



# The Association Between Smoking Initiation Age, Daily Smoking Quantity, and the Ability to Quit



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## Introduction

- Tobacco industry revenue: **\$960B globally** (2024); U.S. quitting rate only **6%** (NIDA, 2020).
- Smoking causes **90% of lung cancer in men, 80% in women**, and 480 thousand U.S. deaths annually (Walser, 2008).
- Tobacco ads (\$8B in 2019) target youth, with Marlboro, Newport, and Camel dominating preferences (CDC, 2021).
- Smoking before 21 increases nicotine dependence and reduces quit success (Ali, 2020).
- Early smoking raises cardiovascular risks; delayed initiation lowers these risks (Fa-Binefa, 2019).
- Limited focus on early adulthood (18–25), a critical developmental period.
- **This study explores whether starting smoking in adolescence or early adulthood impacts quitting success compared to starting post-early adulthood.**

## Methods

### Sample

- Data were drawn from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative survey of U.S. adults aged 18 and older.
- This analysis used **16,237 participants** from Wave 1 (2002), focusing on substance use behaviors and mental health. The original sample size exceeded 43,000.

### Measures

- **Smoking initiation age:** Participants reported the age they began smoking daily. Responses were categorized into defined age groups (e.g., adolescence, early adulthood).
- **Ability to quit:** Measured through self-reported attempts to quit smoking that were unsuccessful, coded as "Yes" or "No."
- **Smoking frequency:** Daily cigarette consumption was recorded, with responses ranging from 1–99 cigarettes. Participants reporting 99 were classified as "Unknown."

## Research Questions

- 1) Is the age of smoking initiation (adolescence vs. early adulthood vs. post-early adulthood) associated with the ability to quit smoking?
- 2) How does smoking frequency relate to cessation success across different initiation age groups?

## Results

### Univariate

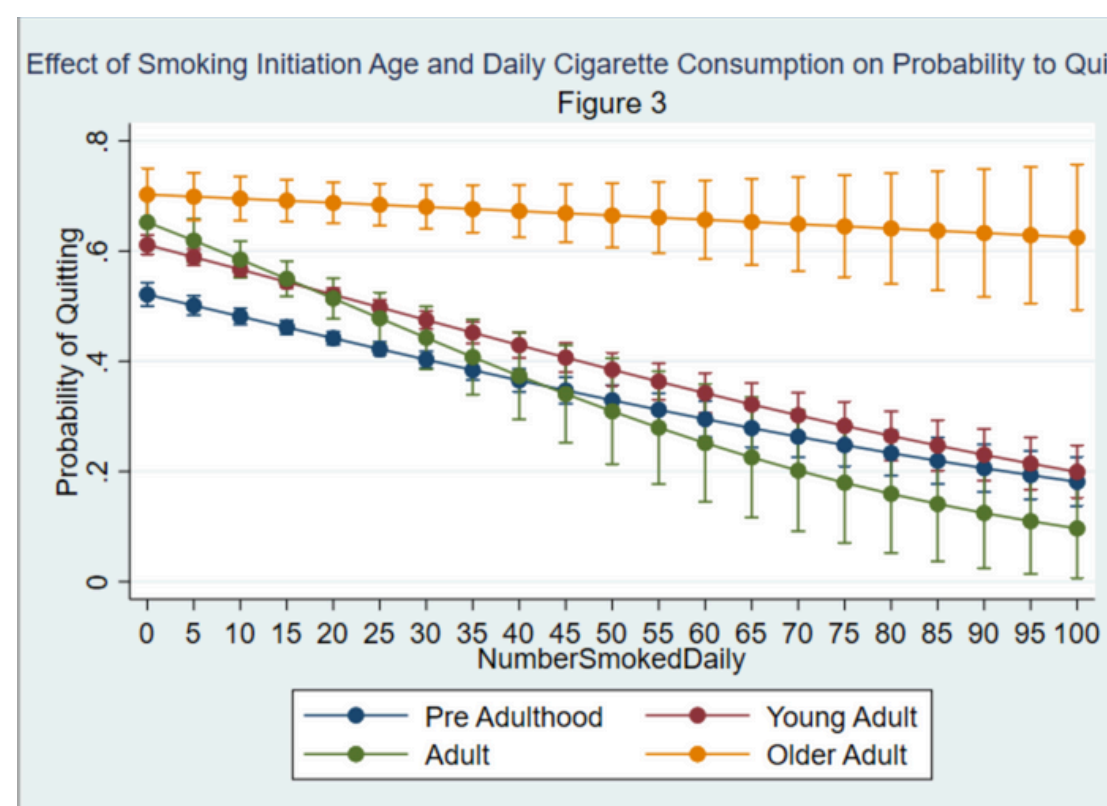
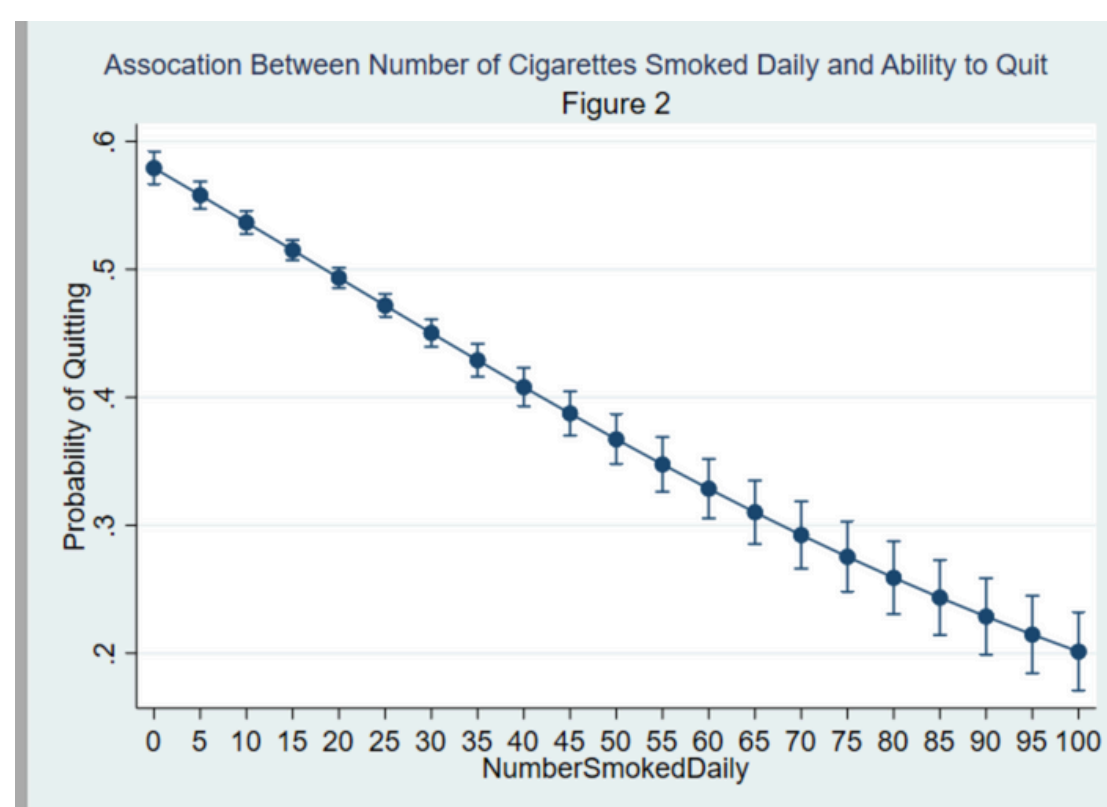
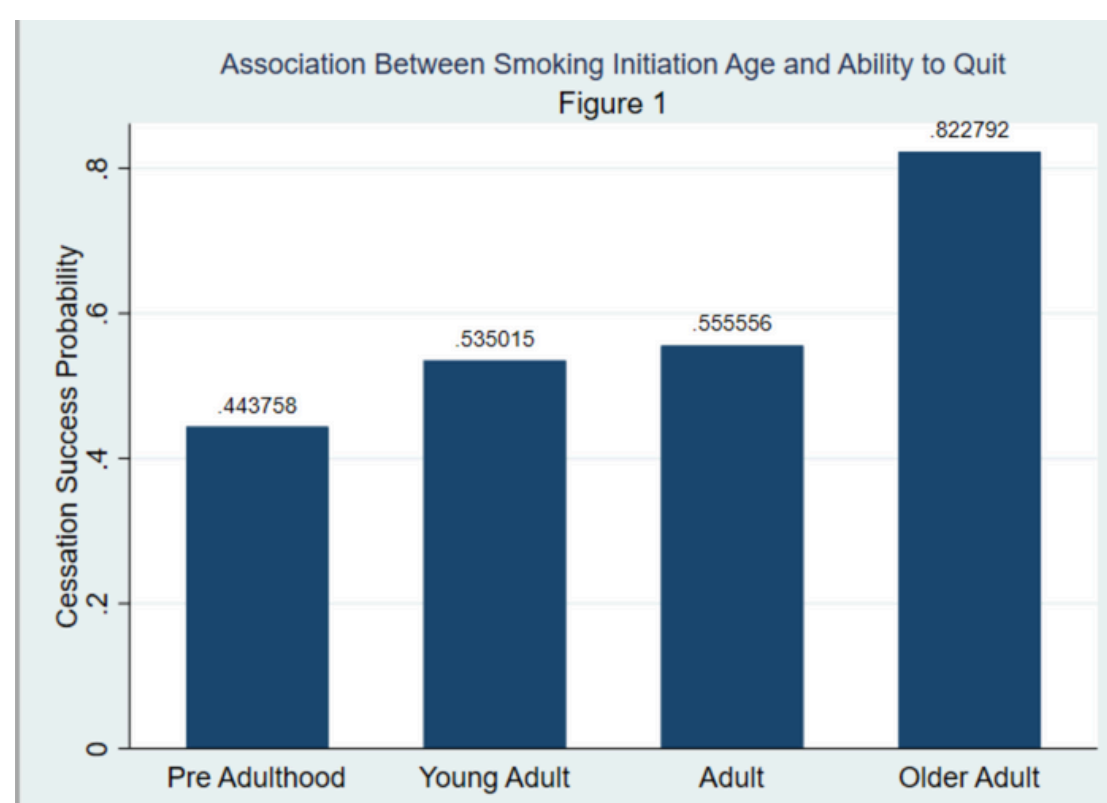
- **55.6%** of smokers who have attempted cessation at least once found they couldn't do it
- The average initiation age of smokers who smoke everyday is **20.6 years old**
- The average number of cigarettes smoked by daily smokers is **18.3**

### Bivariate

- Chi-Square analysis showed that the later a daily smoker started, the more likely they were able to quit (p-value=0.0)
- Post-hoc comparisons revealed that Pre Adolescents have 44.4% of quitting compared to 53.5% for Young Adults and 82.3% for Older Adults. (Figure 1)
- All of the comparisons were statistically significant except for the comparison between Young adults and Adults (p-value of 0.226)

### Multivariate

- Logistic regression exhibited that for every year that smoking initiation is pushed back, the odds ratio for cessation success increases by 1.34 (p-value 0.000).
- For every cigarette smoked, the odds ratio of cessation success declines by 0.98 (p-value 0.00)
- The association between the number of cigarettes smoked daily and young adults is not statistically significant (p-value 0.335)
- The number of cigarettes smoked daily variable weakens the relationship between smoking initiation age and cessation success, which shows that it moderates the relationship
- These interaction terms show that the moderation occurs between Pre-Adolescence and Adults and Adolescence and Older Adults



## Discussion

- Smoking initiation age is **positively associated** with cessation success rates (**Figure 1**):
- Later initiation reduces the likelihood of nicotine dependence and increases the probability of successful quitting (**Figure 2**).
- **Daily cigarette consumption moderates the relationship between smoking initiation age and cessation success:**
- Increased daily consumption significantly lowers cessation success probabilities.
- Adjusting for equivalent levels of cigarette consumption, cessation success rates converge across pre-adolescents, young adults, and adults, suggesting that consumption intensity may override the influence of initiation age on quitting outcomes (**Figure 3**).
- Smoking initiation among older adults is associated with consistently higher cessation probabilities across all levels of cigarette consumption:
- These findings challenge prior research prioritizing smoking initiation age as the primary predictor of cessation success
- **Future research directions:**
- Investigate the unique mechanisms underlying higher cessation success rates among older adults.
- Address potential confounding factors in the interaction between smoking initiation age and daily cigarette consumption.

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