

# Systematically Reversing Post-Traumatic Stress Disorder and Disability Among First Responders Through a Biopsychosocial Occupational Medicine Program

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## INTRODUCTION

### Background:

- Post-traumatic stress disorder (PTSD) is an occupational hazard for first responders. More first responders die from suicide than in the line of duty.
- Although PTSD has often been considered incurable, an occupational medicine program utilizing a transdisciplinary biopsychosocial community model approach to treatment has shown promise in reversing it.
- The program offers intensive treatment in which patients participate for up to six hours per day, five days per week.

### Objectives:

- To assess whether greater intensity of participation in an evidence-based, transdisciplinary program was associated with increased likelihood of clinical resolution of PTSD in a population of first responders.
- To assess whether greater intensity of participation was associated with increased likelihood that participating first responders returned to work.

## MATERIALS & METHODS

### Sample:

- **Data Source:** Occupational medicine clinic data about first responders (firefighter, lifeguard, or police) employed by the City of San Diego
- **Inclusion Criteria:** Patient initiated care between May 1, 2022, and July 30, 2024
- **Exclusion Criteria:** Patient did not have clinically-significant PTSD (PCL-5 $\geq$ 33) at treatment initiation, or patient did not complete an hour with the program

### Variables:

- **Primary Outcome:** Patient had (vs. lacked) clinically-significant PTSD (PCL-5 $\geq$ 33) at treatment completion
- **Secondary Outcome:** Patient had returned to work at treatment completion
- **Independent Variable:** Hours of program exposure (log base 2 transformed)
- **Control Variables:** PCL-5 at initiation, age, whether patient was male, whether patient was a firefighter

### Analysis:

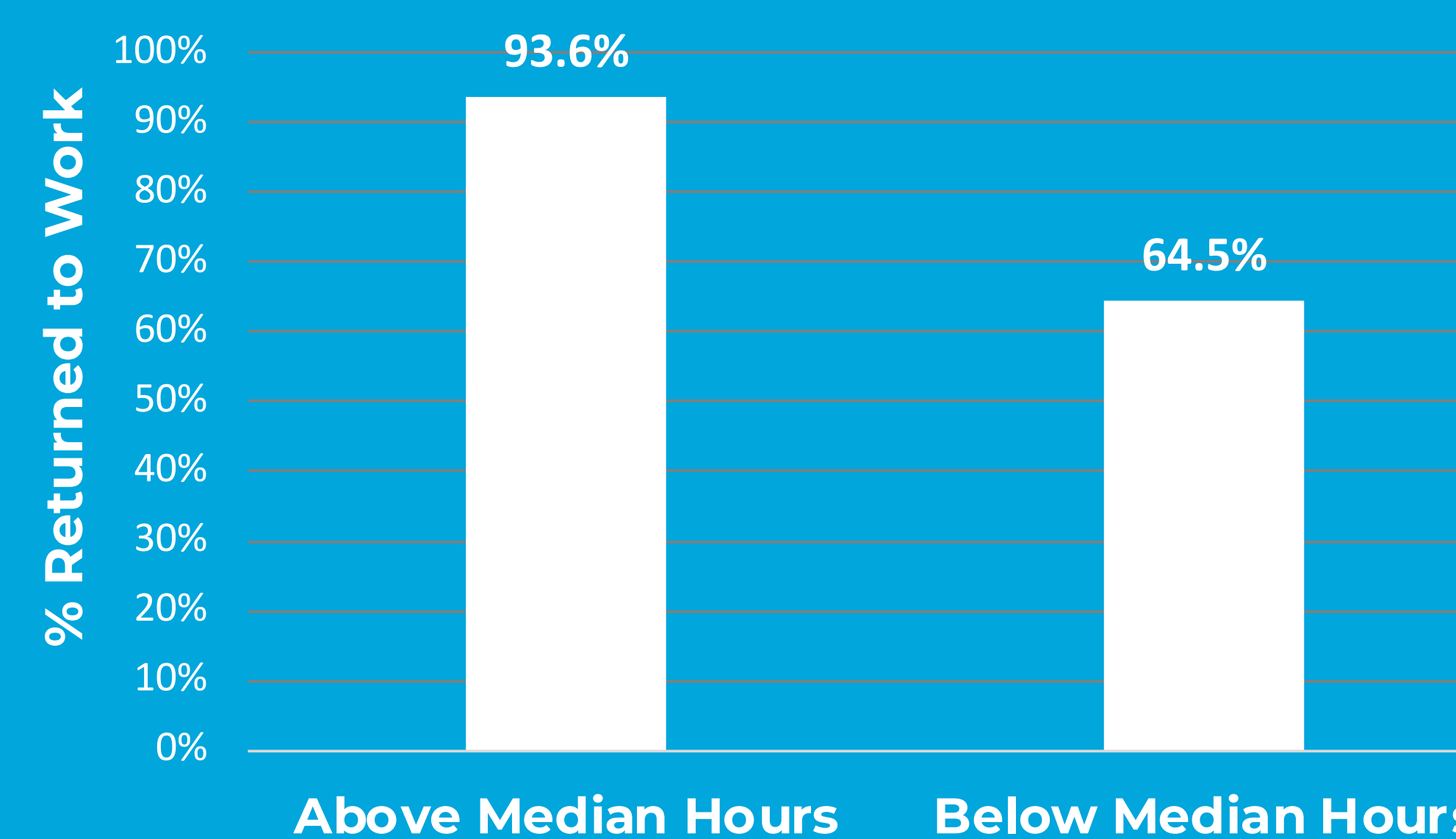
- **Descriptive Statistics:** Patient populations with above- vs. below-median hours of program participation were compared using Chi-square tests and t-tests
- **Univariable Analysis:** The associations between above- vs. below-median hours of program participation and the two outcomes were evaluated using Chi-square tests
- **Multivariable Analysis:** Logistic regressions were used to examine the associations between program hours and the two outcomes, after controlling for the control variables

## RESULTS

- The sample consisted of 62 patients. The median (IQR) program hours for participants in the program was 212.5 (69.5-368.8). As shown in Table 1, the patients that completed above vs. below the median number of program hours did not significantly differ on any of the control variables.
- 29 out of 31 (93.6%) of patients who completed at least the median number of program hours did not have clinically significant PTSD at program termination, compared to 21 out of 31 (67.8%) of patients who did not, a significant difference ( $p=0.02$ )
- 29 out of 31 (93.6%) of patients who completed at least the median number of program hours returned to work, compared to 20 out of 31 (64.5%) of patients who did not, a significant difference ( $p=0.01$ )
- As shown in Table 2, doubling a patient's program hours was significantly associated with lower odds of having PTSD at program termination (odds ratio: 0.50, 95% confidence interval: 0.30-0.83,  $p=0.007$ ) and higher odds of returning to work (odds ratio: 2.05, 95% confidence interval: 1.25-3.38,  $p=0.005$ )

93.6% of patients who completed the median number of program hours returned to work, compared to 64.5% of patients who did not. ( $p=0.01$ )

### % of Patients Returning to Work by Program Participation Level



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## Table 1: Descriptive Statistics

	Above Median Hours (n=31)	Below Median Hours (n=31)	Overall Population (N=62)	p-value for Between Group Difference
Program hours, mean $\pm$ SD	369.6 $\pm$ 82.6	82.7 $\pm$ 56.8	226.2 $\pm$ 160.8	<0.01
Patient age, mean $\pm$ SD	42.1 $\pm$ 9.0	42.3 $\pm$ 8.4	42.2 $\pm$ 8.6	0.92
Male patient, n (%)	22 (71.0)	24 (77.4)	46 (74.2)	0.08
Patient is a firefighter, n (%)	5 (16.1)	6 (19.4)	11 (17.7)	1.00
PCL-5 at initiation, mean $\pm$ SD	53.0 $\pm$ 12.4	52.2 $\pm$ 11.9	52.6 $\pm$ 12.0	0.79
PCL-5 at completion, mean $\pm$ SD	16.4 $\pm$ 9.1	27.3 $\pm$ 16.9	21.9 $\pm$ 14.6	<0.01
Returned to work, n (%)	29 (93.5)	20 (64.5)	49 (79.0)	0.01

Patients that completed above versus below the median number of program hours did not significantly differ in age, gender, likelihood of employment as a firefighter, or PCL-5 at treatment initiation. Patients with above the median number of program hours had significantly lower PCL-5 scores at completion ( $p<0.01$ ) and were significantly more likely to have returned to work ( $p=0.01$ ).

## Table 2: Findings from Adjusted Analysis

	Had PTSD at Termination OR (95% CI)	Returned to Work OR (95% CI)
Logged program hours (base 2)	0.50 (0.30-0.83)	2.05 (1.25-3.38)
Patient age	0.93 (0.85-1.02)	1.03 (0.94-1.12)
Male patient	0.66 (0.11-3.84)	2.58 (0.46-14.39)
Patient is a firefighter	3.62 (0.54-24.21)	0.16 (0.03-1.05)
PCL-5 at initiation	1.01 (0.94-1.07)	0.98 (0.92-1.04)

Patients with greater program participation were significantly less likely to have had PTSD at program termination (OR: 0.50; 95% CI: 0.30-0.83) and were significantly more likely to have returned to work (OR: 2.05; 95% CI: 1.25-3.38). None of the other variables in the models were statistically significant.

## Conclusion

There was a statistically significant relationship between the intensity of program participation and PTSD outcomes. This was evident in both unadjusted and adjusted analyses. Doubling program hours halved the odds (OR: 0.50) that the patient would have clinically significant PTSD upon program termination and doubled the odds (OR: 2.05) that the patient would return to work upon program termination.