

Introduction

Smoking behavior is associated with major depression.

- ▶ Longitudinal investigations have shown that depression increases risk of later smoking [1, 3].
- ▶ Many subsequent studies find a role of major depression in increasing the probability and amount of smoking [2, 7, 8].

Smoking behavior and Nicotine dependence.

- ▶ While smoking is a necessary requirement for nicotine dependence, smoking behavior is a poor predictor of developing nicotine dependence [6, 9].
- ▶ Heavy smokers may not have nicotine dependence, conversely light smokers may have nicotine dependence [6].

Research questions

The goals of the analysis include answering these two questions:

- ▶ Is there an association between major depression and nicotine dependence?
- ▶ Does the prevalence of nicotine dependence differ by ethnicity?

Methods

Data sources

1. A sample from the first wave of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (US adults). We focus on young adult (18–25) smokers (1697 of 43093 respondents).

Measures/Variables

1. Lifetime major depression (**Depression**, 0=No, 1=Yes) [5, 4].
2. Total cigarettes per month (**TotalCigsSmoked** = days smoked times daily cigs smoked, range: 0–2940), a combination of these questions: “About how often did you usually smoke in the past year?” and “On the days that you smoked in the last year, about how many cigarettes did you usually smoke?”
3. Nicotine dependence (**TobaccoDependence**, 0=No, 1=Yes) in the last 12 months.

Methods

1. A two-sample t -test comparing the mean square-root of total cigarettes smoked by depression status.
2. A χ^2 analysis of a two-way contingency table of nicotine dependence by ethnicity.

Discussion

- ▶ These results do not support the previous literature that individuals with major depression are more sensitive to the development of nicotine dependence regardless of how much they smoke. Because we have not controlled for other covariates related to smoking and depression, we may have missed the specific subgroups who could benefit from targeted smoking intervention programs.
- ▶ While Ethnicity was not originally part of a research question, it was interesting to observe that Hispanics tend to report less nicotine dependence than other ethnicities in the study. It is not clear why this should be the case.

Further directions

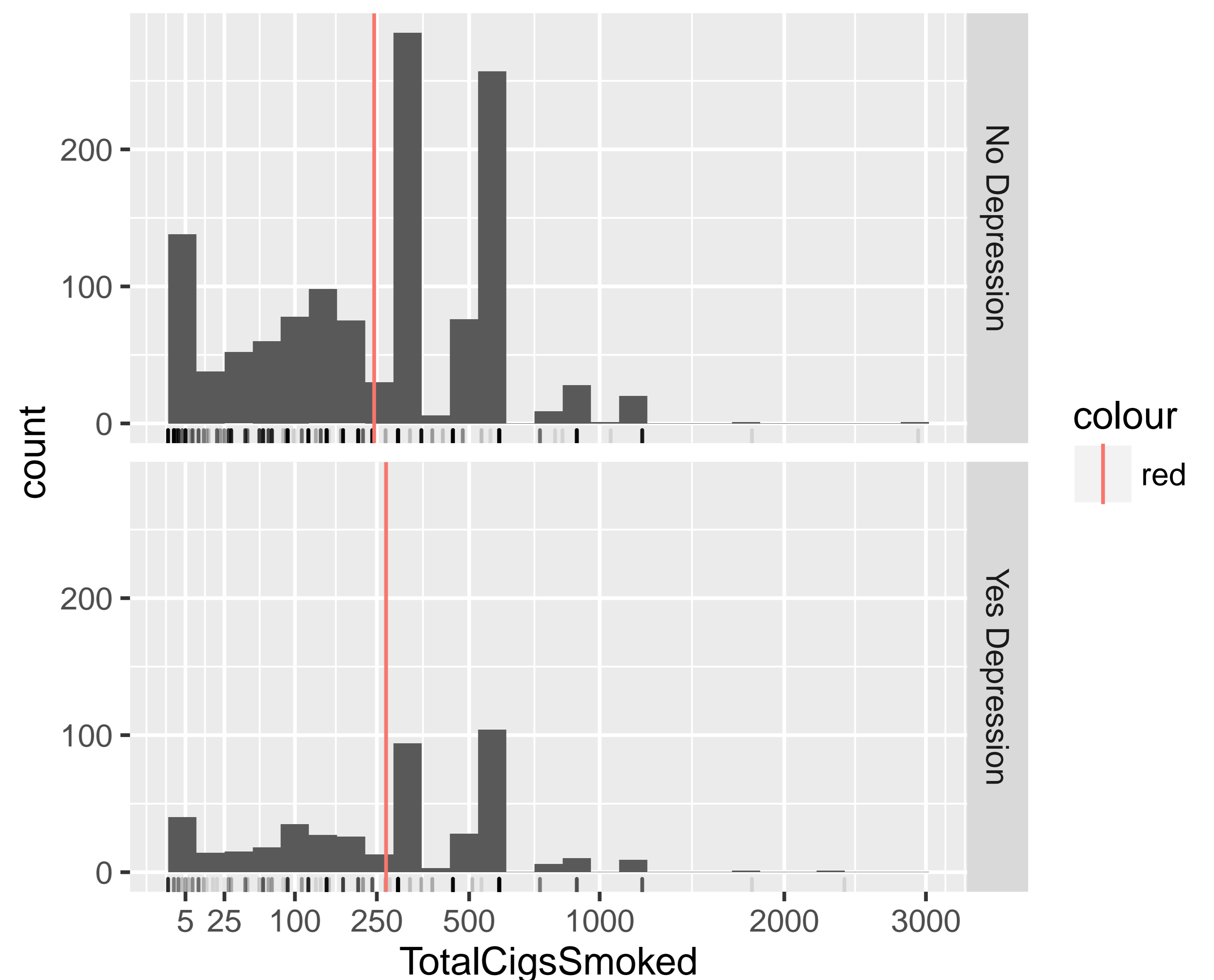
- ▶ We can extend focus to all adults, and (with multiple regression techniques we’ll learn in ADA2) control for additional covariates to assess whether there are particular depressed subpopulations more susceptible to smoking more or developing nicotine dependence.

References

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Major depression and nicotine dependence

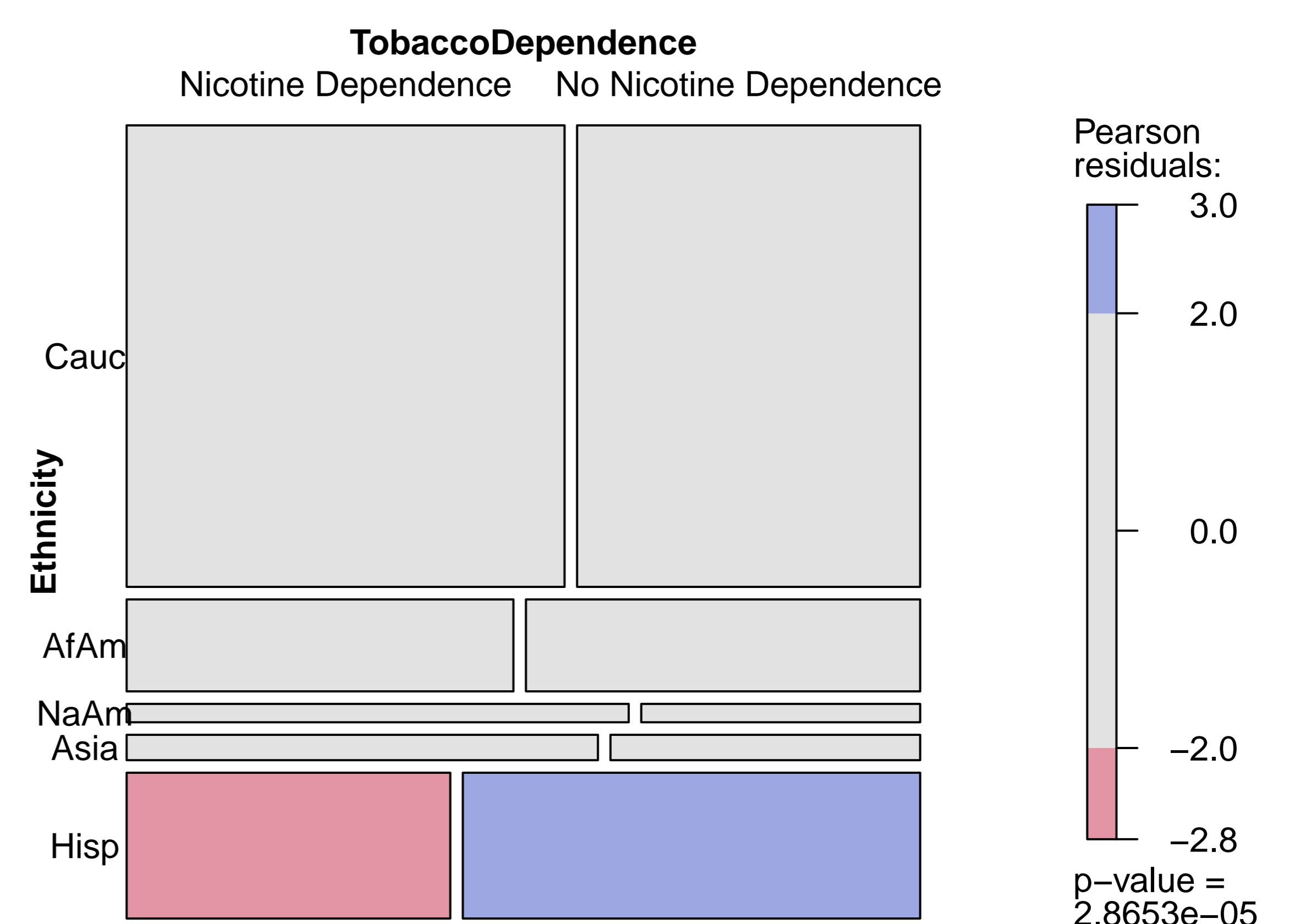
“Is the population mean square-root total cigarettes smoked different for those with depression or not?” $H_0: \mu_D = \mu_{ND}$ versus $H_A: \mu_D \neq \mu_{ND}$



- ▶ Model assumptions are met, the the sampling distribution of the difference in means is normal.
- ▶ Because $p = 0.0666 > 0.05$ (with $t_s = -1.837$), we have insufficient evidence to reject H_0 at an $\alpha = 0.05$ significance level, concluding that the total cigarettes smoked does not differ by depression status.
- ▶ The difference is very small, on the square-root scale it is 0.844 and on the natural scale it is 27 cigarettes each year.
- ▶ Note that a t -test on the original scale also satisfies assumptions and gives the same conclusion.

Nicotine dependence by ethnicity

“Is there an association between TobaccoDependence and Ethnicity?”



- ▶ The model assumptions are met since the expected count for each cell is at least 5.
- ▶ Because the p -value = $2.87 \times 10^{-5} < 0.05$ ($X^2 = 26.2$) we reject the null hypothesis concluding that there is an association between TobaccoDependence and Ethnicity.
- ▶ The primary cause of rejecting H_0 is that Hispanics have less nicotine dependence than expected.