



# Do levels of menthol in mainstream cigarette smoke influence dependence? Data from NHANES 2007-2014

Tiffany Parmis<sup>1</sup>, Cynthia Van Landingham<sup>2</sup>, Kristin Marano<sup>1</sup>

1: RAI Services Company, Winston-Salem, NC 27101; 2: Ramboll, Monroe, LA 71201

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# Introduction

- The Family Smoking Prevention and Tobacco Control Act banned characterizing flavors and flavor descriptors in cigarettes.
- Menthol is not included in that ban, however, the Food and Drug Administration (FDA) has the authority to issue a product standard to ban or limit menthol in cigarettes if the scientific evidence supports such action in order to protect public health.

# Introduction

- FDA previously concluded that menthol in cigarettes may be associated with increased initiation and progression to regular cigarette smoking, increased dependence, and reduced success in smoking cessation, especially among African American menthol smokers.
- In March 2018, FDA issued an advanced notice of proposed rulemaking regarding the role of flavors (including menthol) in youth initiation, and adult cigarette reduction, quitting, and switching.

# Purpose

- The purpose of this evaluation is to ascertain whether different levels of menthol in mainstream cigarette smoke influence indicators of dependence among current, regular smokers, as measured by:
  - cigarettes per day
  - time to first cigarette
  - heaviness of smoking index (HSI) scores



# Methods

# Data Sources

- National Health and Nutrition Examination Survey (NHANES), years 2007-2014
- Smoke menthol levels obtained via publicly available documents provided for the Tobacco Products Scientific Advisory Committee meeting
  - ISO smoking regime
- Products were assigned to categories based on level of smoke menthol

# Definitions

- Exclusive current, regular menthol smokers
- Exclusive current, regular nonmenthol smokers
- Levels of menthol in smoke (mg/cig)
- Time to first cigarette (TTFC)
- HSI variable was created; sum of CPD and TTFC

# Statistical Analyses

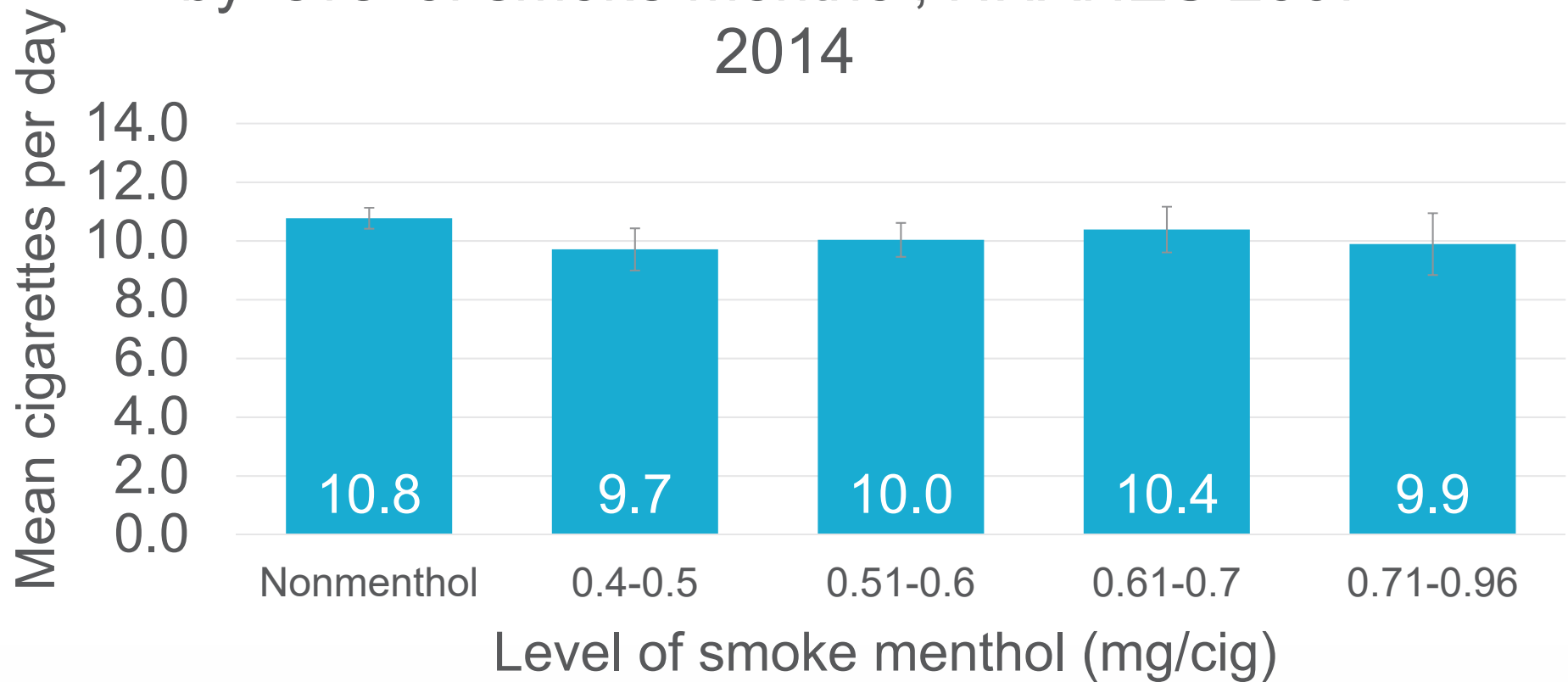
- Unadjusted means were calculated by level of smoke menthol
- Means stratified by level of smoke menthol
  - Adjusted for age, gender, race
- Least square means
  - Adjusted for age, gender, race
- Logistic regression
- National Center for Health Statistics weights and parameters
- Statistically significant if  $p < 0.05$ , 95% CI do not overlap



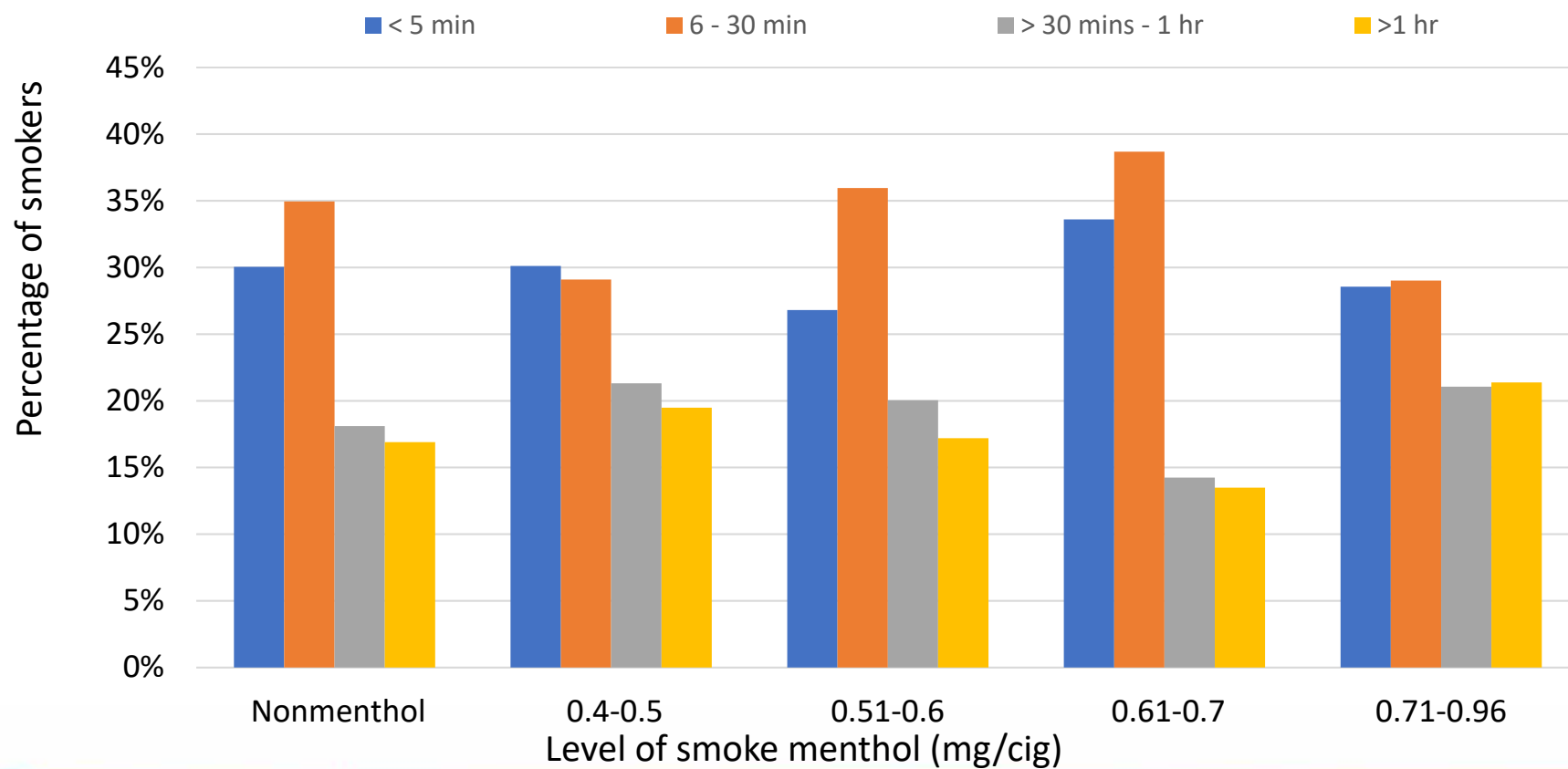


# Results

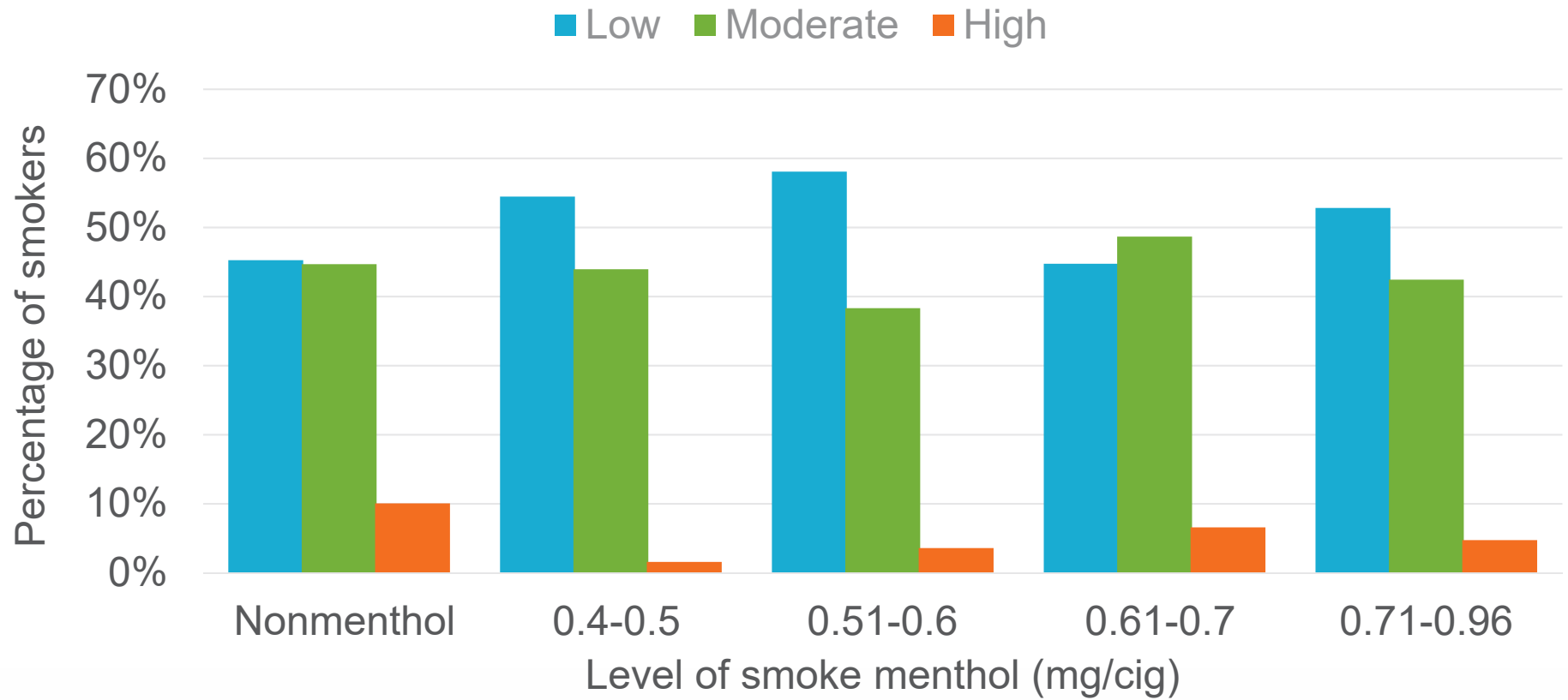
# Least squares means for cigarettes per day by level of smoke menthol, NHANES 2007-2014



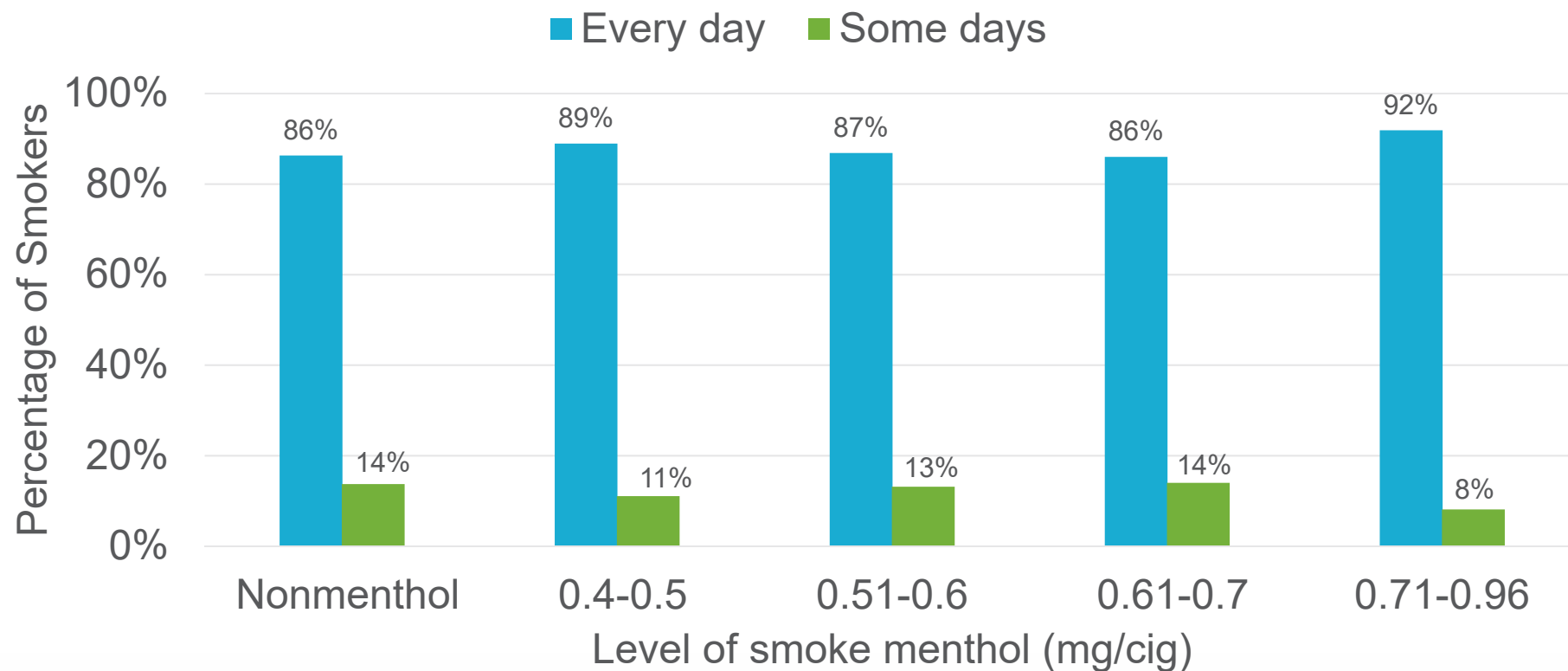
## Distribution of time to first cigarette by level of smoke menthol, NHANES 2007-2014



## Distribution of heaviness of smoking index scores, NHANES 2007-2014



## Distribution of past 30 days smoking frequency, adult current smokers, NHANES 2007-2014



## Strengths

- These analyses are based on commonly used measures.
  - Multiple indicators of dependence yield the same outcome.
- NHANES data are publically available for download/analysis and the data are representative of the civilian, non-institutionalized US population.

## Limitations

- These analyses do not adjust for all conceivable covariates.
- Behaviors of smokers using both menthol and nonmenthol products are not captured.
- Data are self-reported and may be subject to recall bias.

# Conclusions

- These analyses indicate that varying levels of smoke menthol do not influence reported indicators of dependence among U.S. adult, current, exclusive cigarette smokers.
- Regression analyses based on available NHANES data indicate that varying levels of menthol do not impact CPD, TTFC, or HSI.
- Regardless of smoke menthol level, HSI is categorized as <3, indicating low dependence.

# References

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