

## Introduction

- The Adverse Childhood Experiences (ACE) score is a standardized metric calculated as the sum of 10 yes/no questions about abuse, neglect, and household dysfunction<sup>1,2</sup> (**Table 1**)
- The initial ACE study was conducted with a general population at a large HMO; their responses are available through the CDC<sup>3</sup> (**Figure 1**)
- ACEs are correlated with risk factors for several leading causes of death in adults<sup>1</sup>
- Exposure to childhood abuse and dysfunction are associated with problems related to drug use and addiction<sup>2</sup>
- Little is known about how ACEs affect the risk and trajectory of opioid use
- The purpose of this study is to explore the relationship between opioid-dependent patients' ACE scores, and three landmarks of opioid use: age of opioid initiation, current injection drug use (IDU), and lifetime overdose (OD)

## Methods

- Persons seeking inpatient opioid detoxification were approached at admission to Stanley Street Treatment and Resources (SSTAR) between May 2015 and December 2015 to participate in a survey
- The 111-item questionnaire was administered by study staff and was designed to record participant demographics, drug use, medical and mental health history, and ACEs
- ACE scores were calculated as the sum of ten yes/no questions

Table 1. ACE Questionnaire

### Abuse

- Did a parent or other adult in the household often swear at you, insult you, put you down, or humiliate you? Or did they act in a way that made you afraid that you might be physically hurt?
- Did a parent or other adult in the household often push, grab, slap, or throw something at you? Or did they ever hit you so hard that you had marks or were injured?
- Did an adult or person at least 5 years older than you ever touch or fondle you or have you touch their body in a sexual way? Or did they try to actually have oral, anal or vaginal sex with you?

### Neglect

- Did you often feel that no one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other?
- Did you often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

### Household Dysfunction

- Were your parents ever separated or divorced?
- Was your mother or stepmother: Often pushed, grabbed, slapped or had something thrown at her? Or sometimes or often kicked, bitten, hit with a fist, or hit with something hard? Or ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
- Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
- Was a household member depressed or mentally ill or did a household member attempt suicide?
- Did a household member go to prison?

## Methods (cont.)

- A multivariate ordinary least squares regression model was used to estimate the adjusted association of the ACE with age of opioid initiation; tests of significance and 95% confidence interval estimates were based on heteroskedastic Huber-White standard errors
- Multivariate logistic regression was used to estimate the adjusted association of the ACE with the likelihood of recent IDU and lifetime drug overdose.

## Results

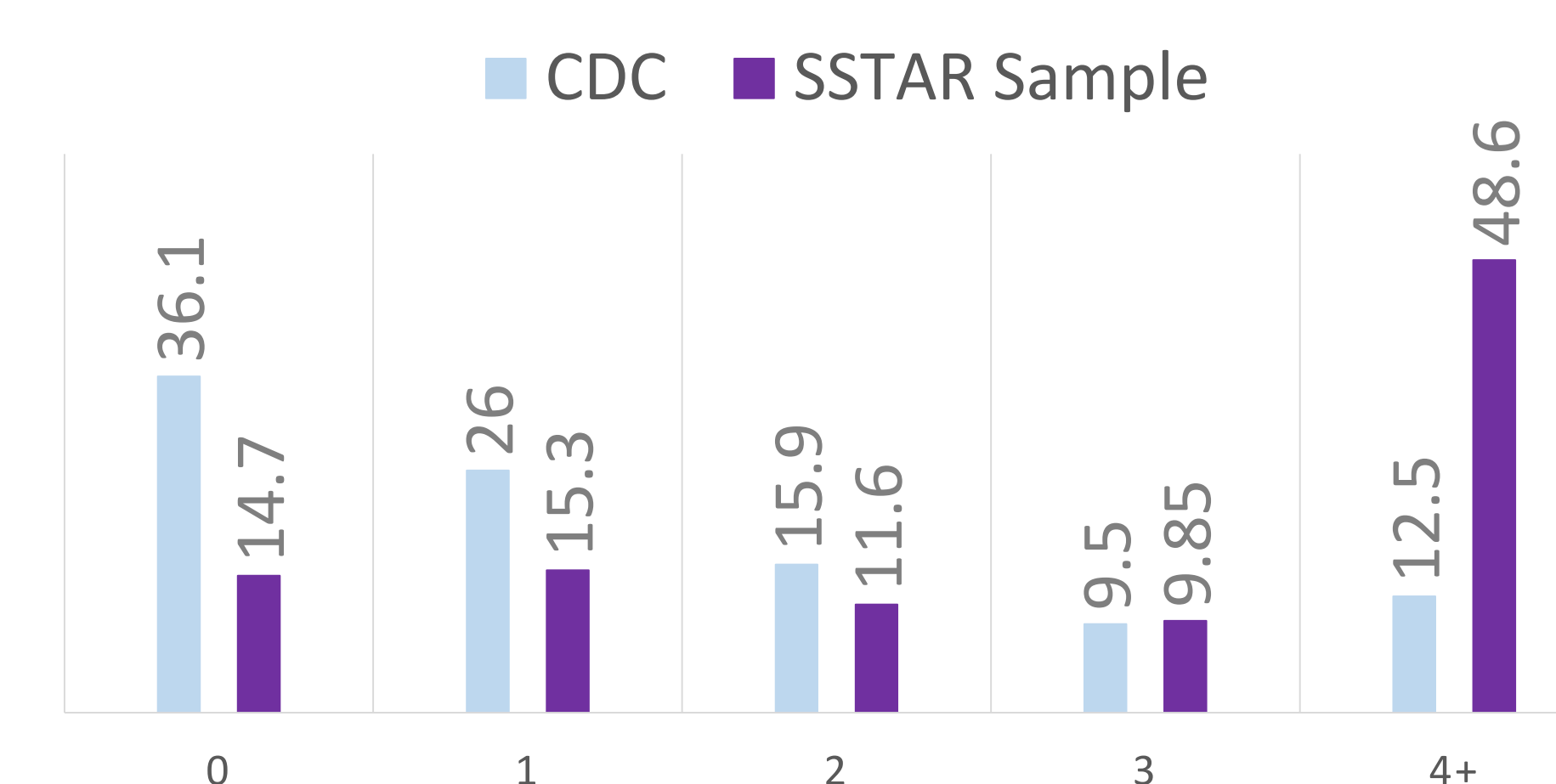
### Demographics

- Participants averaged 32.2 ( $\pm$  8.64) years of age
- 71.3% were male
- 82.5% were non-Latino Caucasian
- 35.9% had pending legal issues,
- 12.5% had spent at least 1 night on the street or in a shelter in the past 90-days
- The mean score on the Adverse Childhood Experiences scale was 4.01 ( $\pm$  3.18, Median = 3)
- Age of initiating opioid use ranged from 12 – 54 years with a mean of 21.7 ( $\pm$  7.12, Median = 20) years
- About 68.7% had injected drugs within the last 30 days
- 39.0% said they had experienced a drug overdose at least once in their life.

## Results (cont.)

- The distribution of study sample ACE scores is presented in **Figure 1**

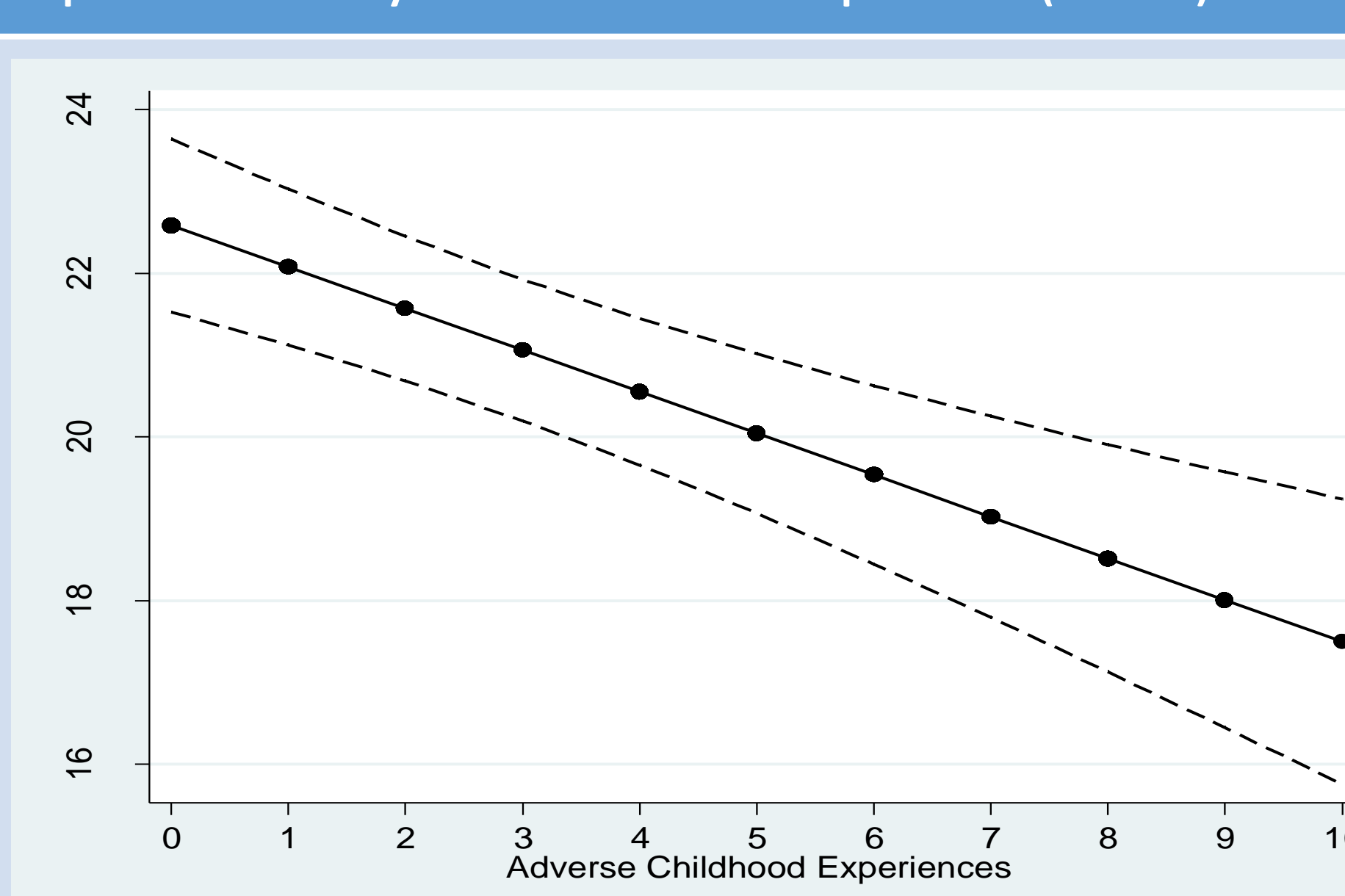
FIGURE 1. CDC<sup>3</sup> AND SSTAR ACE DISTRIBUTIONS



### ACE and Age of Initiation

- After adjusting for age, gender, ethnicity, legal status, and homelessness, the ACE was inversely and significantly associated with age of initiation of opioid use ( $b = -0.51$ , 95%CI  $-0.72$ ;  $-0.30$ ,  $p < .001$ )(**Figure 2**)

Figure 2. Predicted Mean (and 95% Confidence Interval Limits) Age of Opioid Initiation by Adverse Childhood Experiences (n = 457)

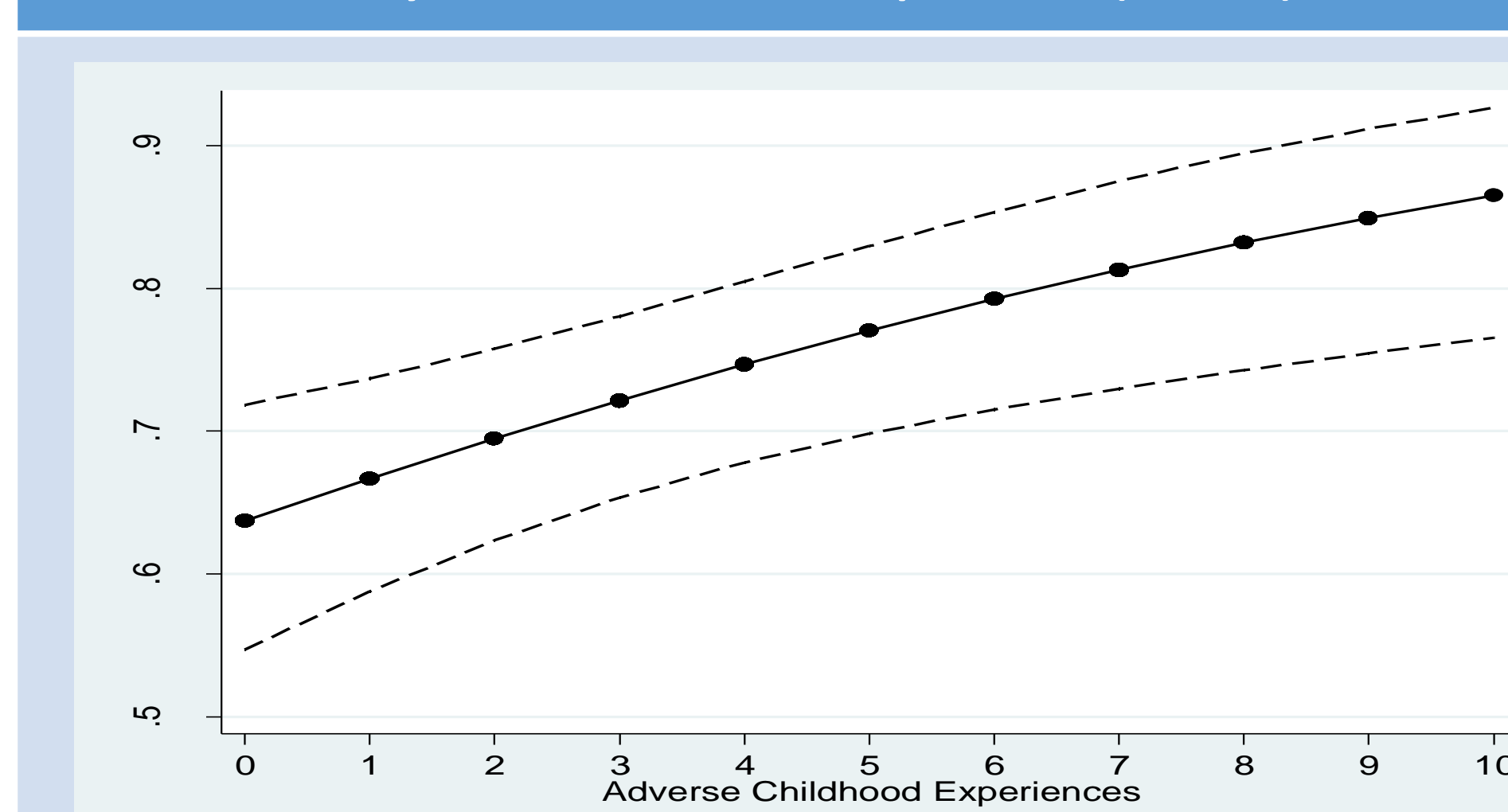


<sup>a</sup> Predicted mean estimated by OLS regression evaluated with covariates specified at mean age, male, non-Latino Caucasian, no pending legal issues, and no recent homelessness.

### ACE and Injection Drug Use

- The ACE was positively and significantly associated with the likelihood of reporting recent IDU (OR = 1.14, 95%CI 1.05; 1.23,  $p < .01$ ) (**Figure 3**)

Figure 3. Predicted Probability (and 95% Confidence Interval Limits) of Recent IDU by Adverse Childhood Experiences (n = 457)

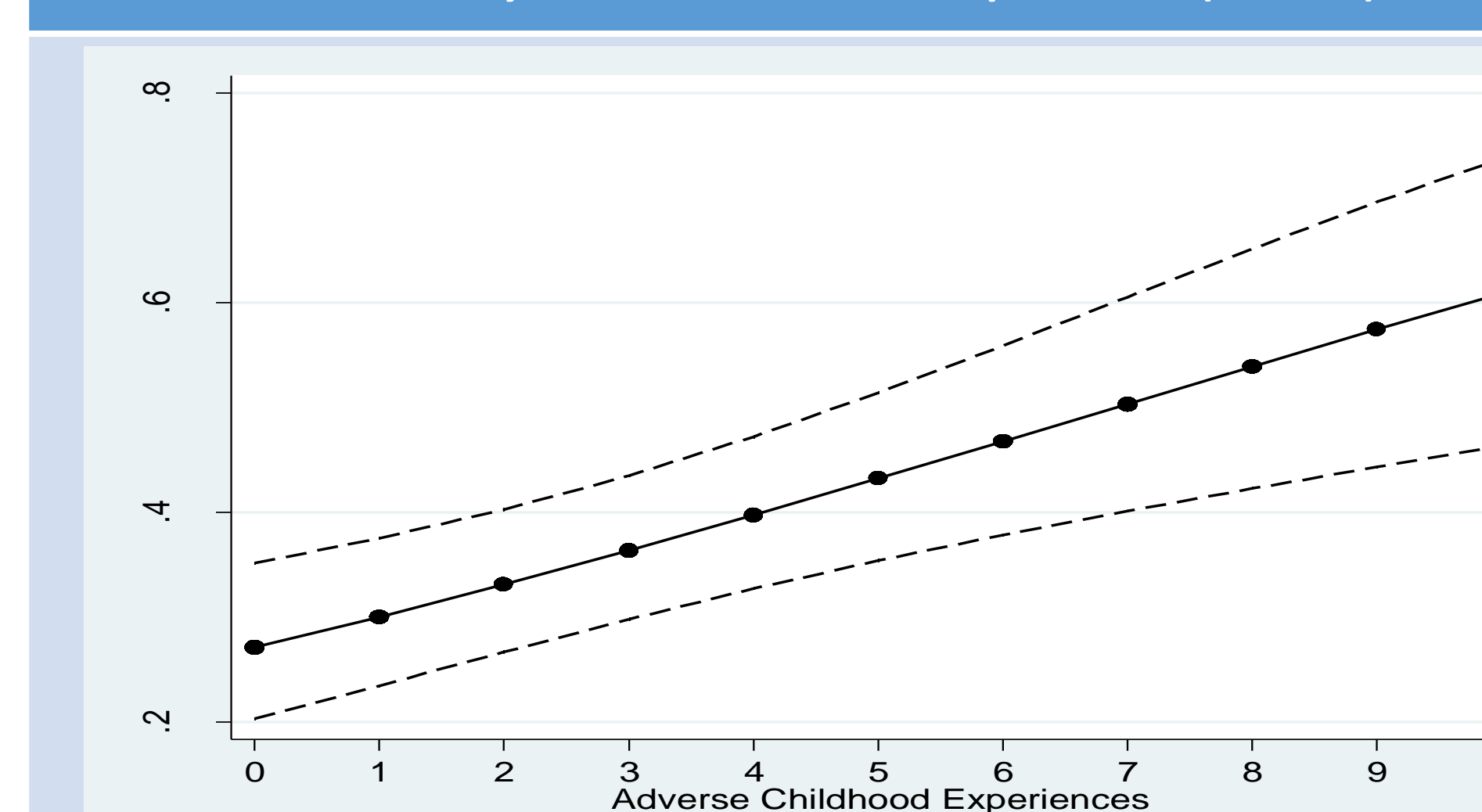


<sup>a</sup> Predicted probabilities estimated by logistic regression evaluated with covariates specified at mean age, male, non-Latino Caucasian, no pending legal issues, and no recent homelessness.

### ACE and Overdose

- The ACE was positively and significantly associated with experiencing a drug overdose (OR = 1.15, 95%CI 1.07; 1.24,  $p < .001$ ) (**Figure 4**)

Figure 4. Predicted Probability (and 95% Confidence Interval Limits) of Lifetime Overdose by Adverse Childhood Experiences (n = 457)



<sup>a</sup> Predicted probabilities estimated by logistic regression evaluated with covariates specified at mean age, male, non-Latino Caucasian, no pending legal issues, and no recent homelessness.

## Conclusions

- Opioid dependent individuals report higher rates of ACEs than the general population
- ACEs are associated with an earlier age of opioid initiation
- Opioid dependent individuals who report adverse childhood experiences may be at greater risk for injection drug use and overdose
- Higher ACE scores may be correlated with severity of opioid dependence, and ACE screening may be useful in identifying a high risk opioid dependent population
- Understanding this connection should be the focus of future research

## References

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## Disclosure

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