

Joshua M. Cohen<sup>1</sup>, Jenny B. Tran<sup>2</sup>, Anna Arzuyan<sup>2</sup>, Jennifer F. Hsia, Ph.D.<sup>2</sup>, Pamina Gorbach, MHS, Dr.P.H.<sup>1</sup>, Steven Shoptaw, Ph.D.<sup>1</sup>  
<sup>1</sup>David Geffen School of Medicine – UCLA; <sup>2</sup>California School of Professional Psychology, Alliant International University – Los Angeles

## ABSTRACT

### OBJECTIVE

The primary aim of the study was to describe links between cigarette smoking, recent biomarkers of substance use, and reported HIV risk behaviors (including reported substance use by self and partner prior to last anal sex) in young MoCSM.

### METHODS

Data collection followed IRB approved protocols of the MASCULINE Study (mSTUDY). Enrollment of MoCSM <40 years old included collection of urine, blood, and other specimens for testing of substance use, infectious diseases, and basic health markers. Self-reports were collected via computer assisted interview. Chi-square analyses, binary logistic and multivariable logistic regressions were conducted.

### RESULTS

Findings showed strong links between reported cigarette smoking and urine drug screen results, as well as with self-report drug use, self-report drug use before anal sex, and partner substance use (see Bivariate Analyses).

## INTRODUCTION

### BACKGROUND

- Although overall smoking prevalence has decreased, some groups exhibit increased smoking use (Cui et al., 2012)
- Cigarette smokers living with HIV have worse health outcomes (e.g., increased viremia, more likely to be hospitalized) than non-smokers comparatively (Hile et al., 2016; O'Cleirigh et al., 2015)
- MSM are a population at increased risk for HIV transmission (Dyer et al., 2012)
- Rates of smoking among MSM with HIV greater than those with HIV generally (Robinson et al., 2014)
- MSM report increased substance use (McCabe et al., 2009)
- Young MSM cigarette smokers are of increased likelihood to use marijuana and binge drink alcohol relative to non-smoking counterparts (D'Avanzo et al., 2016), though little remains known about the relationship between cigarette smoking and other substances in young MSM, especially MoCSM

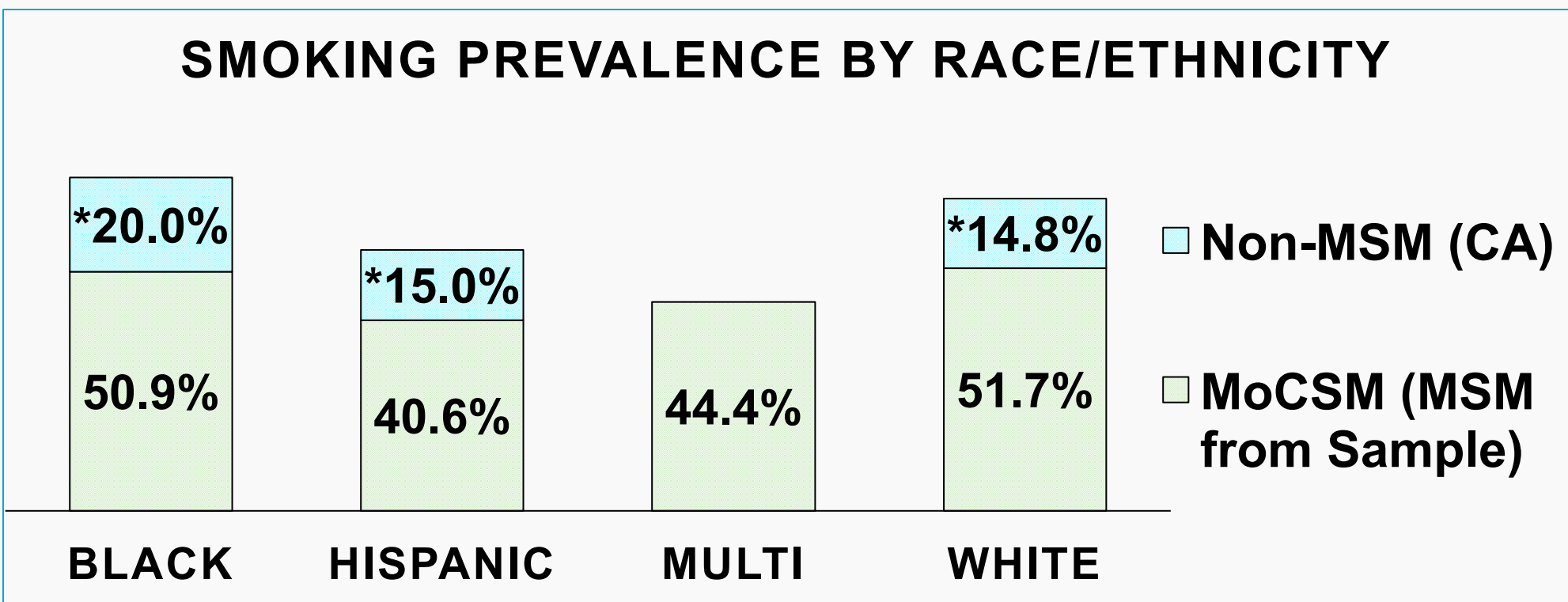
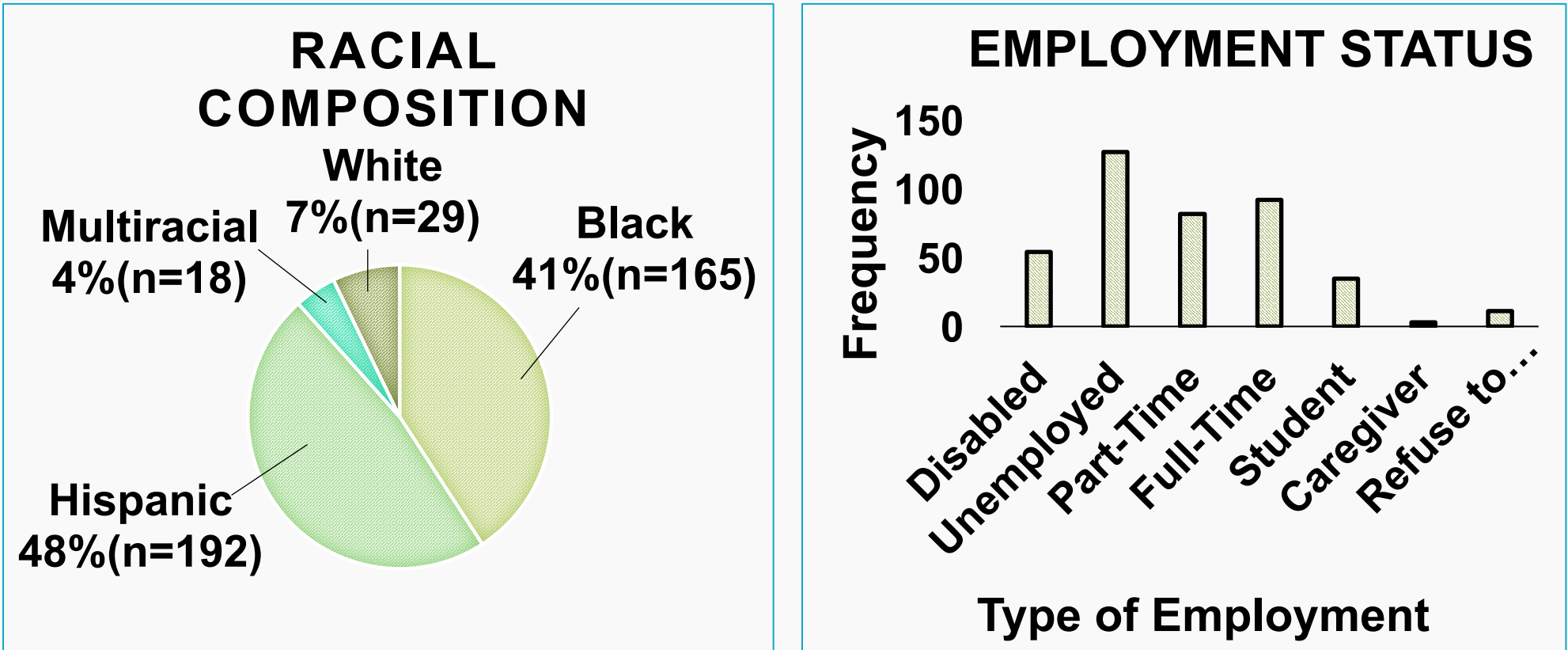
### HYPOTHESES

- Cigarette smoking and use of other substances will be higher in HIV-positive MoCSM in comparison to HIV-negative MoCSM
- Substance use and partner substance use will influence cigarette smoking among MoCSM

## METHODS

### SAMPLE

- 404 MSM, predominately men of color
- 52.0% ( $n=210$ ) HIV- and 48.0% ( $n=194$ ) HIV+
- 45.8% ( $n=185$ ) reported smoking cigarettes
- Age:  $M = 31.4$  years,  $SD = 6.9$  years, range = 18 – 46 years
- 48.8% ( $n=197$ ) report high school or less equivalent educational level, 44.1% ( $n=178$ ) report some college, 6.2% ( $n=25$ ) report graduate school as highest educational level



### DESIGN & PROCEDURE

- NIH/NIDA cohort-sequential study (mSTUDY)
- Recruitment via in-person/online adverts (Grindr, GROWLr) [see handouts]
- Eligibility screening conducted by telephone
  - Assigned to following clinical sites:
    - HIV- (UCLA Vine Street Clinic)
    - HIV+ (Los Angeles LGBT Center)
- Baseline visit (Screening/Enrollment) with follow-up visits every 6 months
  - Biological samples (hair, nails, blood, urine and saliva)
  - Self-report data via Computer Assisted Self-Interview

### MEASURES

- Cigarette use: self-report
- Other substance use: urine drug screen
- Partner substance use: self-report

### STATISTICAL ANALYSES

- ANOVA
  - Chi-square w/Bonferroni correction
  - Bivariate analyses
- Analyses conducted with: SPSS® Version 25. (IBM® SPSS® Modeler Solution Publisher)

## RESULTS

### HIV STATUS

- No difference in cigarette use by HIV status:
  - HIV+ ( $n=94$ , 23.3%), HIV- ( $n=91$ , 22.5%)
  - $F(1,402) = 1.063$ ,  $p=0.30$

### URINE DRUG USE

- More HIV+ cigarette users tested positive for methamphetamines/amphetamines than expected ( $\chi^2(1)=20.30$ ,  $p<0.001$ )

### SELF-REPORT DRUG USE

- More HIV+ cigarette users endorsed use of methamphetamines/amphetamines than expected ( $\chi^2(1)=27.24$ ,  $p<0.001$ )

### SELF-REPORT BEFORE ANAL SEX

- Fewer HIV+ cigarette smokers endorsed heavy drinking prior to anal sex than expected ( $\chi^2(1)=16.36$ ,  $p<0.001$ )

### PARTNER SUBSTANCE USE

- Cigarette use and HIV status were marginally significant (e.g., methamphetamines/amphetamines  $\chi^2(2)=9.623$ ,  $p<0.008$ )

### BIVARIATE ANALYSES: CIGARETTE USE

Variables	OR:	95% CI	p-value
Urine Drug Use			
Cocaine	3.8	1.3 – 10.6	0.05
Marijuana	2.4	1.6 – 3.7	0.001
Methamphetamine/Amphetamine	2.7	1.5 – 4.6	0.001
Self-Report Drug Use			
Cocaine	2.8	1.8 – 4.5	0.001
Marijuana	1.6	1.1 – 2.4	0.05
Methamphetamine/Amphetamine	3.2	2.1 – 4.8	0.001
Self-Report before Anal Sex			
Cocaine	3.2	1.4 – 7.5	0.01
Marijuana	1.5	1.0 – 2.3	0.1
Methamphetamine/Amphetamine	2.4	1.5 – 3.8	0.001
Partner Substance Use			
Cocaine	3.4	1.7 – 7.2	0.001
Erectile Dysfunction Drugs	2.1	1.0 – 4.4	0.1
Marijuana	2.1	1.4 – 3.3	0.001
Methamphetamine/Amphetamine	2.7	1.7 – 4.4	0.001

## CONCLUSION

- Overall, high cigarette smoking prevalence
- Cigarette smoking did not differ by HIV status
- Recent methamphetamine/amphetamine use was associated with cigarette use in HIV-positive individuals
- Individuals with recent use of cocaine, marijuana, and methamphetamines/amphetamines are at least twice as likely to smoke cigarettes

### IMPLICATIONS

- Association between other substance use and cigarettes may confer additional health concerns and greater risk for HIV transmission
- Treatment efforts on reducing drug use (e.g. methamphetamine) could simultaneously target smoking cessation in addition to other substance use with MoCSM
- Findings herein may be relevant for public health interventions that target smoking reduction and improvement of physical health within the MoCSM population.

### LIMITATIONS

- Substance use can and is often exacerbated by other psychosocial factors (e.g., depression, internalized homophobia, etc.), thus complicating the relationship between cigarette smoking patterns and other substance use
- Sample drawn from limited geographical area

### FUTURE DIRECTIONS

- Future research can be aimed to look into the associated problems caused by multiple substance use faced by cigarette smokers within the MoCSM population
- Further studies and analyses of the present sample can study smoking patterns in light of exacerbating psychosocial factors to investigate whether syndemic theory applies to MoCSM

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