART MAP training.

Pre- and post-training surveys were developed by the study leaders and CPWR, with two goals in mind. First, to show that students learned the material that was disseminated in the training, and second, to gauge whether their attitudes about naloxone and people who use drugs changed after receiving the training. The questions and results of these surveys can be found in appendixes D and E. The pre-training survey began with an opt-out question which included informed-consent language (see appendix A). The pre-training survey was administered via a QR code on the first slide of the training so that students could fill it out on their phones. Subsequently, trainees completed the post-training via a QR on the last slide of the trainings.

Pre- and post-surveys were analyzed using a Wilson Ranked sums test. Each answer was given a number score, for example, 1 was assigned for answers indicating “not comfortable” or “not knowledgeable” and 5 was assigned

to answers indicating “extremely comfortable” or “extremely knowledgeable.” The differences in the mean score for each pre- and post-test answers were added up and tested for significance.

Accomplishments and results

Pre- and post-training surveys demonstrated that the program successfully met its learning objectives. The post-training responses indicated increased knowledge of the signs and symptoms of an opioid overdose, increased confidence in administering naloxone, increased comfort with reviving someone, and increased willingness to carry naloxone.

A total of 117 students completed the pre-training survey, while 104 completed the post-training survey. Among the post-training survey participants, 50 were from California, 35 from Illinois, and 20 from New York training. Although 17 trainees reported not receiving two doses of Narcan, trainers clarified that each trainee had received a kit containing two doses, likely indicating a misunderstanding about the kit contents. It is unclear why some of the trainees who completed the pre-training survey failed to fill out the post-training survey.

Key results included:

- Over 80% of trainees reported they were likely to carry naloxone after the training, compared to only 16% who reported carrying it before the training.
- Nearly all trainees felt at least moderately familiar with recognizing the signs and symptoms of an opioid overdose, a significant improvement from one-third in the pre-training survey.
- Confidence in responding to an overdose emergency increased dramatically, with more than 80% feeling very confident post-training, compared to less than half before the training.
- Over 90% of trainees reported being at least somewhat comfortable reviving someone experiencing an opioid overdose, up from approximately 40% pre-training.
- Nearly all trainees felt at least moderately confident in explaining naloxone to others, compared to about 40% pre-training.

Pre-training surveys indicated that most participants already believed naloxone should be available on construction sites, that individuals who overdose deserve medical attention, and that construction workers face a higher risk of opioid overdose than other workers. Post-training responses further reduced negative perceptions, reinforcing the effectiveness of the training in achieving its goals. Furthermore, a final question asking trainees how to improve the training only indicated that the training was clear and informative. There were no comments on improving the training.

For detailed survey results, refer to Appendices D and E.

Mean Score Analysis

Table 1. Mean Score for Each Question and Combined Score by Time Period

Question	**Highest Possible Score**	**Pre**	**Post**	**Difference**
		Mean (Std)	**Mean (Std)**	
Reporting carrying naloxone*	2	1.2(0.4)	1.8(0.4)	0.6
How familiar are you with the signs and symptoms of an opioid overdose?	5	2.1(1.0)	3.7(1.1)	1.6

Question	Highest Possible Score	Pre Mean (Std)	Post Mean (Std)	Difference
How confident are you in your ability to respond to an opioid overdose emergency?	5	2.5(1.3)	4.1(1.1)	1.6
How comfortable would you be reviving someone with naloxone if they appeared to be experiencing an opioid overdose?	5	3.1(1.4)	4.5(0.9)	1.4
How confident would you be explaining what naloxone is to someone who didn't know about it?	5	2.6(1.2)	4.1(1.0)	1.4
Construction workers have a higher risk of opioid overdose than other workers	2	1.5(0.8)	2.0(0.2)	0.4
Naloxone, also known as Narcan, should be available on construction sites in case of an overdose emergency	5	4.8(0.7)	4.9(0.5)	0.1
People who overdose on opioids deserve medical attention.	5	4.8(0.6)	4.9(0.5)	0.1
Combined	34	22.7(4.5)	30.0(2.8)	7.3
*Question changed between pre and post-test, but coded to produce comparable answers.				

Combined difference is significant using a Wilson Ranked Sum Test $p < 0.0001$.

See appendix B for details of Wison test.

Discussion

Pre- and post-training results from the first training (West-SMART Local 104-San Francisco, CA) showed that all training objectives were being met. These results spurred SMOHIT leadership to expand the naloxone trainings beyond the initial three training facilities to all facilities across the country that were teaching the SMART MAP training. There were 9 SMART MAP trainings in 2024, and SMOHIT is scheduled to disseminate 30 SMART MAPT trainings in 2025. Once it was decided to expand the naloxone training to all SMART MAP trainings the need for more naloxone became a limiting factor in this process. There was enough funding from the grant to cover naloxone for the three previously named training facilities, but expanding to other sites meant we needed to find other sources of funding and supply to have enough naloxone to be able to distribute naloxone to all SMART MAP trainings. We reached out to multiples distributors to fulfill our needs. Fortunately, we have taken delivery of all the naloxone that we needed for the 2024 SMART MAP trainings due to increased funding from SMOHIT through SMART member contributions.

We feel that even more members could have been reached if we had included some of our larger employers in this pilot. This would have increased the size of our trainings and broadened the scale of the project, which would have given us access to more members. In the future we may attempt to engage larger employers to expand the scope of our naloxone distribution. This is not a tack we can take with our SMART MAP trainings, but if future trainings could be exclusively focused on naloxone, we believe we could disseminate these trainings on worksites, at shops, and at other workspaces to increase our reach for naloxone training and distribution. We have had over 40 presentations in 2024 with attendance from 15 to over 100 people at each training.

Naloxone has been added to our online store so that SMART members can order more if needed. We are scheduled to implement online training for our members in Q1 2025. It will consist of a training video and short quiz that must be completed for that person to receive their order of naloxone. SMOHIT expects to distribute over 4,000 doses to SMART members and contractors in 2024 and continue this program in 2025 through member contributions.

Presentations and Publications

- A short article was published in the SMOHIT website outlining the grant: https://www.smohit.org/smohit-receives-grant-to-provide-naloxone-training/
- SMOHIT participated in the CPWR r2p Annual Meeting in 2024 and outlined the findings of the pilot to that point. This included the California and Illinois data.
- Fund administrator Aldo Zambetti presented some of the findings of this pilot at the SMART National Convention, August 2024.

Dissemination plan

At all subsequent training sessions, we discussed the success of this pilot and used it to introduce the material. We will continue to reference the pilot to introduce this training at future sessions. Additionally, SMOHIT will participate in the March CPWR Webinar, “New Research on Mental Health & Construction.”

References

[1] R. Dissell, "Opioid Overdose Deaths - Which jobs are at risk?," *The Plain Dealer,* 5 November 2017.

[2] "Opioid-related Overdose Deaths in Massachusetts by Industry and Occupation, 2011-2015," Massachusetts Department of Public Health, Boston, 2018.

[3] A. D. Trueblood, C. M. Rodman and R. D. M. Brooks, "Mental Health Trends in the," CPWR- The Center for Construction Research and Training, Silver Spring, MD, 2024.

[4] M. F. M. Garnett and A. M. M. Miniño, "Drug Overdose Deaths in the United States, 2003–2023," HCHS Data Brief, Hyattsville, MD, 2024.

Appendix A: Pre-Training Consent and Opt-Out

The purpose of this survey is to evaluate your competency for responding to an opioid overdose, to learn more about general attitudes and beliefs about naloxone, and to analyze the training efficacy. There are no known risks to participating in these surveys and there are no benefits to you directly, although the results will be used to further develop the training and make it more impactful for future audiences. You can quit this survey at any time without any consequences. People with physical dependence on opioids may have withdrawal symptoms within minutes after they are given naloxone. Withdrawal symptoms might include headaches, changes in blood pressure, rapid heart rate, sweating, nausea, vomiting, and tremors. While this is uncomfortable, it is usually not life threatening unless someone has another underlying condition. If you have questions about the survey, please contact Chris Rodman at CPWR at crodman@cpwr.com. This survey was approved by the CPWR Institutional Review Board (IRB). If you have questions for the IRB please contact Chris Le at chrisle@cpwr.com. Thank you for contributing to this effort!

- ○ Continue
- ○ Opt Out

Appendix B: Wilson Ranked-Sum Test

Wilcoxon-Rank Sum Test

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable combined Classified by Variable Period

Period	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Pre	117	8146.50	13104.0	480.236475	69.628205
Post	106	16829.50	11872.0	480.236475	158.768868

Average scores were used for ties.

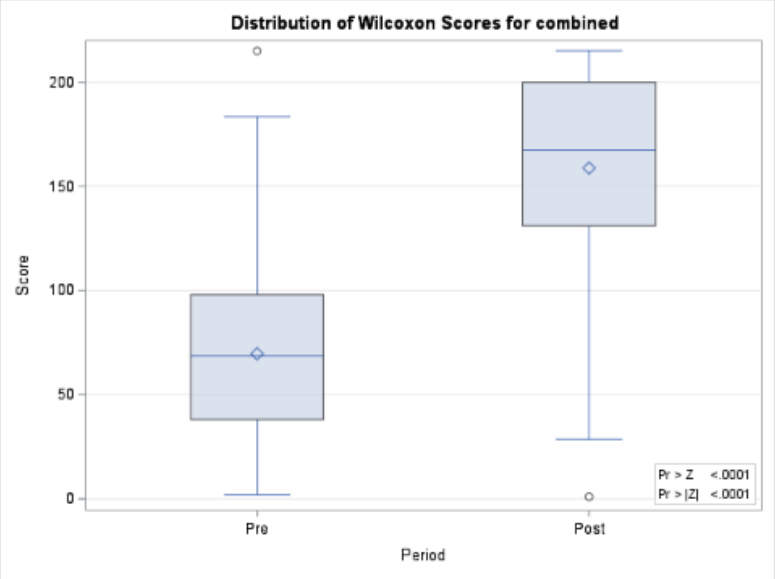
Wilcoxon Two-Sample Test

				t Approximation	
Statistic	Z	Pr > Z	Pr > |Z|	Pr > Z	Pr > |Z|
16829.50	10.3220	<.0001	<.0001	<.0001	<.0001

Z includes a continuity correction of 0.5.

Kruskal-Wallis Test

Chi-Square	DF	Pr > ChiSq
106.5651	1	<.0001



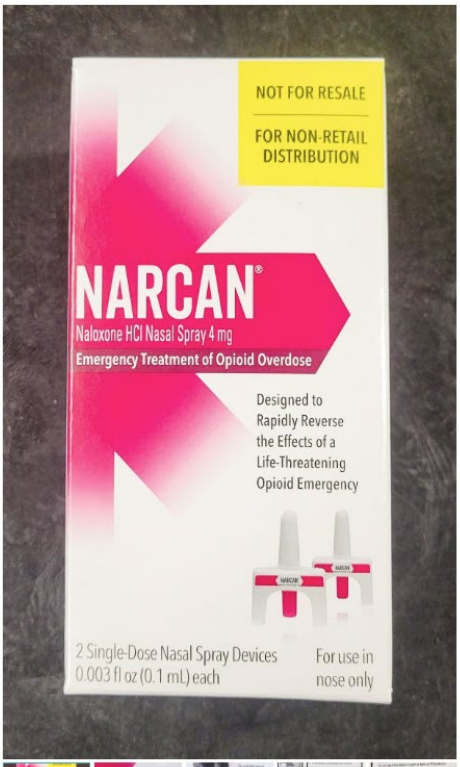
The combined scores between pre- and post-tests are significantly different at p<0.0001.

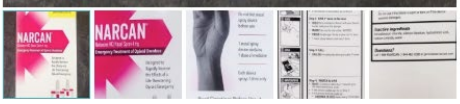
Appendix C: SMOHIT Website Naloxone Distribution Page

Safety Matters®

SMOHIT map
MEMBER ASSISTANCE PROGRAM

HOME | Mental Health | Safety & Training | Mega Projects | Events | News | About Us | SHOP





Back to Shop

View Shopping Cart

Naloxone

What is Naloxone (NARCAN)?

Naloxone is a medication approved by the Food and Drug Administration (FDA) designed to rapidly reverse opioid overdose. It is an opioid antagonist—meaning that it binds to opioid receptors and can reverse and block the effects of other opioids, such as heroin, morphine, and oxycodone. Administered when a patient is showing signs of opioid overdose, naloxone is a temporary treatment and its effects do not last long.

To order additional Naloxone through SMOHIT for your office, JATC, job site, shop or personal use, you need to have attended one of our training sessions.

If your Naloxone has expired or you have used it and need a replacement for personal use, you can order up to two packages.

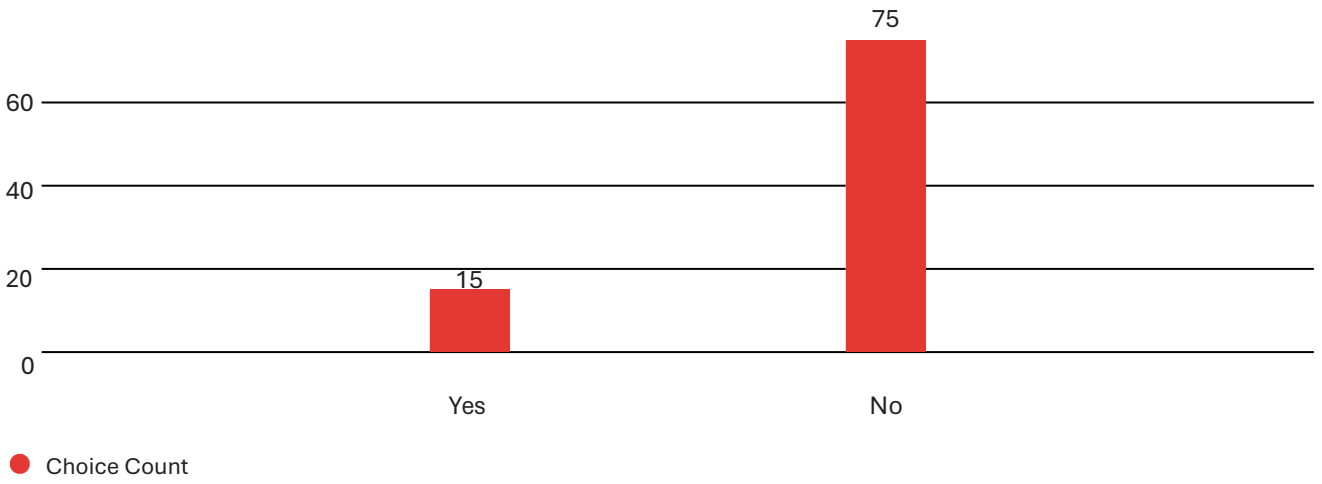
To order for your office, JATC, job site or shop, you can order a box of 12 individual packages (two doses per package).

If you would like us to bring our Naloxone training to your local area or to place an order for more than 12 packages, please click here to submit a request.

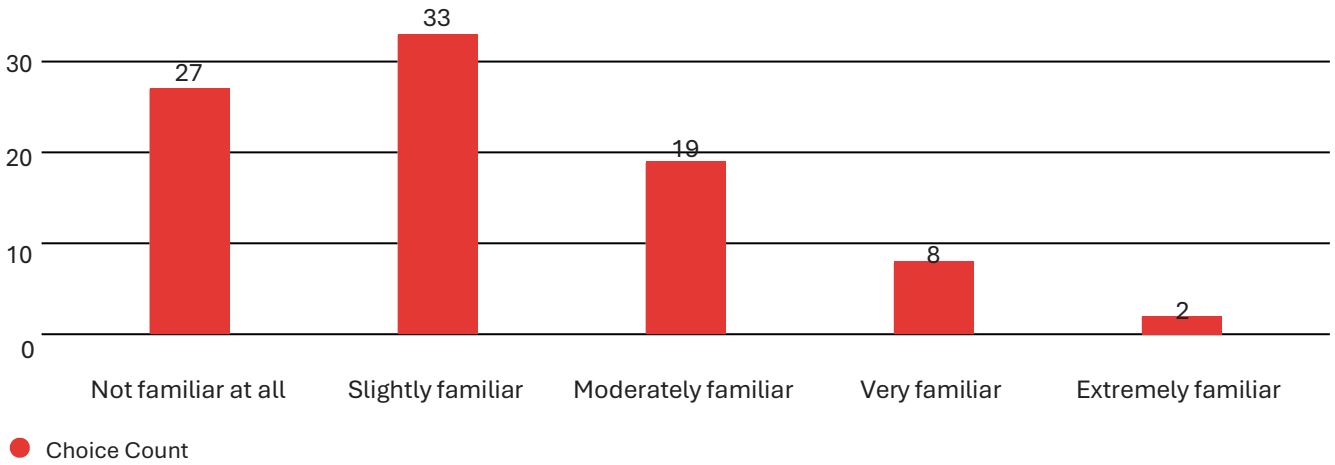
1 Add to cart

Appendix D: Pre-Training Survey Responses

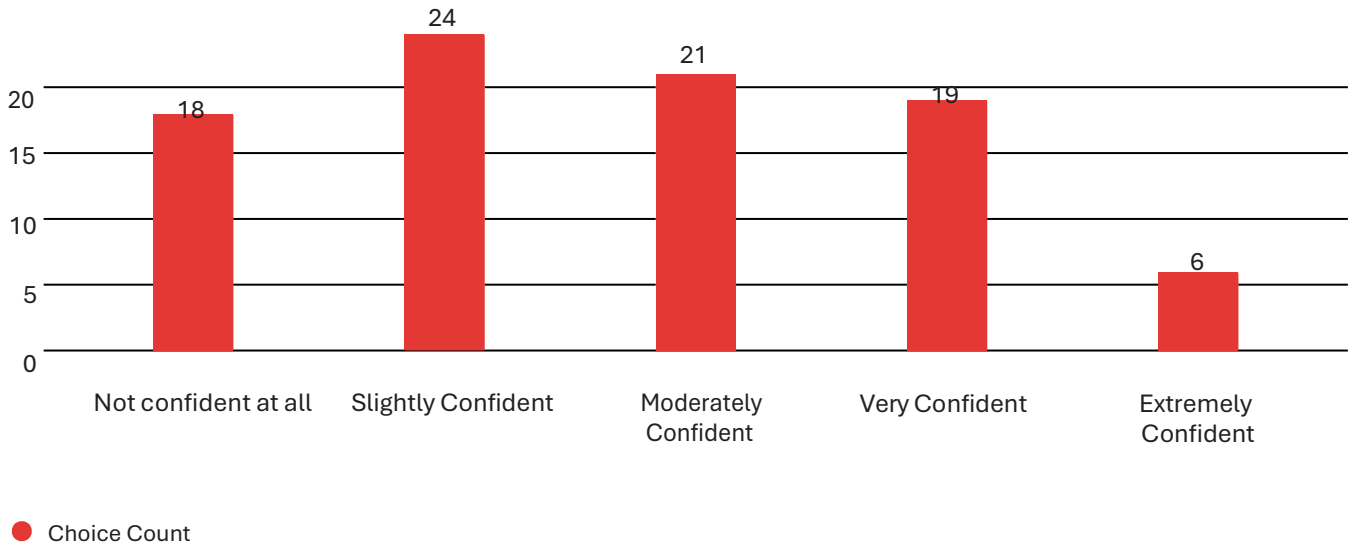
Q2 - Do you currently carry naloxone?



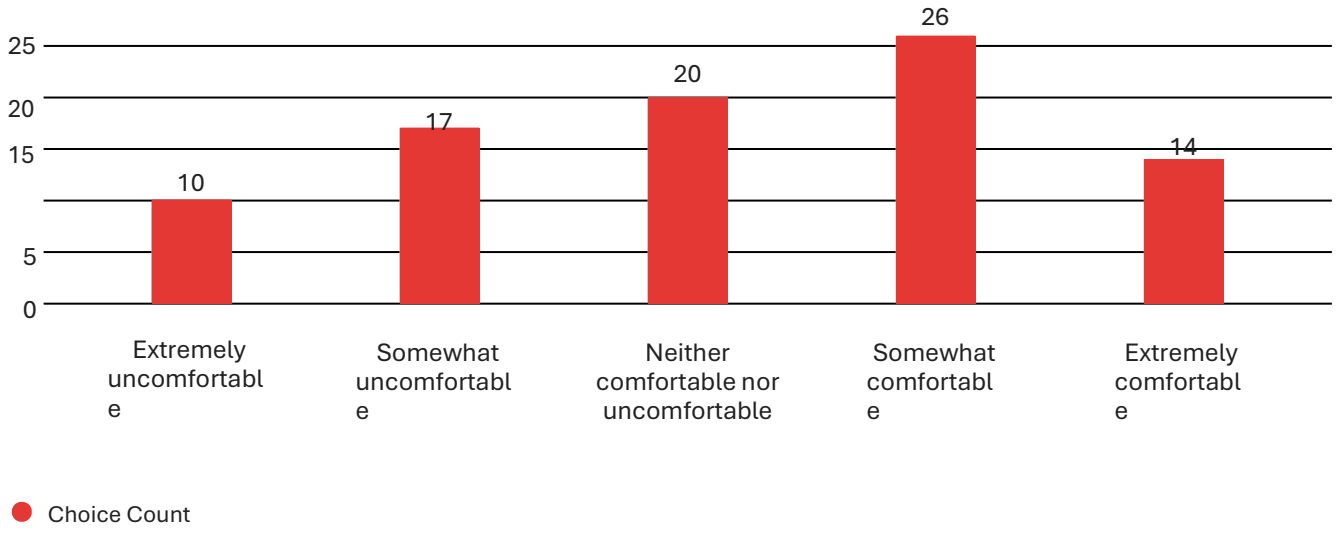
Q3 - 2. How familiar are you with the signs and symptoms of an opioid overdose?



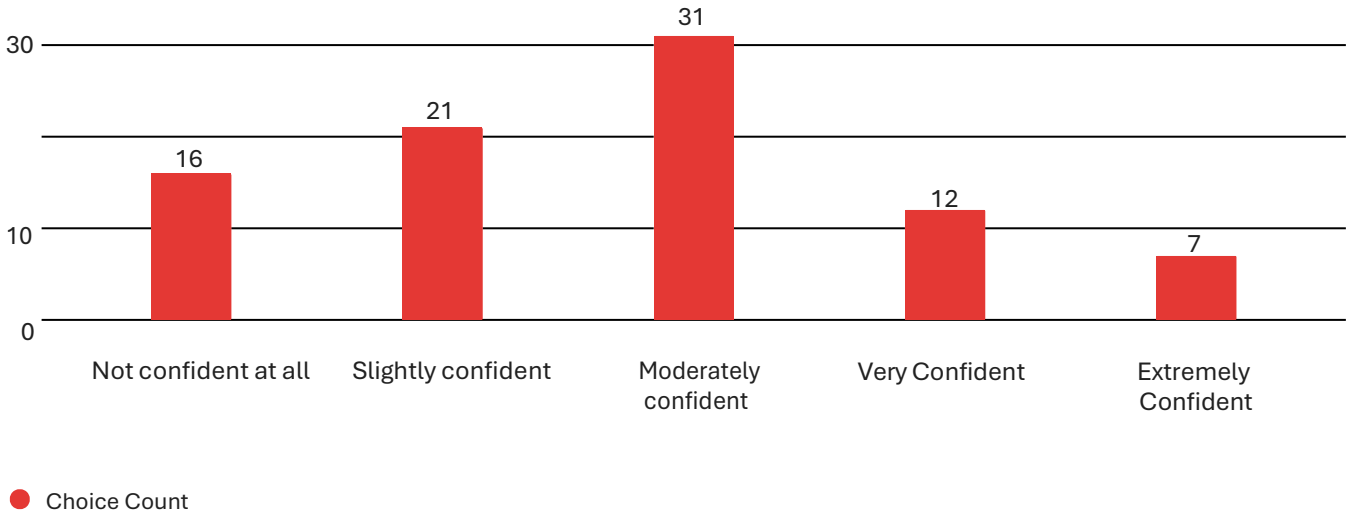
Q4 - How confident are you in your ability to respond to an opioid overdose emergency?



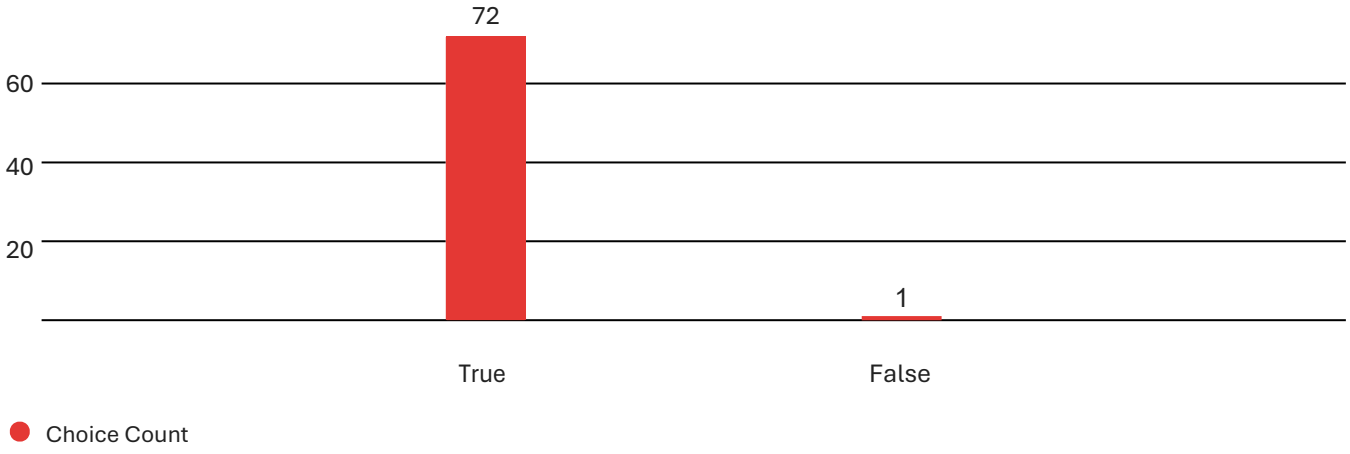
Q5 - How comfortable would you be reviving someone with naloxone if they appeared to be experiencing an opioid overdose?



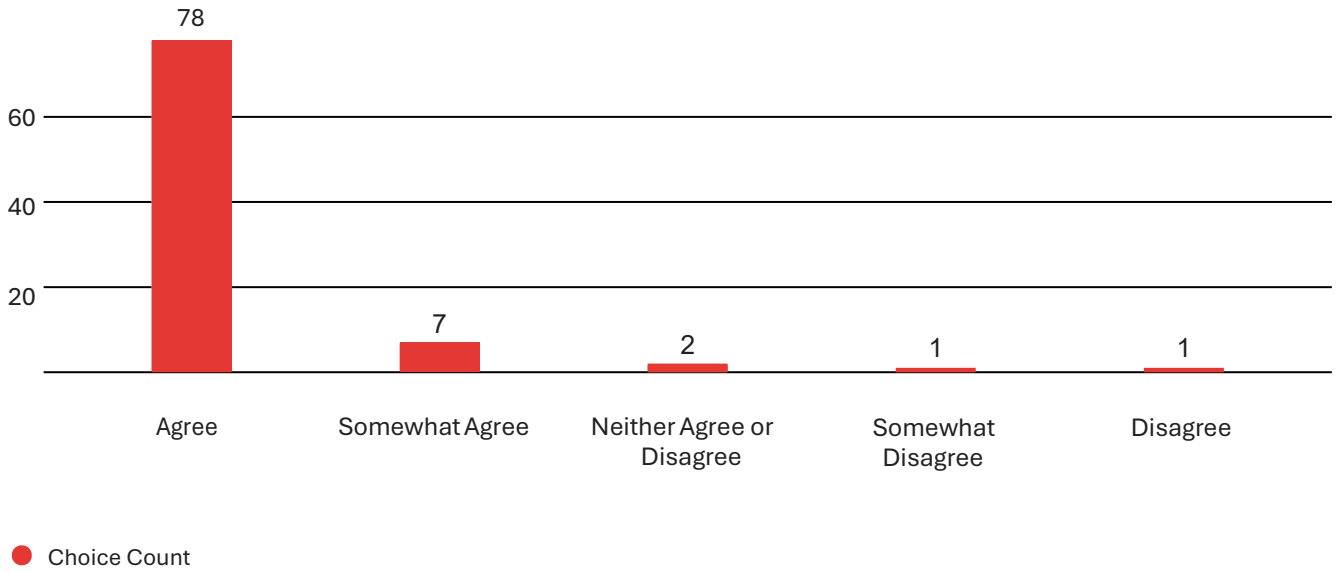
Q6 - How confident would you be explaining what naloxone is to someone who didn't know about it?



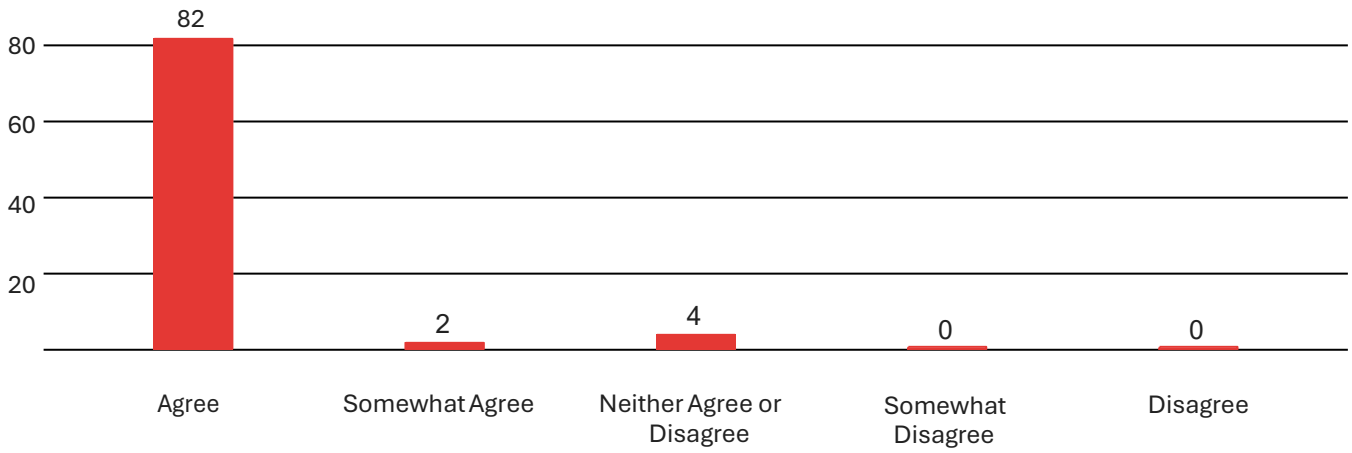
Q7 - Construction workers have a higher risk of opioid overdose than other workers



Q8 - Naloxone, also known as Narcan, should be available on construction sites in case of an overdose emergency



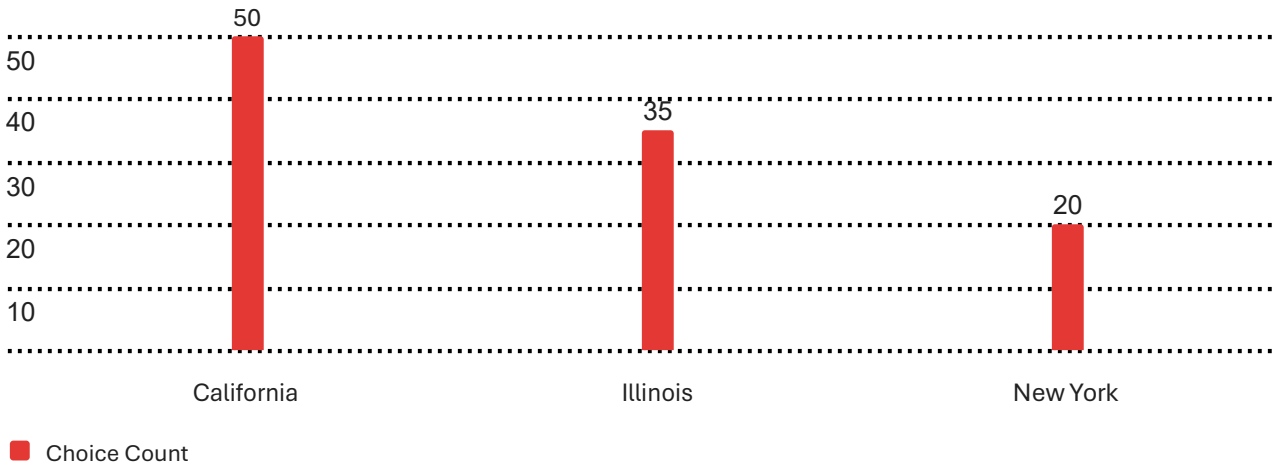
Q9 - People who overdose on opioids deserve medical attention.



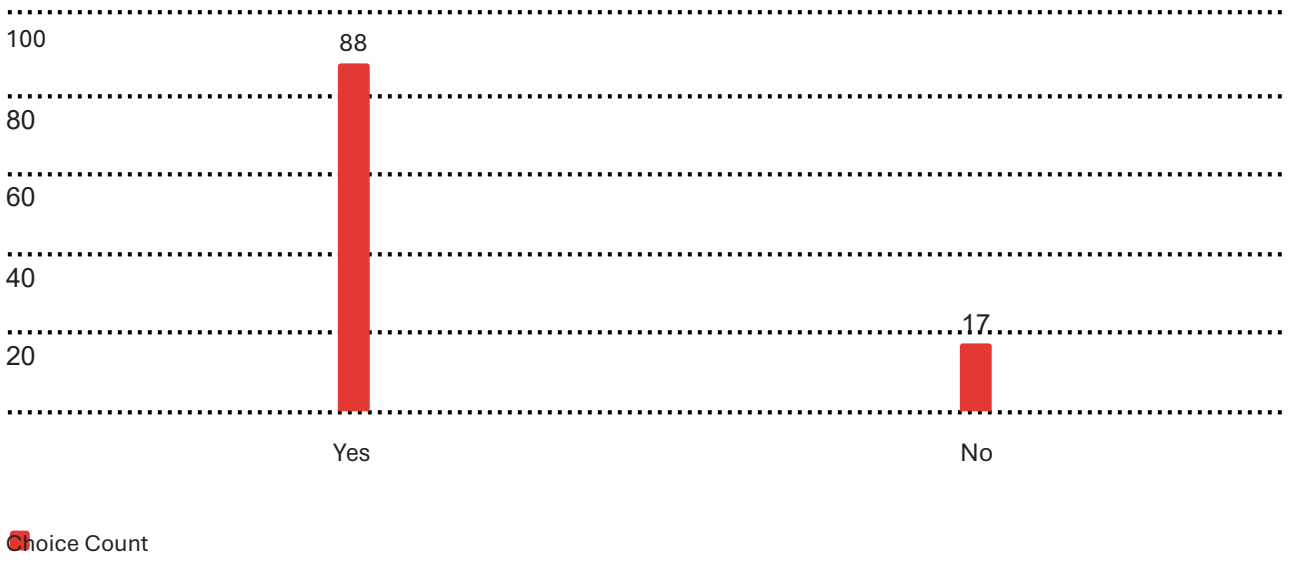
Choice Count

Appendix E: Post-Training Survey Responses

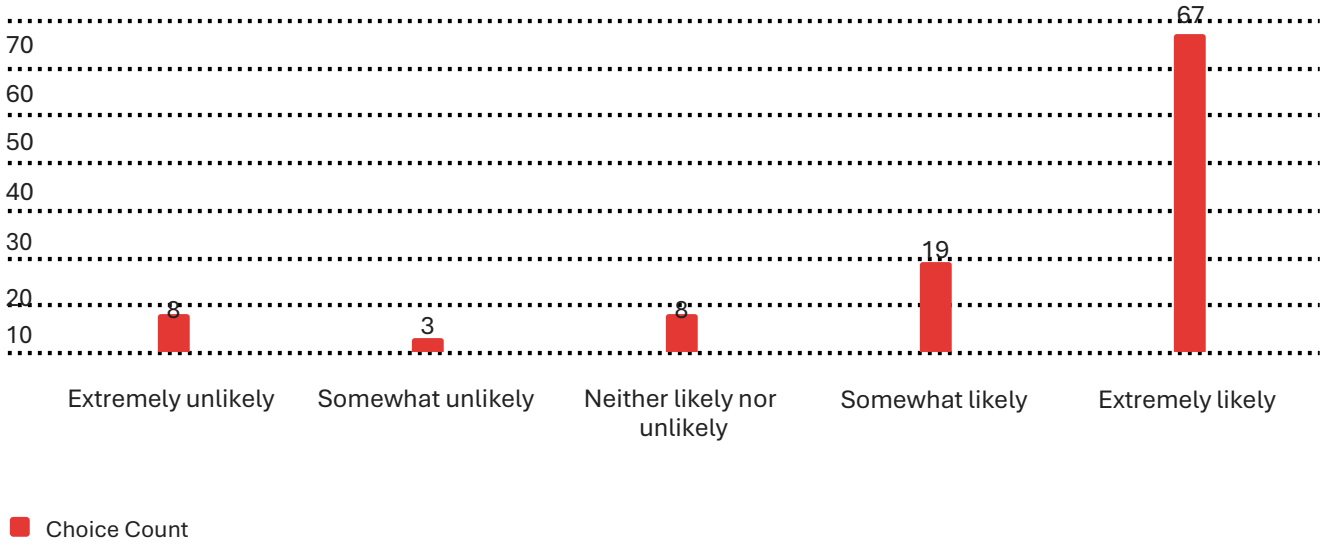
Where did you receive your naloxone training?



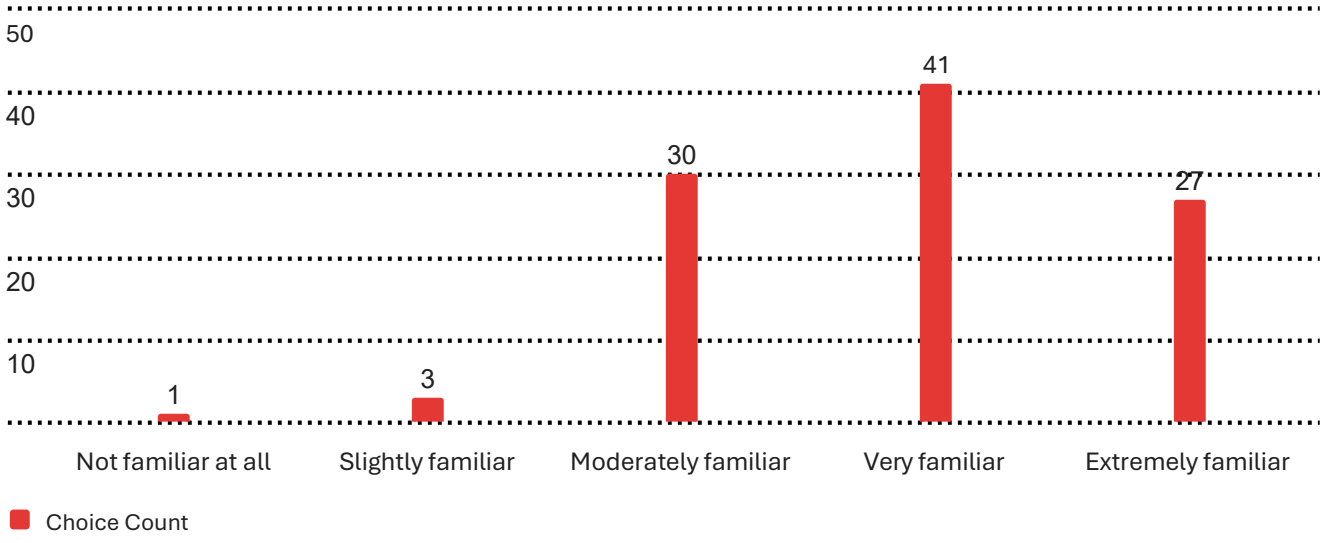
Were you given two doses of naloxone at the end of this training?



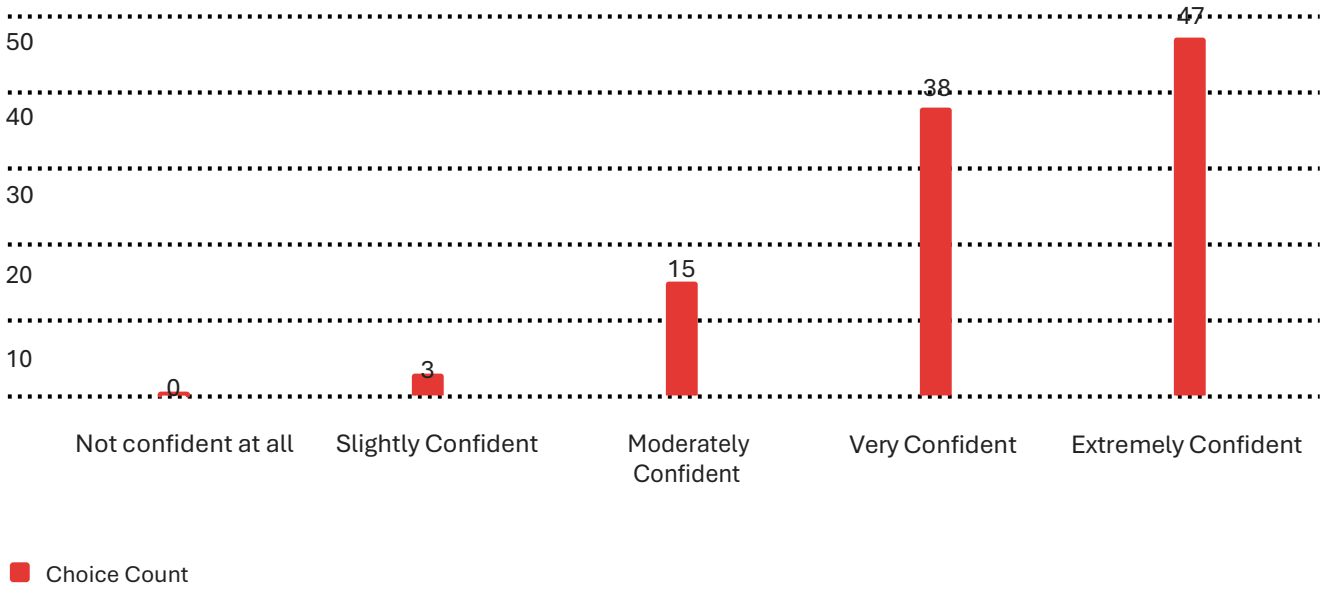
After completing this training, how likely are you to carry your naloxone with you?



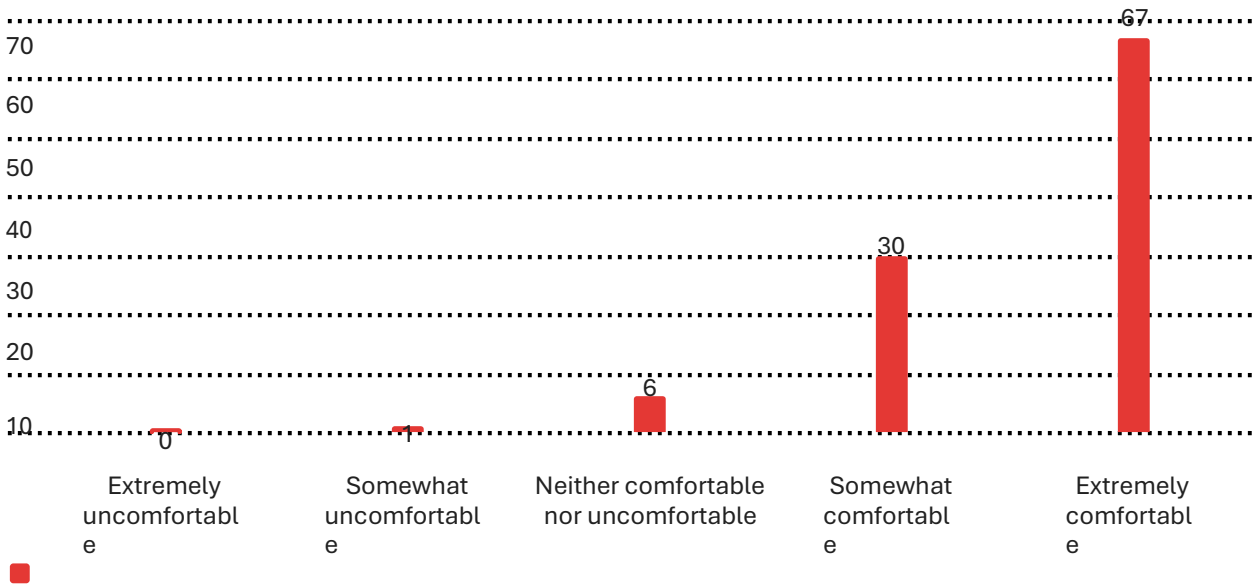
Q3 - How familiar are you with the signs and symptoms of an opioid overdose?



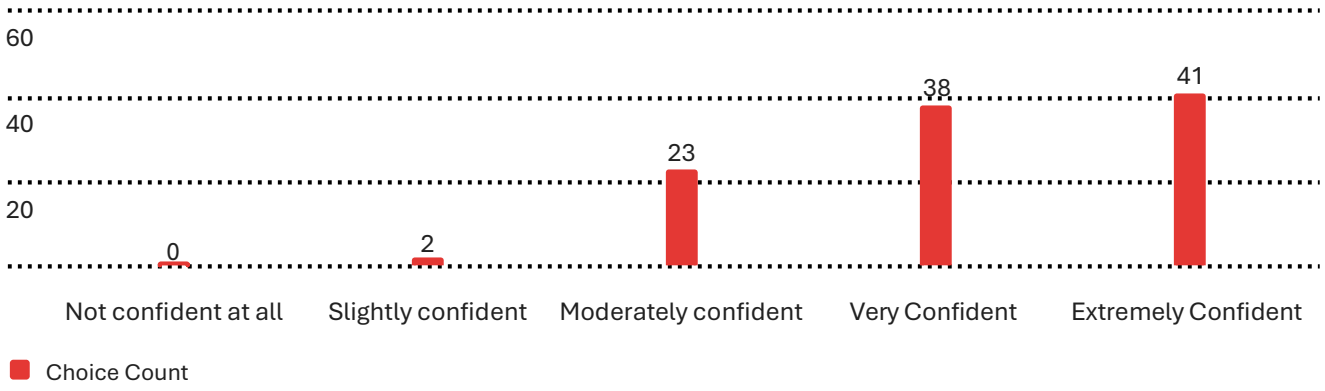
Q4 - How confident are you in your ability to respond to an opioid overdose emergency?



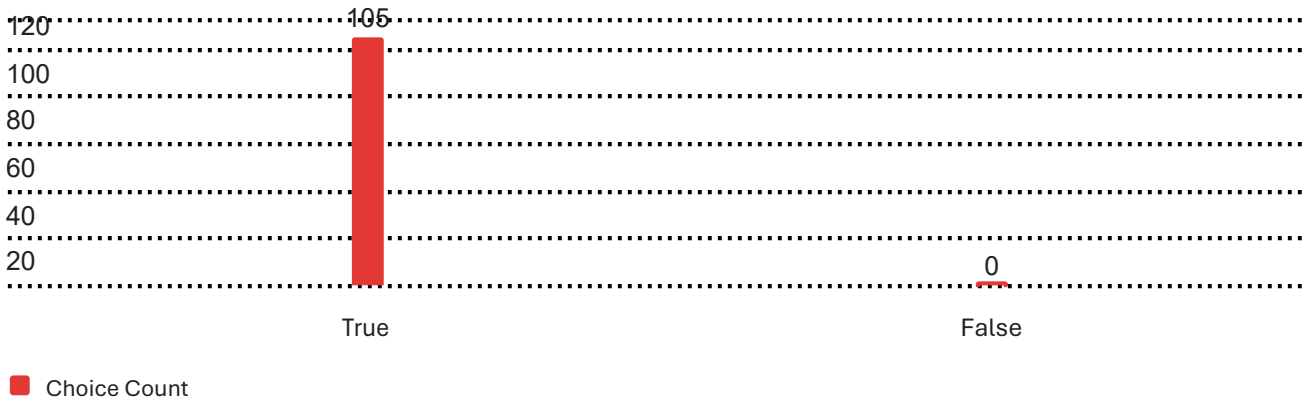
Q5 - How comfortable would you be reviving someone with naloxone if they appeared to be experiencing an opioid overdose?



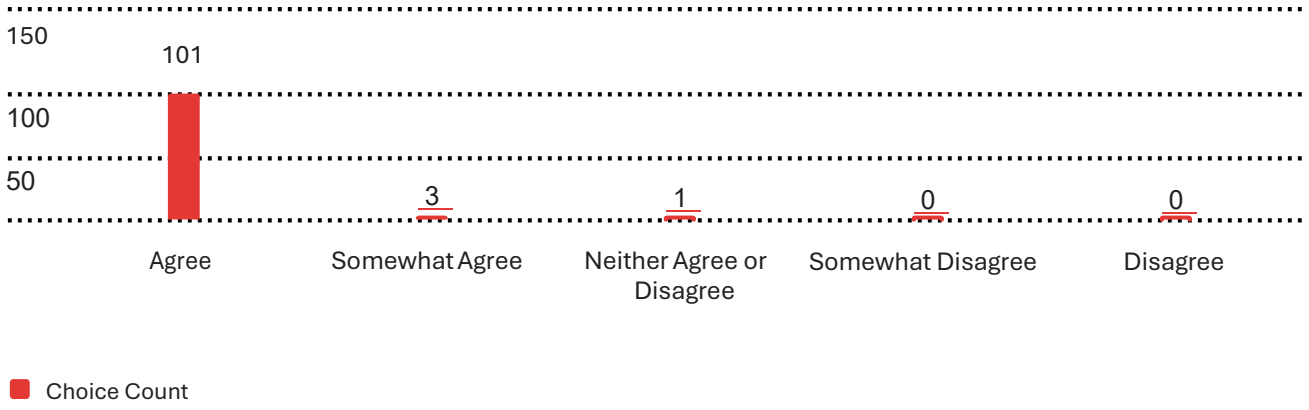
Q6 - How confident would you be explaining what naloxone is to someone who didn't know about it?



Q7 - Construction workers have a higher risk of opioid overdose than other workers



Q8 - Naloxone, also known as Narcan, should be available on construction sites in case of an overdose emergency



Q9 - People who overdose on opioids deserve medical attention.