

Is the Rise in Illicit Opioids Affecting Labor Supply and Disability Claiming Rates?

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Introduction

The opioid crisis in the United States is the worst drug overdose epidemic in the country's history and a national emergency. In 2017 alone, there were over 70,000 drug overdoses; almost 70% of these involved opioids (Scholl et al., 2019). While we often focus on the rate of fatal overdoses when discussing the opioid crisis, there is widespread interest in understanding its broader effects and there is evidence that it is permeating countless facets of individual, household, and national well-being. Policymakers and researchers have expressed considerable interest in evaluating the economic and labor supply consequences of the opioid crisis.¹

Furthering difficulties in quantifying the labor supply effects, the opioid crisis has evolved over time. Before 2010, the "first wave" was driven primarily by misuse of prescription opioids, such as OxyContin. In 2010, a pivotal transformation produced a heroin epidemic -- the second wave -- which transitioned into the third wave around 2013, an illicit fentanyl crisis. Recent research has suggested that this transformation from prescription to illicitly-produced opioids was driven by the reformulation of OxyContin. In 2010, Purdue Pharma introduced an abuse-deterrent version of OxyContin, replacing the original formulation. This replacement represented a substantial shock to the availability of abusable opioids as OxyContin was often the "drug of choice" for non-medical users (Cicero et al., 2005). The implications of this shock were substantial. Prior research has shown that states with higher rates of non-

¹ There have been Congressional hearings on the economic effects specifically: see <https://www.govinfo.gov/content/pkg/CHRG-115shrg26119/html/CHRG-115shrg26119.htm>, last accessed July 8, 2019.

medical use of OxyContin experienced disproportionate growth in heroin overdose rates (Alpert et al., 2018) and hepatitis C rates (Powell et al., 2019).

The wide-ranging effects of the opioid crisis, such as the implications on the labor market and social insurance programs, are only beginning to be understood. An emerging literature analyzes the effects of opioid availability and overprescribing on the labor market. Krueger (2017) suggests that the rise in opioid prescribing since 2000 can explain a large share of the decline in labor force participation among men over that time period. Aliprantis et al. (2019) adopt a similar empirical approach and conclude that 44% of the drop in male labor force participation between 2001 and 2015 can be attributed to the rise in opioid prescribing.

This developing literature measures opioid exposure in terms of geographic prescribing rates. In contrast, this paper studies the labor supply effects of the transition of the opioid crisis from prescription opioids to illicit opioids – heroin and fentanyl – which are not measured in prescriptions. This emphasis is likely more relevant to the current state of the epidemic and informs our knowledge about how we should expect these outcomes to evolve as heroin and illicit fentanyl continue to flood many local drug markets.

Methods

We constructed labor supply outcomes using the monthly Current Population Study (CPS), relying primarily on state-level measures of employment and labor force participation for 2001-2015. We select these years for consistency with the disability data source described below.

To construct state-level measures of disability claiming behavior, we used Social Security Administration (SSA) Fiscal Year Disability Claim Data. These variables are available for calendar years 2001-2015 at the annual level. We will study a range of outcomes. While disability applications and determinations can often take months and even years, the data benchmark each applicant to the *calendar* year in which he or she applied. Thus, when we study the fraction of applicants in a year receiving favorable determinations, this fraction is constructed by year of application, regardless of when the determination is made. This construction is fortunate because we are interested in how the pool of applicants changed post-reformulation.

To measure “exposure” to OxyContin reformulation, we use state-level non-medical use of OxyContin from the National Survey on Drug Use and Health (NSDUH). The survey provides information on “non-medical OxyContin use” within the past year as well as “non-medical pain reliever use.” We aggregate together the available pre-reformulation years (2004-2009).

We then study the relationship between OxyContin misuse and labor/disability outcomes over time in an event study framework:

$$(1) \quad Y_{st} = \alpha_s + \gamma_{rt} + \delta_t \times OxyRate_s^{Pre} + \theta_t \times PainRelieverRate_s^{Pre} + X'_{st}\varphi + \varepsilon_{st},$$

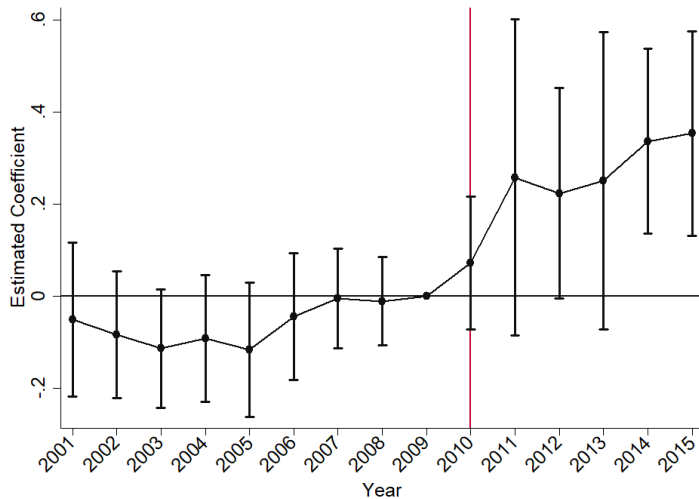
where Y_{st} is the labor supply or disability outcome in state s and year t ; $OxyRate_s^{Pre}$ represents the fixed OxyContin misuse rate in state s in the pre-reformulation period (2004-2009) and represents our measure of exposure to reformulation.

$PainRelieverRate_s^{Pre}$ represents the pain reliever misuse rate in state s in the pre-reformulation period. We trace out the δ_t estimates for our main results.

Results

We find little evidence of any effects of reformulation on traditional labor supply measures such as employment-to-population ratios or labor force participation. However, we find strong relationships with disability applications. Figure 1 shows these results. Before reformulation, there was little relationship between nonmedical OxyContin misuse and disability claiming rates. This changed dramatically after reformulation.

We observe similar effects for the fraction of eligible adults receiving favorable determinations, suggesting downstream implications on disability enrollment. Our estimates imply that a state with a standard deviation higher pre-reformulation non-medical OxyContin rate experienced a 5% increase in disability applicants and an 8% increase in favorable determinations after reformulation. As heroin and illicit fentanyl availability continues to grow, we should expect the economic costs of the opioid crisis to grow as well.



Pre-Period F-Statistic for 2006-2008 = 2.000

Post-Period F-Statistic for 2011-2015 = 3.032***

Figure 1: Non-Medical OxyContin Misuse Event Study Estimates for Percent Eligible Adults Applying for Disability

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