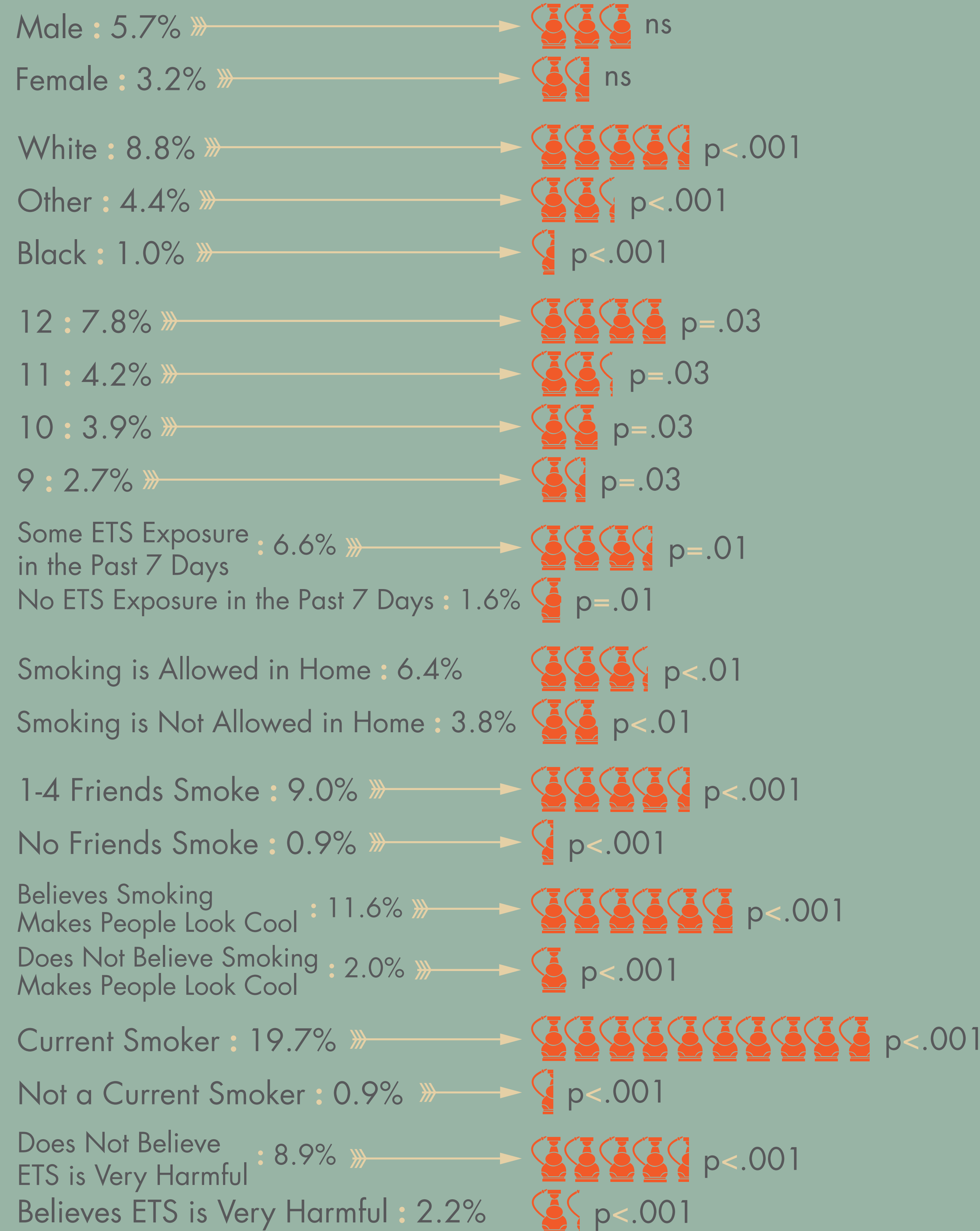


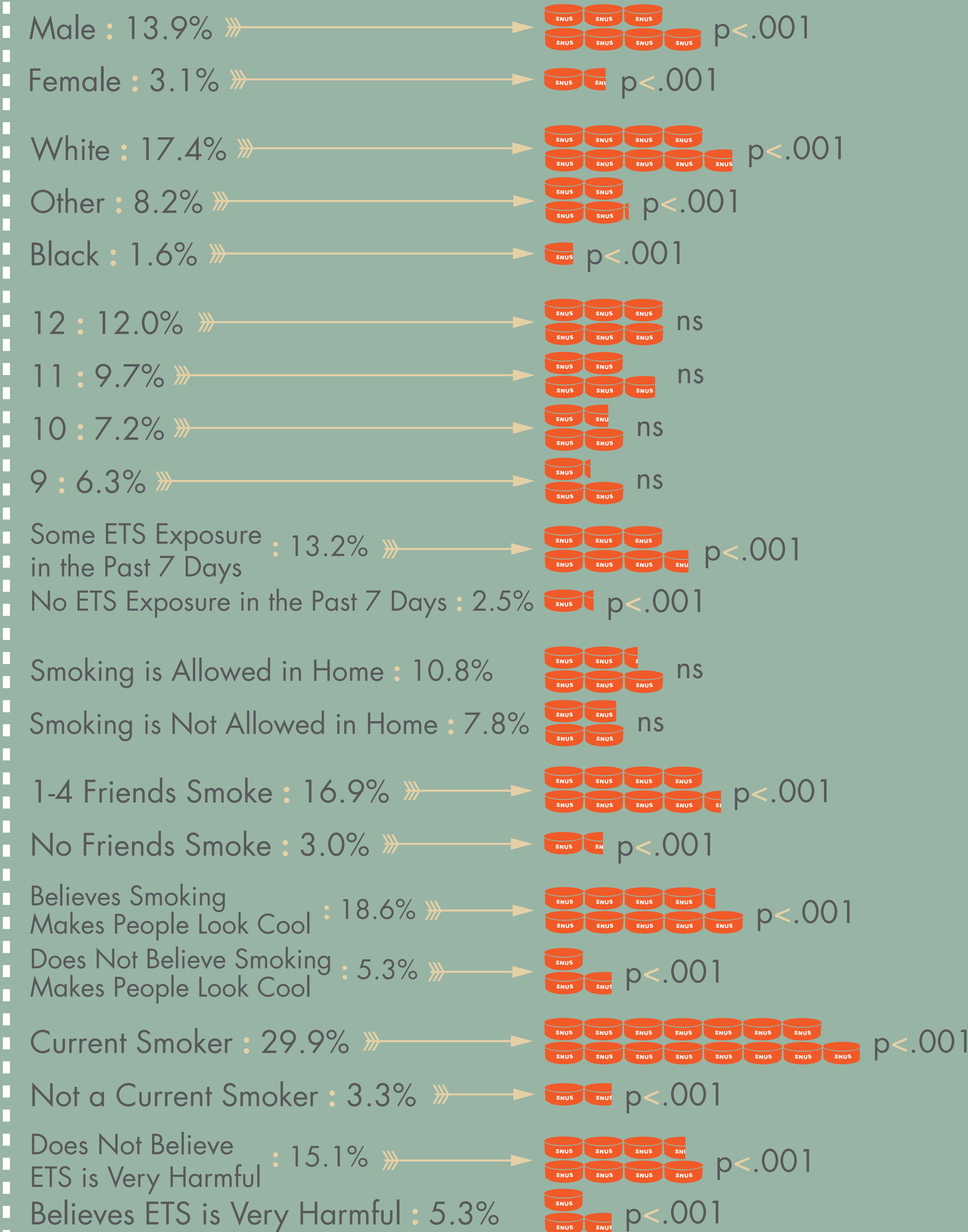
# CORRELATES of EVER AND CURRENT USE OF EMERGING *tobacco* PRODUCTS AMONG *mississippi* YOUTH

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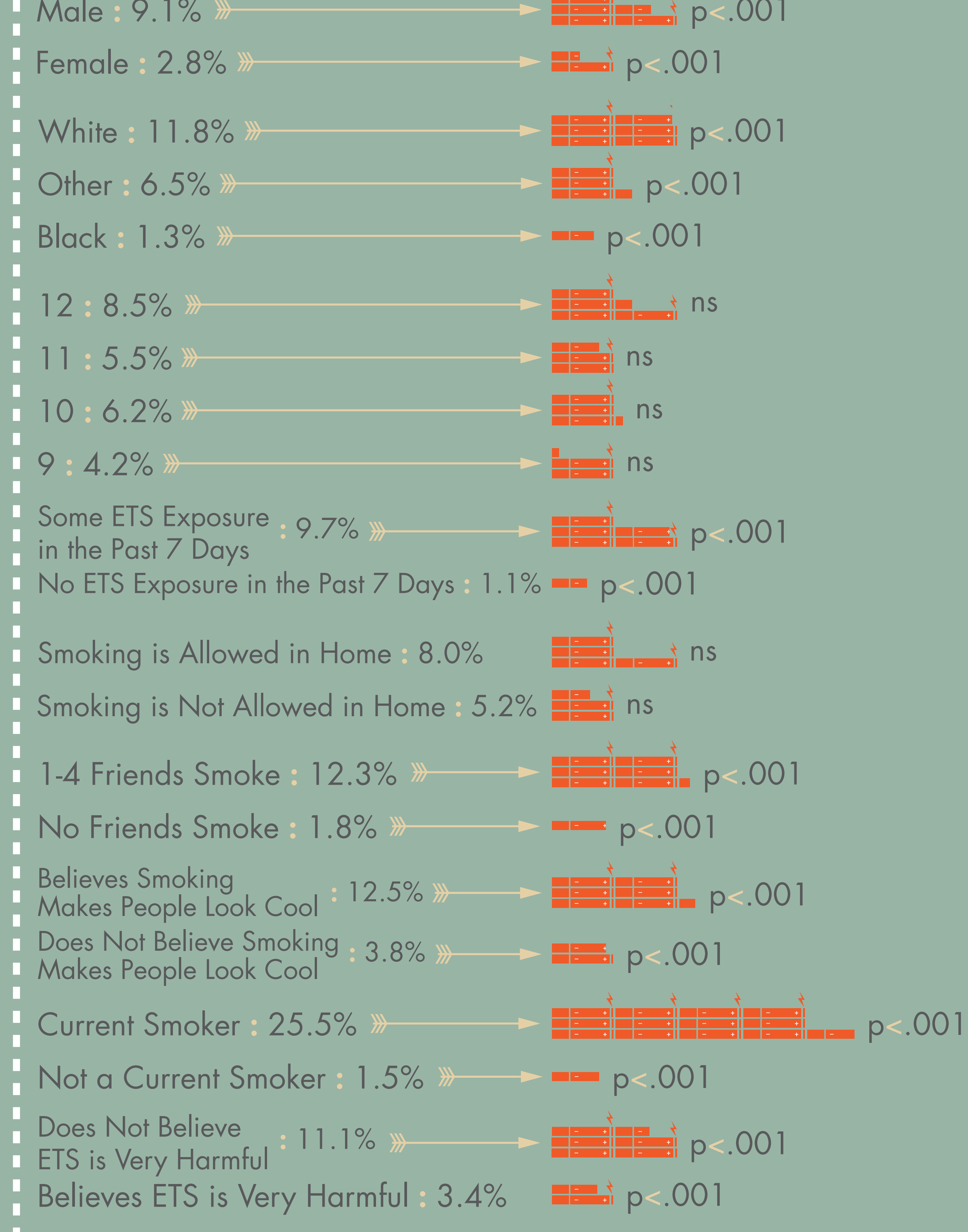
## Ever HOOKAH Use = 2%



## Ever SNUS Use = 2%



## Ever ELECTRONIC CIGARETTE Use = 2%



## 2011 Ever & Current Use

	Hookah Use 95% C.I. (Lower, Upper)	Snus Use 95% C.I. (Lower, Upper)	Electronic Cigarette Use 95% C.I. (Lower, Upper)
Ever Use	4.4% (3.1%, 6.2%)	8.5% (6.3%, 11.4%)	5.9% (4.3%, 8.2%)
Current Use	1.6% (1.1%, 2.3%)	3.7% (2.5%, 5.4%)	2.3% (1.5%, 3.6%)

## Multivariable Analyses

	Ever Hookah Use OR (95% C.I.) (Lower, Upper)	Ever Snus Use OR (95% C.I.) (Lower, Upper)	Ever Electronic Cigarette Use OR (95% C.I.) (Lower, Upper)
Male : Female	1.4 (0.6, 2.9)	6.2 (3.1, 12.5)	3.3 (1.8, 5.9)
White : Black	4.4 (2.0, 9.5)	9.3 (3.9, 21.9)	5.4 (1.9, 15.0)
Other : Black	5.1 (1.8, 14.3)	4.7 (1.7, 13.0)	4.5 (1.5, 13.5)
Some ETS Exposure in the Past 7 Days : None	0.6 (0.2, 1.7)	2.2 (1.1, 4.5)	4.0 (1.2, 13.0)
Current Smoker : Not	9.3 (4.0, 21.7)	4.5 (2.7, 7.5)	7.5 (3.0, 19.3)

## INTRODUCTION

Recently, snus and electronic cigarettes have been introduced to the US market, while hookah/waterpipes have gained popularity. As cigarette smoking rates among youth have decreased and leveled off in recent years (Centers for Disease Control and Prevention (CDC) 2010), the increased usage of emerging tobacco products raises concerns about poly-tobacco use, renormalization of tobacco use, and nonsmokers initiating tobacco use. Although snus and electronic cigarettes are non-combustible forms of tobacco, their health effects are either unknown or similar to those of cigarette smoking and hookah use. Electronic cigarettes specifically claim to be less harmful than cigarettes and may serve as an initiator to regular cigarette smoking (Centers for Disease Control and Prevention (CDC) 2013). Snus use is gaining popularity among youth because it is multi-flavored and easily concealable (Loukas et al., 2012). Although studies have provided data regarding adult use of these emerging products (McMillen, Maduka, & Winickoff, 2012), little research has been published on the effects on youth use. Results from this research can inform health policy regarding use of these products among youth and identify demographic, behavioral, and situational predictors of use.

## METHODS

### Background

Data are from the Mississippi Youth Tobacco Survey (YTS). The YTS provides states with the data needed to design, implement, and evaluate comprehensive tobacco control programs. We added items to assess the use of emerging tobacco products in 2010, and examined use among high school students for 2010, 2011, and 2012.

### Sample Design

We applied a multi-stage sample design with public high schools selected proportional to enrollment size. Classrooms were chosen randomly within selected schools and all students in selected classes were eligible for participation. Data were collected by an anonymous self-administered questionnaire during a normal class period by teachers following standardized procedures.

### Editing, Weighting, and Initial Analysis of Data

The Research Triangle Institute and the CDC's Office of Smoking and Health provided technical assistance with the processing and weighting of the data. A weighting factor was applied to each student record to adjust for non-response at the school, class, and student levels. SUDAAN statistical software was used to calculate standard errors for estimates and 95 percent confidence intervals. Weight adjustments were made for the following:

- Weight = W1 \* W2 \* f1 \* f2 \* f3 \* f4
- W1 = inverse of the probability of selecting the school
- W2 = inverse of the probability of selecting the classroom within the school
- f1 = a school-level non-response adjustment factor calculated by school size (small, medium, large)
- f2 = a class adjustment factor calculated by school
- f3 = a student-level non-response adjustment factor calculated by class
- f4 = a post stratification adjustment factor calculated by gender and grade

## DISCUSSION

Overall, use of snus and electronic cigarettes was more common among Mississippi youth than use of hookah. In general, being male, white, and in a higher grade are risk factors for use of emerging products. Further, students who currently smoke, are exposed to smoking, or believe that smoking is cool have higher rates of using emerging products than those with opposing characteristics. In multivariable analyses sex, race, exposure to tobacco smoke, and smoking status remained significant predictors of use of these emerging products. Increased awareness of the prevalence of emerging tobacco products, demographic risk factors, and behavioral and situational predictors, will help to inform programmatic activity, public health policy, and regulatory action.

This is one of the first studies to examine emerging tobacco product prevalence and predictors among youth. Our findings are similar to those of other studies that have examined hookah (Jordan & Delnevo, 2010), snus (Loukas et al., 2012), and electronic cigarettes (Centers for Disease Control and Prevention (CDC) 2013) singularly.

The use of emerging tobacco products among youth raises concerns regarding poly-tobacco use, renormalization of tobacco use, and nonsmokers initiating tobacco use. Future research should examine trends in prevalence and determine the motives of youth in using these products.

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