



## Why do kids get into trouble on school days?

Stephen B. Billings<sup>a,\*</sup>, David C. Phillips<sup>b</sup>

<sup>a</sup> Department of Finance, University of Colorado-Boulder, United States

<sup>b</sup> Wilson-Sheehan Lab for Economic Opportunities, Department of Economics, University of Notre Dame, United States



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### ABSTRACT

Previous literature highlights a robust relationship between schools and longer term criminal outcomes. The research presented here examines the short term effects of school being in-session on crime. We begin by confirming the findings of Jacob and Lefgren (2003) that teacher in-service days lead to a reduction in violent crime, consistent with a role for social interactions in school. We extend this result by showing that schools populated with more high crime risk students have larger decreases in crime on teacher in-service days but that this effect is reversed for schools with mostly low crime risk students. These results provide evidence that concentrating high crime risk students into particular schools increases local crime.

### 1. Introduction

The presence and variation in crime across urban neighborhoods is often attributed to such diverse factors as police enforcement, lack of legal employment opportunities and the presence of social environments that lower the cost of crime. Numerous policy attempts to improve criminal justice procedures and provide better employment opportunities have not made large impacts on neighborhoods with persistently high levels of crime. Given the challenges in addressing this spatial inequality in crime, a number of policies have begun to leverage the role of social influences on criminal decisions. As discussed by Glaeser et al. (1996), patterns of crime across neighborhoods and over time display strong evidence of social interactions. Given the role of public schools in grouping kids together, school assignment policies have an important role in facilitating social influences on crime. The common policy of neighborhood assignment to schools generates a strong link between school interactions and neighborhood crime. Therefore, policies that impact school assignment or even school attendance calendars may have importance roles in addressing spatial inequality in crime.

Schools provide two distinct mechanisms for affecting juvenile crime. Compulsory schooling is a form of incapacitation for juveniles that both educates and provides activities for otherwise 'idle hands'. This incapacitation effect is coupled with social interactions that often form due to relationships created during school. Decoupling the effects of incapacitation and social interactions due to schools is challenging, and most of our understanding of school social interactions and crime is based on longer-term effects of school peers on adult crime (e.g.

Cullen et al., 2006; Deming, 2011; Hjalmarsson et al., 2015; Billings et al., 2014, 2016). In contrast, our understanding of incapacitation is primarily based on non-school, limited interaction settings such as movies or video games where Dahl and DellaVigna (2009) and Cunningham et al. (2016) show that the release of popular movies or video games keeps juveniles occupied and leads to a decrease or no effect on crime.

Most scholars find a negative relationship between schools and crime with most of this research focusing on school peer quality. Cullen et al. (2006) and Deming (2011) show that kids assigned to a better school under school choice lotteries are less likely to be arrested as adults. This finding is confirmed in different contexts with Billings et al. (2014) and Billings et al. (2016) showing that school peer composition matters for offending and direct peer interactions. Some longer-term studies support the role of incapacitation. Using variation in the length of school days, Berthelon and Kruger (2011) shows that longer school days decrease adult crime. This effect is taken as an incapacitation effect, since a larger dosage of peer interaction due to a prolonged school day would increase any peer effects in the opposite direction. A number of other papers show the positive effects on staying in school longer on crime which may highlight benefits due to incapacitation.<sup>1</sup>

Other scholars confirm or suggest a role for peers and crime outside schools. Galiani et al. (2011) show a positive relationships between military service and later crime which may be a result of negative peer effects in the military. Gelber et al. (2016) find a positive effect of youth employment programs in decreasing later crime with peers being one of the underlying mechanisms. Additionally, Bayer et al. (2009) show a large role of peer effects on recidivism due to juvenile incarceration. Almost all of the

\* Corresponding author.

E-mail addresses: [stephen.billings@colorado.edu](mailto:stephen.billings@colorado.edu) (S.B. Billings), [David.Phillips.184@nd.edu](mailto:David.Phillips.184@nd.edu) (D.C. Phillips).

<sup>1</sup> e.g. Cook and Kang et al., 2016; Hjalmarsson et al., 2015; Lochner and Moretti, 2004

literature on schools and crime focuses on longer-term criminal outcomes, which are often a result of years together in school as well as multiple social interactions. These long-term impacts are important for policies that relate to school assignment and school resources.

In contrast only a few studies examine the short-term effects of school on crime. In its simplest form, short term effects could be staying off the street during school hours or hanging out with school friends after school. [Jacob and Lefgren \(2003\)](#) shows that in-service (teacher work) days lead to less violent crime and more property crime with most of the effects due to less after school violent crime.<sup>2</sup> This finding of less school leading to less violent crime dismisses a strong role for incapacitation, while the finding of greater property crime is suggestive of some benefits due to incapacitation. [Luallen \(2006\)](#) provides support for the results in [Jacob and Lefgren \(2003\)](#) by showing teacher strikes and the associated canceling of school leads to decreases in violent crime and increases in property crimes. [Cuellar and Markowitz \(2015\)](#) finds that kids subject to out-of-school suspension have twice the rate of offending relative to kids with in-school suspension.

This literature provides strong evidence for the short-term effects of schools on crime, but more analysis is needed to understand temporal and spatial heterogeneity in this relationship. Do certain neighborhoods experience different effects from variation in school days? How does the timing of crime change in response to having the day off from school? If juveniles are not in school, they are likely in home neighborhoods thus potentially changing peer concentration and the subsequent nature of peer effects. Since policy recommendations are quite different for the short-term effects of schools on crime, additional evidence is needed to better tailor policies such as after-school programs, police deployment, and school calendar configurations (length of day, number of school days) to minimize crime outcomes.

The research presented here first applies the model of [Jacob and Lefgren \(2003\)](#) to a different dataset and study area and confirms most of their results. Our contribution then lies in expanding this model of exogenous variation in schooling due to teacher in-service days to examine the composition of students by neighborhood and schools, the location of crime, and changes in crime clearance on in-service days. These additional elements provide new insight into the role of schools. Specifically, heterogeneity in the response of crime to school closures highlights the strong role of schools on increasing violent crime in neighborhoods with large shares of high crime risk students. Consistent with [Billings et al. \(2016\)](#), this result highlights a role of both schools and neighborhoods among likely criminals for which schools provide a means to facilitate social interaction. Conversely, schools populated by low crime risk students decrease crime levels, suggesting a role for positive peer effects on decreasing crime. The timing of crime effects confirms that the role of schools is primarily through facilitating social interactions during school which spillover into after-school hours. Finally, we examine crime clearance on in-service days, and find no effects once we control for the changing composition of crime types, suggesting police adapt to changing activity patterns of students.

## 2. Data

Since we want to extend existing analysis of the short-term effects of school on crime, we need more spatially detailed data than is provided in datasets such as the National Incident-Based Reporting System. We therefore turn to the administrative set of a large urban policing district located in Charlotte, NC which contains a population of around 1 million people and receives almost 100,000 reported crimes a year. Our main dataset is based on reported crime records from the Charlotte-Mecklenburg Police Department (CMPD), which maintains an extensive database on reported crimes. Similar in nature to the

National Incident-Based Reporting System data, this dataset contains detailed information about the time, day and nature of each reported crime in our study area of Charlotte which encompasses almost all of Mecklenburg County, NC. The main advantage of this data is two additional features. First, we have the exact spatial coordinates for the reported location of each crime. Second, we are able to determine if a crime led to an arrest or was dismissed as a non-criminal activity. We incorporate data from 1998-2011 which corresponds with the 1998/1999 through 2010/2011 school years. We start with a total of 1,479,910 reported crimes into our analysis and use geographical information to assign reported crime to 372 Census Block Groups. After removing any observations for incidents that are noncriminal, suicide/accidental death, missing person or runaway, or contained missing information we had 1,408,265 observations. Consistent with the literature, we classify crime by FBI crime categories and focus on indexed property and violent crimes.

Since our reported crimes data does not contain information on offenders, we also incorporate data on arrests of juveniles aged 16–18. We take an extract from the Mecklenburg County Sheriff's Department which serves the same jurisdiction as the CMPD. This dataset will provide fewer events but is better suited to identify juvenile criminal activity. Results using reported crime and juvenile arrests are similar and most of our results focus on reported crimes since they capture more criminal events and are not as heavily influenced by arrest rates.

Our final source of data is school administrative records for the schools years of 1999-2011 from Charlotte-Mecklenburg Schools (CMS) for all individual students that attended public school in the county. The data include student gender, race, yearly end-of-grade (EOG) test scores, days absent and days suspended from school. The EOG tests are standardized and administered across the state of North Carolina from 1993 to the present. We link CMS data to arrest registry data for Mecklenburg County from 1999 to 2011 using first and last name as well as date of birth. The arrest data includes individual names and identifiers, and information on the number and nature of charges. While this data allow us to observe the future criminal behavior of CMS students, regardless of whether they transfer or drop out of school, they are limited to crimes committed within Mecklenburg County.

We use the CMS data to determine the number of students living in a neighborhood and also match school and arrest data to determine predicted arrest risk factors for CMS students. In order to generate predicted arrest probabilities, we estimate a first stage model of an individual ever being arrested between the ages of 16 and 21 on covariates for gender, race, math and reading test scores in 5th grade, days absent and days suspended from school in 5th grade. We also include year fixed effects and CBG neighborhood fixed effects. We limit the sample used to estimate the coefficients that explain arrest probabilities to students that we observe at age 14 between the 1999–2001 school years to avoid any confounding effects from the large change in school attendance boundaries that occurred in 2003. We then use these coefficients to generate predicted arrest probabilities for all students in the 1999–2011 school years and classify any student with a predicted arrest probability in the top quintile as 'very high risk'.

[Table 1](#) provides descriptive statistics for our panel dataset of daily observations for each CBG neighborhood. Our data averages about 0.65 incidents and 0.014 juvenile arrests per day for our 372 CBG neighborhoods. About two-thirds of reported crimes are classified as property crimes while about one-sixth are violent crimes. For different time blocks of a day, we see reported crimes evenly distributed across daytime hours as well as afternoon/evening hours. Not surprisingly, reported crimes are less frequent during the early morning hours.

## 3. Empirical framework

Our empirical strategy exploits teacher in-service work days to create quasi-experimental variation in whether school is in session. We claim that the Charlotte-Mecklenburg school system assigns in-service

<sup>2</sup> The term in-service and teacher work day are synonymous and both indicate weekdays during the school year set aside for teacher planning and entail teachers going to the school, but no students attend school for the day.

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