

# Where There's Smoke...: The Wage Impact of Smoking

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## Summary:

Cigarette smokers earn significantly less than nonsmokers, but the magnitude of the smoking wage gap and the pathways by which it originates are unclear. While most research focuses on contemporaneous reasons for the wage differential, the research described in this Policy Hub article finds that decisions made early in life—about education, labor force participation, and occupation—contribute significantly to the wage penalty smokers face later, especially for men. Women are found to be judged more harshly by their current employers for their smoking behavior, and since quitting smoking doesn't entirely erase the impact of early decisions, early intervention is imperative to avoid the negative wage impacts.

## Key findings:

1. Almost 90 percent of the smoking wage gap for men is determined by the impact of smoking on early in life decisions about education, work, and occupation, suggesting that programs designed to prevent youth smoking will be especially beneficial for men.
2. Almost two-thirds of the smoking wage gap for women is determined by their current smoking behavior, suggesting that quitting smoking will have significant labor market benefits.

**JEL classification:** I10, I12

**Key words:** wages, smoking, dynamic system of equations, NLSY

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The fact that people who smoke cigarettes earn lower wages, on average, than those who don't is well known. Compared to nonsmokers, smokers incur an estimated wage penalty of between 2 percent and 14 percent (Auld 2005; Grafova and Stafford 2009; van Ours 2004).

Theories abound for the existence of the smoking wage penalty. Smokers tend to have more health issues (CDC TobaccoFree 2019) and so may be absent from work more often and thus less productive than nonsmokers. Smoking breaks might also reduce productivity—if the workplace has indoor smoking restrictions, a smoker needs to interrupt the workday to go outside for smoking breaks. Furthermore, the additional healthcare costs smokers experience may ultimately hit their employers through higher costs of providing health insurance to their workers. One study estimates that each smoker costs their employer about \$6,000 per year, on average, more than their nonsmoking colleague (Wile 2014). Employers with a distaste for the habit may also pay smokers less than nonsmokers, thus shrinking the pool of labor market opportunities available to smokers (Hotchkiss and Pitts 2013).

All of these theories serve as contemporaneous explanations for the smoking wage penalty, as they relate today's smoking behavior to the lower wage the smoker experiences today. Alternatively (or in addition), the penalty may be a product of different decisions that smokers and nonsmokers make throughout their lives—decisions such as going to college, choosing an occupation, or whether to work (and whether to work part-time or full-time)—and how those decisions reinforce each other and interact with the decision to smoke. For example, the decision about whether or not to go to college is intrinsically related to occupational choices. Additionally, one's outlook on the future (or the degree to which one discounts the impact of today's decisions on future outcomes) may play an important role in both the decision to smoke and the decision go to college.

When policymakers consider what might be useful in curbing smoking behavior, it's important to know how much of the wage penalty can be explained by contemporaneous factors (that is to say, factors carrying a direct impact) versus dynamic ones (those factors experienced indirectly over the life cycle). If most of the penalty derives from dynamic factors, for example, changing one's perception of the returns from certain decisions made early in life might be important. If most of the penalty results from contemporaneous factors, the decision to quit smoking would have a more immediate impact on wages than if the wage penalty is predetermined by decisions made years ago.

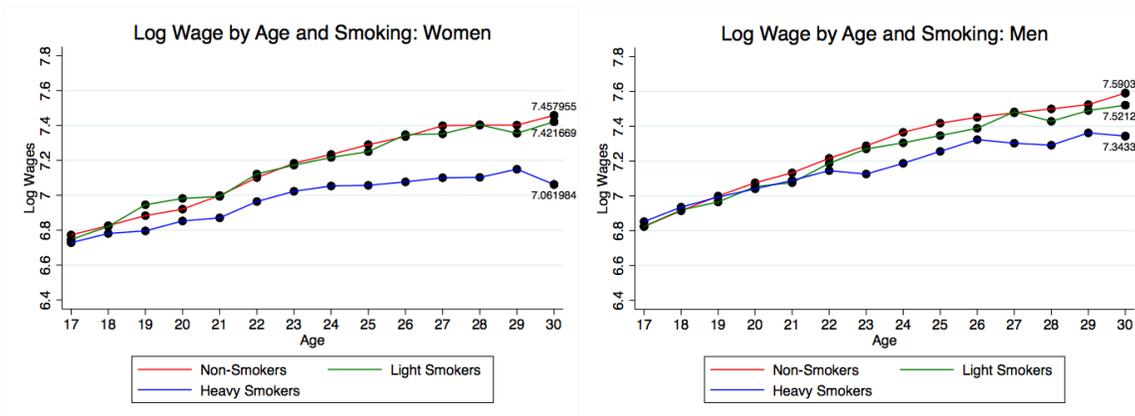
Our recent working paper (Darden, Hotchkiss, and Pitts 2020) allows for separate identification of contemporaneous and dynamic contributors to the smoking wage penalty. This *Policy Hub* article

highlights the differences we find by gender in the relationship between smoking behavior and wages. For women, two thirds of the wage differential is contemporaneous, whereas the contemporaneous effect only captures 11 percent of the wage differential among men. This gender differential has implications for policy, specifically where to invest antismoking funds to get the largest return.

The National Longitudinal Survey of Youth (NLSY) is a survey of 12- to 18-year-olds that began in 1997 and continues today, providing a rich source of demographic and behavioral information that allows us to follow individuals throughout their early adult years. These data are used to estimate, in determining wages, a dynamic model that allows full interaction between decisions about smoking, education, and working. In addition, conditional on working, we account for decisions about hours of work and occupational choice. We also allow for nonrandom attrition from the survey. Details of the model and full results can be found in Darden, Hotchkiss, and Pitts (2020).

Figure 1 illustrates the observed wage penalty that grows over time for men and women, comparing nonsmoker wages with wages for both heavy and light smokers. We define heavy smoking as having smoked in at least 20 of the previous 30 days (light smokers smoke between one and 19 days out of 30).

**Figure 1: Log Wages by Age and Gender**

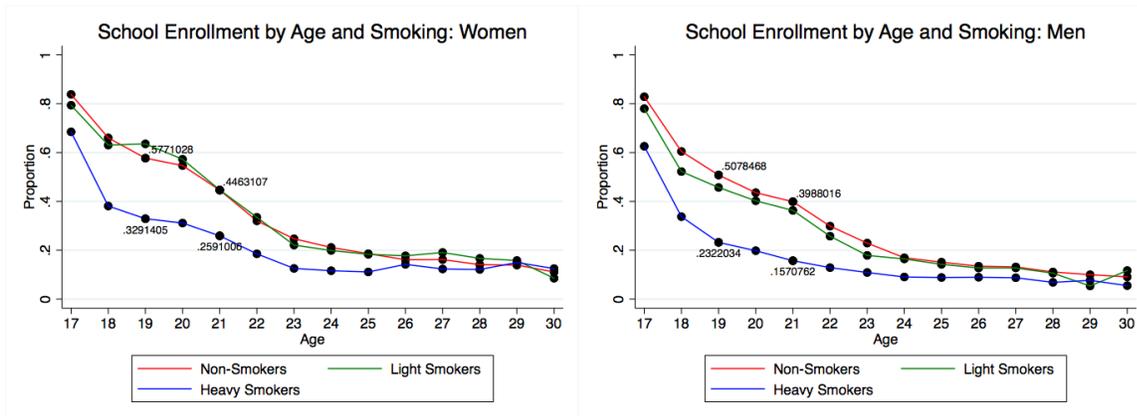


Note: “Log wage” refers to the natural logarithm of the hourly wage.

Source: Authors’ calculations using NLSY data

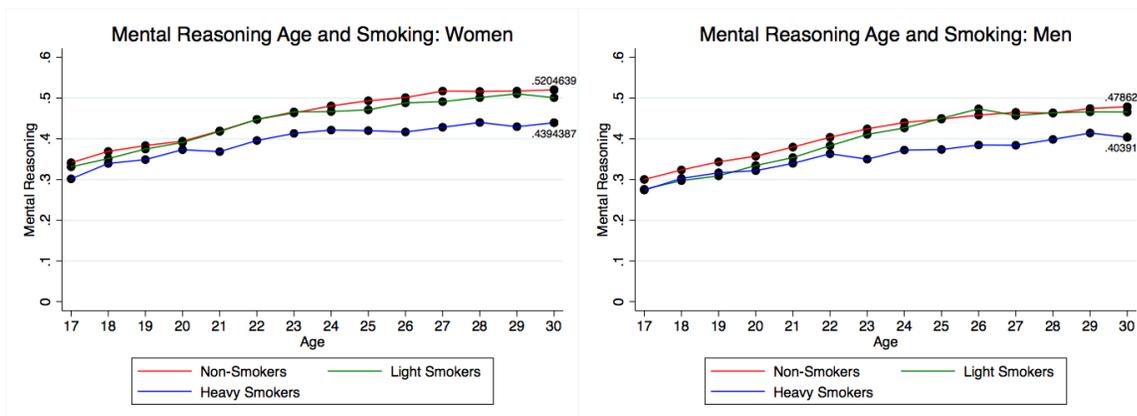
By the age of 30, the largest wage gap is between nonsmokers and heavy smokers. During the late teen years, male heavy smokers actually earn more their nonsmoking compatriots. A primary reason for this, as figure 2 shows, is that heavy smokers—both men and women—are less likely to attend college. School enrollment drops dramatically at age 17 for heavy smokers.

**Figure 2: School Enrollment by Age and Gender**

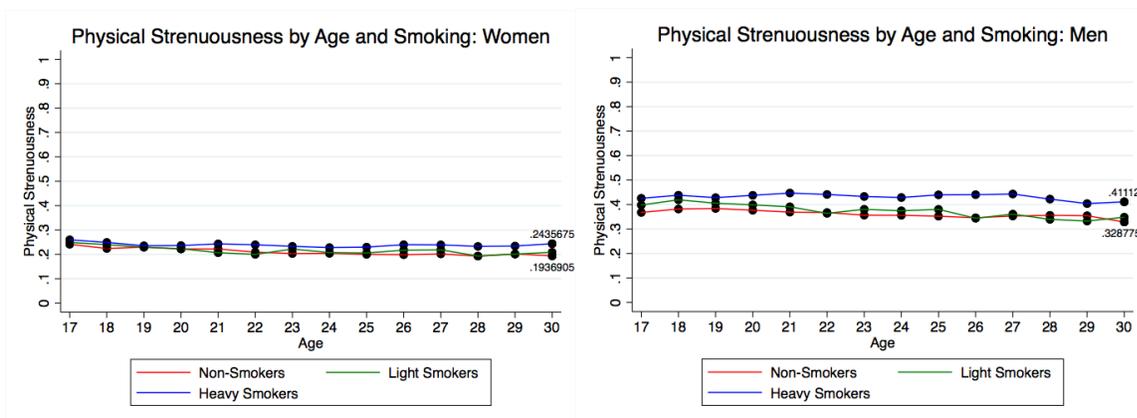


Note: Values are depicted for some points for perspective only.  
 Source: Authors' calculations using NLSY data

**Figure 3a: Log Wages for Mental Demands of Jobs, by Age and Gender**



**Figure 3b: Log Wages for Physical Demands of Jobs, by Age and Gender**

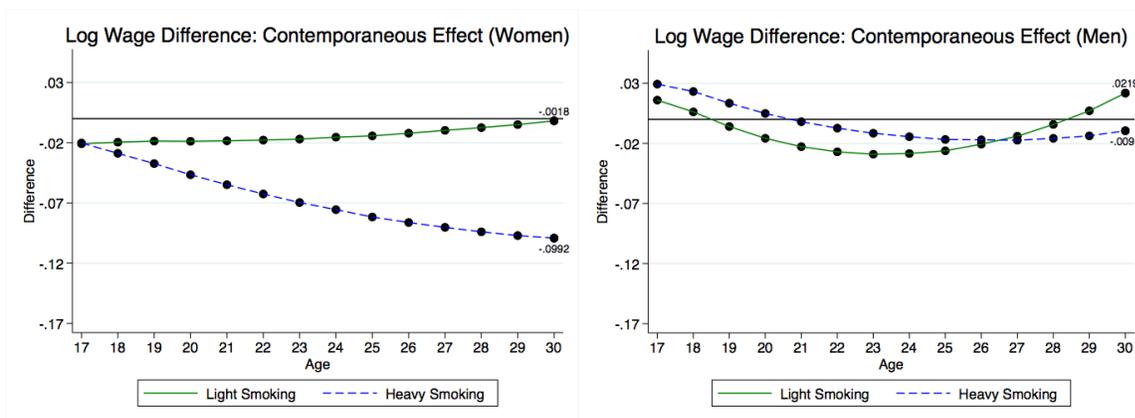


Note: "Log wage" refers to the natural logarithm of the hourly wage.  
 Source: Authors' calculations using NLSY data

Figures 3a and 3b illustrates that the wage gap between nonsmokers and heavy smokers looks very different among workers with mentally demanding versus physically demanding jobs. Whereas the wages of heavy smokers in mentally demanding jobs are about 7 to 8 percent lower than those of their nonsmoking coworkers, the wages of heavy smokers in physically demanding jobs are from 5 to 8 percent higher than those of their nonsmoking coworkers.

While the type of occupation has a relatively similar impact on the smoking wage penalty for men and women, the relative contribution of contemporaneous versus dynamic factors differs quite a bit by gender. The estimated total smoking wage gap is 14.8 percent for women and 9.3 percent for men. Figure 4 illustrates what portion of the total wage gap results from contemporaneous factors only—removing the relationships between early decisions related to smoking and education, smoking and occupational choice, and so on.

**Figure 4: Contemporaneous Smoking Wage Penalty by Smoking Intensity and Gender**



Note: "Log wage" refers to the natural logarithm of the hourly wage.

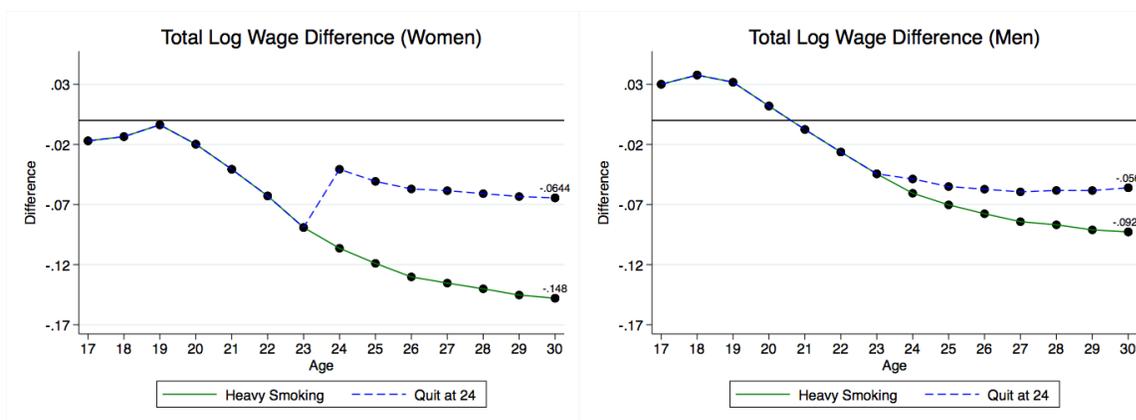
Source: Authors' calculations using NLSY data

From figure 4 we see that at age 30, the wage gap explained by contemporaneous factors only is a much larger share of the total gap for women (0.10/0.148) than for men (0.01/0.093). In other words, the gap for male smokers is driven much more by the dynamic decisions made over time related to education and occupational choice, whereas the gap for female smokers is determined more "on the spot" (that is, contemporaneously).

Since most of the smoking wage penalty for women is determined contemporaneously, going from smoking one day to not smoking the next (simply put, quitting smoking) will have a larger impact for women than for men. This impact can be seen in figure 5, where the heavy-smoker wage penalty for women immediately declines by more than half upon quitting smoking at age 24. The smoking wage

penalty for men only gradually declines, and then by only about a third. Further, as figure 5 shows, quitting smoking doesn't make the penalty completely disappear for either men or women—the vestigial penalty is the result of early decisions made about smoking, education, and occupation and their effects on wages years later.

**Figure 5: The Impact on the Wage Gap by Gender of Quitting Smoking at Age 24**



Note: “Log wage” refers to the natural logarithm of the hourly wage.

Source: Authors’ calculations using NLSY data

Our finding that smoking has a more immediate impact on wages for women than for comparable men is consistent with research by others showing that obesity has a more dramatic effect on women’s wages than on comparable men’s wages (Cawley 2013; Gilleskie et al. 2017; Mason 2012). All else equal, similar behaviors and appearance, if unrelated to productivity, should have similar effects on wages regardless of gender. These results suggest that women are judged more harshly and, thus, penalized through relatively lower wages for what employers might consider bad choices or a less desirable appearance, which could be classified as a form of discrimination against women. Getting a bigger boost for quitting smoking is of little consolation when the penalty is greater to begin with.

From a policy perspective, the most striking observation from our research is the importance of the relationship between the decision to start smoking and decisions about education and occupational choice in the determination of future wages. Between the age of 30 and retirement at age 65, the lifetime earnings of smokers will be roughly \$270,000 less for women and \$190,000 less for men than what nonsmokers would earn over those 35 years.<sup>1</sup>

<sup>1</sup> Lifetime earnings calculator: <https://www.calculators.org/savings/lifetime-earnings.php#:~:text=First%20enter%20your%20current%20age,and%20cost%20of%20living%20increases>.

However, it is important to keep in mind that although quitting won't erase all the consequences of an early decision to start smoking, it can put a dent in the penalty, especially for women. Furthermore, this research suggests that, beyond the obvious beneficial health-related impacts, promoting successful antismoking campaigns targeted at youth will have the added benefit of improved long-term labor market benefits. In other words, early intervention is crucial, especially for men.

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