



## Deterability by age



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### ABSTRACT

The most effective use of law enforcement resources for reducing crime has generated significant attention across law enforcement agencies, federal, state, and local decision-making committees as well as many academic disciplines. One of the more spirited discussions revolves around law enforcement agents targeting criminal activity based on a suspect's race and age. While racial profiling has received considerable attention, discussions about age-based patrolling and age-graded penalties have received much less attention. In the current analysis, we test the response, by age, of speeding on roadways (a crime that is often considered to be linked to age) to decreases in the probability of being apprehended. We find that all drivers appear to quasi-uniformly increase their speed in response to the reduced chance of being apprehended. Additionally, more egregious and seasoned offenders tend to be more responsive to fluctuations in law enforcement presence.

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## 1. Introduction

There is a growing cost–benefit conversation about the best policy strategies to prevent crime (e.g. Cook, Ludwig, & McCrary, 2012; Donohue and Siegelman, 1998; Durlauf & Nagin, 2011). Part of this conversation focuses on identifying the best strategies for preventing crime by particular population sub-groups. This conversation mirrors developments in criminology, where the discussion has changed from a “what works” mentality to a “what works for whom” mentality (Cullen, 2005). One of the most meaningful sub-groups for this discussion is adolescents and young adults, who are responsible for a large percentage of overall crime. For example, people in the 15–24 age group account for 14% of the population but 40% of all arrests reported to the Uniform Crime Reporting system in 2009 (Crime in the United States, 2009, Table 38).

The desire to identify policies which might have a strong effect on youth and young adults is supported by lifecourse criminology's emphasis on age-graded theories of crime (Abbott, 2001; Elder, 1998; Sampson and Laub, 2005). In an age graded theory, factors like work and romantic relationships have different meanings and different consequences at different times in life. Research

in psychology and neuroscience also support the idea of “age-gradedness” with research that shows that adolescent and young adult brains are not fully formed. From this perspective, adolescents and young adults are literally processing information and making decisions in different ways (Steinberg, 2010). Some specific examples include the claims that youth may be more likely to discount the future, allow emotions to play a larger role in decisions or be more susceptible to peer pressure. (Coffman et al., 2010; Monahan, Steinberg, & Coffman, 2009; Steinberg et al., 2009).

These types of differences in decision making have very clear implications for deterrence. Individuals who discount the future heavily, or worse yet do not even consider the future, are less likely to be deterred (Paternoster & Pogarsky, 2009). Although some researchers have argued against severe penalties against youth on the grounds that their developmental immaturity makes them less responsible for their actions (Steinberg & Scott, 2003), the same developmental immaturity might also make punishment-heavy strategies ineffective or at least less effective for youth.

However, there is surprisingly little research on the differential impact of deterrent threats by age. A 1998 review of the general deterrence literature by Daniel Nagin (1998) identified only one deterrence study that disaggregated the deterrent effect by age (Sampson & Cohen, 1988). Despite Nagin's call that such efforts become standard in deterrence studies (Nagin, 1998: 32), we are

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aware of few additional deterrence studies that have disaggregated the deterrent effect of a policy change by age.<sup>1</sup>

This void does not exist because of indifference to the idea. The study of deterrence has unique challenges due to the simultaneity between enforcement levels and crime at both the individual and aggregate level (Cook, 1980; Nagin, 1998). This character of deterrence research limits the credible causal study of the deterrent threats to situations where the researcher can claim plausible exogeneity in the threat of enforcement. These rigorous studies are relatively uncommon (Durlauf & Nagin, 2011). Within this small subset of plausible studies, some of the policies looked at by researchers are age-specific, like the change from the juvenile to the adult criminal justice system (Hjalmarsson, 2009; Lee & McCrary, 2009; Levitt, 1998) or the change in the drinking age (Carpenter, 2008).<sup>2</sup> As a result, comparisons of effectiveness across age groups are not possible. Even when the policy affects all age groups, like policing levels, the data may not support breakdowns by age. For example, most aggregate studies that look at the impact of changes in policing use crimes reported to the police as the outcome variable (Di Tella & Schargrodsky, 2004; Klick & Tabarrok, 2005; Shi, 2009). Offenses are used instead of arrests because of legitimate concerns about capturing changes in the behavior of the police, rather than changes in the behavior of the individuals. In addition, arrest data is considered more problematic than offense data. Yet, while age is available in arrest data, it is not available in offense data.

In this paper, we explicitly study the differential impact of the speed of a citation by age due to an exogenous change in the threat of citations for speeding in Oregon. DeAngelo and Hansen (2010) demonstrate how the budget crisis in Oregon led to a 35% reduction in the size of the state police, and a corresponding increase in speed and accidents on Oregon roadways.<sup>3</sup> In this paper, we will focus on data from individual citations from the state police in Oregon, in which the age of the driver is recorded. And, rather than focus on the age distribution of the citations solely on the existence of a citation, we focus on the speed of the cited driver, as a function of the posted speed limit. Not surprisingly, given the earlier results from DeAngelo and Hansen (2010), we find that the average speed of a cited driver increases after the layoffs. We also find that younger drivers who are cited tend to be driving faster than older cited drivers. When we initially examine the driving response to changes in law enforcement presence, we find almost no age-specific response to the layoff. However, when we examine the data more closely, we find that certain subgroups respond to the reduction in law enforcement. Most notably, more experienced, older speeders respond by increasing their speeds in the aftermath of the layoff.

We acknowledge that using citation data, rather than an outside source of speed data (which is not available by age), creates concerns about changes in police behavior that might be misinterpreted as changes in individual behavior. However, we believe that speed citation data has advantages relative to raw arrest data. Most notably, traffic crimes are by far more frequent than more “serious” crime. In addition, the enforcement of traffic related crimes promotes a large positive externality of considerably reducing traffic related fatalities, which account for 750,000–1,180,000 fatalities each year (Peden et al., 2004),

**Table 1**  
Schedule of budget cuts (in millions of dollars).

Agency	Biennium budget cut
K-12 Education	101.18
Community colleges	14.91
Higher education	24.50
Prisons	19.17
Oregon State Police	12.2
Oregon Youth Authority	8.52
Medical assistance programs	23.43
Programs for seniors and the disabled	23.43
Services for the developmentally disabled	12.78
Services for children and families	11.72

Sources: Oregon State Police budget information acquired from the 2003 to 2005 legislatively approved budget. Other budget information was obtained from *House Bill 5100*.

Table 1 details the budget cuts that Oregon faced as a result of the failure to pass Measure 28. While voters were required to approve or reject an income tax increase and did not have the ability to line item veto portions of the budget cuts, we provide this table in order to show that the only budget cuts that appear to impact whether or not a driver is apprehended is the reduction in budget to the Oregon State Police.

whereas intentional homicides account for 468,000 fatalities per year (UNODC, 2010). The examination of more serious crimes (e.g. homicide, robbery, drugs) also convolutes the examination of the effect of age on deterrence, since most serious crimes result in incarceration. Thus, we cannot disentangle the impact of simply being older versus changes in the expected cost of punishment on the propensity to commit a proscribed activity. Lastly, the examination of speed related citations is a measure of egregiousness that is easily measured and verified. We proceed in the next section by providing background on the employment situation in Oregon.

## 2. Background

The state budget in Oregon has faced considerable pressure over the last decade. Oregonians passed *Measure 50* in 1997 that effectively limited the state legislature’s ability to change the tax rate without requiring a vote of approval from the citizens of Oregon. The inability of the state government to increase the income tax rate resulted in a sizeable budget deficit of \$385.8 million, which was approximately 20.4–27.2 percent of the state budget in 2003.<sup>4</sup> In order to reduce the deficit and because the state already had almost \$5 billion dollars in obligation bonds issued, the state had two choices: increase the state income tax or cut spending on public services.

As discussed in DeAngelo and Hansen (2010), *House Bill 5100* was approved by Governor Kulongoski, which specified budget cuts to several government agencies should *Measure 28* not be approved. Table 1 is replicated from DeAngelo and Hansen (2010) and details the budget cuts that would result from the implementation of *House Bill 5100*. In short, *Measure 28* would have approved an income tax rate increase that would have offset the budget cuts that would be experienced by state agencies. In a record turnout to the polls, *Measure 28* failed to be passed on January 28, 2003. Four days later, the budget cuts set forward in *House Bill 5100* (and displayed in Table 1) were carried out, resulting in the firing of 117 of the 354 troopers that were employed at the time.<sup>5</sup> It is this reduction in the presence of law enforcement that we will exploit when examining

<sup>1</sup> For an exception, see Drago et al. (2009). They found that the threat of longer prison sentences deterred all age groups of ex-offenders in a similar way. However, the youngest age group in this study are those 32 and under.

<sup>2</sup> Some of the policies are not age specific, but only affect older offender by construction. For example, the three strike law in CA (Helland & Tabarrok, 2007) or the prison release in Italy (Drago et al., 2009) and France (Maurin & Ourr, 2009).

<sup>3</sup> The use of changes in the size of the police force (due to grants, budget cuts, and the like) to examine the impact on crime has become commonplace (see Evans & Owens, 2007; Levitt, 1997).

<sup>4</sup> See <http://www.oregon.gov/DAS/BAM/docs/Capital.Investment/BondingPresentation2007Legislature.pdf?ga=t>.

<sup>5</sup> For a detailed discussion of the changes in Oregon’s state budget as well as the nature of the layoff with regards which officers were laid off, see DeAngelo and Hansen (2010). For the purposes of this analysis it is most important to note that layoffs were based exclusively on seniority.

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