The Impact of Paydays on Violent and Sexual Crime Rates

Mikkel Mertz

THE ROCKWOOL FOUNDATION
RESEARCH

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Abstract

I show that rates of sexual and violent crimes increase by 77% immediately following paydays of wage earners and public transfer recipients. Additional analysis identifies increased alcohol consumption, substance abuse, and heightened partying behavior as important mechanisms. The concentration of crime following paydays leads to lower crime clearance rates, indicating strain on police resources. Implementing alternative payment schedules that distribute payments across different segments of the population at varying times of the month could smooth monthly crime cycles, reduce pressure on police, and potentially lower overall crime rates.

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1 Introduction

Crime imposes large costs on society, including costs to the criminal justice system and harm to victims (Anderson, 1999). Violent and sexual crimes, in particular, are often highlighted as the most costly crime types (Cohen et al., 2004; Bindler and Ketel, 2022). Understanding the determinants of crime is crucial to effectively reduce it. Existing studies show that anticipated income shocks, such as monthly cash transfers or in-kind benefits, can decrease the propensity of recipients to commit economically motivated crimes by alleviating financial constraints (e.g., Foley, 2011; Carr and Packham, 2019). Yet, such anticipated income shocks may also have unintended consequences, including increased consumption of alcohol and other temptation goods, as well as substance abuse (e.g., Riddell and Riddell, 2006; Dobkin and Puller, 2007) – all of which have been shown to causally increase rates of violent and sexual crimes (e.g., Carpenter, 2005; Carpenter and Dobkin, 2015; Luca et al., 2015; Lindo et al., 2018; Bondurant et al., 2018; Barron et al., 2024). Despite these potential mechanisms, little is known about the effect of anticipated income shocks on violent and sexual crime rates.

This paper investigates how anticipated income shocks, in the form of paydays, affect crime rates, with a focus on their impact on violent and sexual crime levels and the mechanisms driving this response.

To address these questions, I use full-population administrative data from Denmark. A key feature of this data is information from police registers on all reported crimes, which can be linked to alleged offenders if a charge is made.[1] I estimate the effect of paydays on criminal activity using an event study design that exploits variation in the timing of paydays, induced by the majority of wage earners and public transfer recipients always being paid on the last workday of the month.[2] The key identifying assumption is that conditional on day of the week, special day, month and year fixed effects, any remaining variation in the crime rate is due to the time passed since the last payday.[3]

I document a strong effect of paydays on the rate of violent and sexual crimes. Specifically, I show that the number of reported violent and sexual crimes increases by 77% on the day following paydays, and remains elevated for three days. This increase reflects both large increases in less severe crime types such as indecent behavior (189%) following paydays, but also large increases in the number of reported cases of serious violence (44%) and rape

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[1]A crime can be linked to an individual if a charge is made at any point in the future. This is a major advantage relative to most existing work relying on either arrest or conviction data.

[2]Around 80% of wage earners are paid monthly on the last workday of the month. Similarly most forms of public transfers such as social assistance, publicly provided pensions, and study grants are paid on the last workday of the month.

[3]A similar strategy has been used to study mortality around payment dates in Evans and Moore (2012) and to study prescription medicine purchasing behavior around cash transfers (Lyngse, 2020; Gross et al., 2022).

(231%). Hence, the increased rates of violent and sexual crimes following paydays do not simply reflect increases in petty crimes, but increases in crime types that are likely to have severe negative consequences to victims.

One potential mechanism behind the increased rate of violent and sex crimes following paydays is that paydays change the activities and consumption patterns of recipients, and in particular their alcohol consumption and substance abuse.[4] I investigate the importance of this mechanism, by studying how proxies for alcohol consumption (charges for driving under the influence and hospital contacts related to alcohol) and substance abuse (reported cases relating to possession of illegal drugs and hospital contacts related to substance abuse) change around paydays. Results show that both alcohol consumption and substance abuse increase following paydays. Specifically, the number of individuals caught driving under the influence of alcohol increases by 14% , and the number of individuals caught in the possession of illegal drugs increases by 41% following paydays. Together, these results suggest that paydays increase the number of violent and sex crimes, at least in part, by increasing alcohol and substance abuse behavior of recipients.

The changes in alcohol and substance abuse behavior following paydays could reflect an income effect for liquidity-constrained individuals. Specifically, the payday and associated change in liquidity may increase the consumption of normal goods, including drugs and alcohol. Alternatively, if paydays are anticipated and salient, they may generate a "party effect" similar to those documented for football game days (Rees and Schnepel, 2009; Lindo et al., 2018). When investigating which demographic groups contribute to the increased rates of violent and sexual crimes following paydays, I show that the increase in criminal activity occurs across all groups. Specifically, I show that both social assistance recipients, wage earners and the self-employed, recipients of other public transfers, individuals with high and low levels of education, men and women, and individuals with and without a criminal history contribute to the rise in violent and sexual crimes following paydays. These results indicate the breadth of the phenomenon, and that explanations behind it are unlikely to be linked solely to changes in liquidity for low-income groups. Instead, these results suggest that paydays increase individuals' propensity to go out on the same day, and that the increased number of violent and sexual crimes reflects an increased concentration of individuals in the nightlife which increase the number of volatile social interactions as found in schools (Jacob and Lefgren, 2003).

The concentration of violent and sexual crimes, but also the rise in substance abuse and

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[4]Existing research shows that anticipated income transfers increase recipients' propensity to go out (Stephens Jr, 2003), their calorie intake (Shapiro, 2005), their prescription medicine purchasing patterns (Lyngse, 2020; Gross et al., 2022) and their substance abuse behavior (Riddell and Riddell, 2006; Dobkin and Puller, 2007).

alcohol related hospital contacts on paydays may put stress on both police and hospitals constrained by fixed resources. Indeed, I show that the crime clearance rate decreases for property crimes following paydays, and that the number of hospitalizations increases dramatically.

These findings suggest that it may be beneficial to consider alternative payment schedules, that pay different segments of the population at different times. By spreading out partying behavior over several paydays, such schedules will likely result in smaller increases in violent and sexual crime levels following each individual payday, and lead to smoother monthly crime and hospital admission cycles. This could alleviate strain on hospitals and police forces, and improve crime clearance rates. Because the number of potential volatile social interactions rises quadratically with the number of individuals who are out at the same time, such staggered paydays may not just smooth monthly crime cycles but also reduce overall levels of violent and sexual crime.

By studying criminal activity around paydays, this paper is most closely related to the literature studying the short-term relationship between public transfers and crime (Foley, 2011; Carr and Packham, 2019; Watson et al., 2020). While existing studies show that welfare benefit payments decrease the propensity to commit economically motivated crimes, I show that violent and sexual crime rates increase following paydays, and that this response is not limited to welfare benefit recipients. This response is of particular concern given the high costs to society and victims associated with these crime types (Cohen et al., 2004; Bindler and Ketel, 2022).

This paper is also closely related to existing studies of the relationship between anticipated income shocks, mortality, and in particular substance abuse related mortality (Dobkin and Puller, 2007; Evans and Moore, 2011, 2012; Andersson et al., 2015). In studying related, but less extreme measures of substance abuse and alcohol consumption than mortality, such as hospitalizations and crime, this study gives a more comprehensive understanding of the relationship between anticipated income shocks, substance abuse and alcohol consumption. Furthermore, by highlighting increased alcohol consumption, substance abuse and partying behavior as potential mechanisms behind the increased violent and sexual crime rates following payments, this paper is also closely related to the literature studying the relationship between these factors and criminal behavior (Carpenter, 2005; Carpenter and Dobkin, 2015; Luca et al., 2015; Lindo et al., 2018; Bondurant et al., 2018; Barron et al., 2024).

More broadly, this paper is related to the literature studying how various factors influence violent and sexual crime rates. Existing studies, for instance, document that violent behavior can be triggered by emotions (Card and Dahl, 2011), that a lack of access to mental health care (Jácome, 2020) can increase individuals propensity to commit violence, and that factors

such as summer jobs (Heller, 2014; Davis and Heller, 2020) and cognitive behavioral therapy (Heller et al., 2013; Blattman et al., 2017, 2023) can lead to both short and long run reductions in the propensity to commit violence. The results presented in this paper add to these findings by showing that paydays can increase the number of violent and sexual crimes by increasing partying behavior.

The remainder of this paper is structured as follows. Section 2 introduces the Danish context and data. Section 3 describes the event study specification used to estimate how crime rates evolve around paydays. Section 4 describes the results, and Section 5 concludes.

2 Danish Context and Data

2.1 Danish Context

In Denmark most public transfers and wage earnings are paid into recipients' bank account on the last workday of the month. Specifically, while around 80% off all wage earners receive their wage on the last workday of the month, more than 90% of public transfer recipients receive their transfer on this day, with both social assistance, unemployment insurance, publicly provided pension and study grants following this payment schedule. Social assistance act as the final safety net for the working age population (age 18-64). To qualify for social assistance, applicants must experience a change in economic circumstances, such as job loss or sickness, that leaves them unable to support themselves and their family. Furthermore, recipients should be unable to acquire support via other types of transfers, such as unemployment insurance. Consequently, social assistance recipients are likely to be the most liquidity constrained group.

That payments always fall on the last workday of the month creates variation in the type of day paydays falls on, which I use to identify payday effects on crime outcomes. Figure 1 shows the distribution of the 192 paydays between 2003 and 2018 by the day of the week the payment falls. Pay dates most frequently fall on a Friday (42%), but are otherwise evenly distributed across the remaining work days.

2.2 Data

My analysis is based on administrative registers collected, and made available for research purposes by Statistics Denmark. The main data sources for this study are police registers, which includes detailed information on all reported crimes in Denmark from 1990 onward.

2.2.1 Sample

For each of the 192 paydays occurring between 2003 and 2018 (inclusive), I construct a 28 day event period running from 14 days before to 13 days after the pay date. This leaves me with a panel that is balanced in days since the payment, to which I refer as event time, such that, event time zero refers to the day of the payment.

2.2.2 Outcomes

Measures of criminal activity: For all reported crimes, the police data includes information on the type of reported crime, the date the crime is committed and the time of the day the crime is committed. For each of the 28 days surrounding paydays, I add information on the number of reported crimes committed that day. Furthermore, I use information on the type of crime committed to identify the number of reported violent and sexual crimes, which is the main outcome of interest.

I also use the police data to construct measures of the number of reported crimes associated with drug possession and the number of individuals charged with driving under the influence of alcohol as proxies for substance abuse and alcohol consumption, respectively, and for partying behavior more generally.

Measures of hospital contacts: Increases to criminal activity and increased partying behavior more broadly may put stress on hospitals with fixed resources. To investigate this further, I use hospital registers with information on the date and the primary diagnosis of each hospital contact. The diagnosis is made by a hospital doctor, suggesting that the assessment is likely to be very credible. I use this information to construct measures of the daily number of contacts with a Danish hospital (in- and outpatient). Specifically, I construct measures of hospital contacts related to physical injuries, substance abuse, and alcohol consumption.[5] Changes to the number of hospital contacts due to physical injuries around paydays is likely directly related to changes in the number of reported violent and sex crimes. In contrast, hospital contacts due to substance abuse and alcohol consumption are meant as proxies for alcohol consumption, substance abuse and partying behavior more broadly.

Offender characteristics: A key feature of the police data is the inclusion of a unique case number, which enables the tracking of a reported crime through the judicial process. If

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[5]The register classifies all diagnoses according to the World Health Organization (WHO)'s International Classification of Diseases and Related Health Problems (ICD-10). I follow the existing literature and classify the following ICD-10 codes as related to substance abuse: F11-F19; X40-X49; X60-X64; Y10-Y16; T36-T50 (see e.g. Evans and Moore, 2012); the following ICD-10 codes as related to alcohol consumption: F100-F109; G621; G312; G721; I426; K292; K700-K709; K852; K860; Q860; P043; X45, X65; Y15 (see e.g. Carpenter and Dobkin, 2009); and the following ICD-10 codes as related to physical injuries: DS0-DS9; DT0-DT2; DT31-DT32; DT33-DT35.

a crime results in charges, a unique individual identifier for each alleged perpetrator allows me to link additional information about the perpetrator from other administrative data sources. I use this information to distinguish between different offender groups and examine how various segments of the population contribute to changes in criminal activity around paydays. Because the age of criminal responsibility in Denmark is 15, I restrict these groups to individuals who are at least 15 years old.

I use annual income data to classify the population into main income groups based on their primary income source in a year. These groups include wage earners and the self-employed, social assistance recipients, unemployment insurance recipients, study grant recipients, and others.[6]

Furthermore, I separate the population by gender, highest level of completed education at the beginning of the year (no more than compulsory schooling, upper-secondary education, vocational training, or higher education), and prior criminal behavior. Prior criminal behavior is categorized as individuals charged with having committed a crime in the last year, within 1-2 years, more than 2 years ago, and individuals with no prior charges.[7]

For each of these segments of the population, I create measures of the total number of criminal charges they face for crimes committed each day during the sample period. This measure reflects each group's total contribution to overall crime levels, capturing both the size of the group and its crime propensity. To isolate crime propensity, I also construct group specific crime rates reflecting the number charges faced per 100,000 individuals within each group.

2.3 Descriptive Statistics

Table 1 presents descriptive statistics for the daily number of reported violent and sexual crimes over the sample period. On average, 73.4 violent and sexual crimes are reported daily (Column 1), corresponding to 1.6 reported crimes per 100,000 individual in the population (Column 2). Among these reported crimes, 49.6 (68%) result in at least one charge, and a total of 54.4 charges on average. The table reveals considerable heterogeneity in crime rates across demographic groups, with low resource individuals exhibiting the highest crime rates. Crime rates are for instance higher for social assistance recipients (8.4 per 100,000), individuals with no more than compulsory education (2.5 per 100,000), and those who have been charged with committing a crime within the last year (42.1 per 100,000). As is seen in

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[6]The group of others includes those with no positive income in a year, as well as those whose main source of income was wealth income or income from minor public benefits such as housing assistance.

[7]Past criminal behavior is measured from 14 days prior to each payday. This ensures that all groups can potentially commit crime in the full event window studied around each payday.

most settings men are much more crime prone than women.

3   Empirical Strategy

To estimate the impact of paydays on criminal activity in the surrounding period, I use an event study specification as indicated in Equation 1.[8]

$$C_{t,k} = \sum_{k \neq -14, k=-13}^{13} \delta_k \cdot D_{t,k} + f_{dow(t,k)} + f_{y(t,k)} + f_{m(t,k)} + f_{sd(t,k)} + e_{t,k}. \tag{1}$$

Here $C_{t,k}$ is the number of reported violent and sexual crimes, k days after the payday at time t (or other outcomes). The $D_{t,k}$'s are event time dummies equal to one, k days after the payday at time t, where $k = 0$. I omit the event time dummy for $k = -14$ from the regression, such that, all δ_k's are measured relative to 14 days prior to the payday. Finally, $f_{dow(t,k)}$, $f_{m(t,k)}$, $f_{y(t,k)}$, and $f_{sd(t,k)}$ are day of the week, month of the year, year and special day fixed effects, respectively.[9] These fixed effects control for changes in criminal activity due to the day of the week, such as criminal activity being different on weekends (see Appendix Figure A.1), changes in criminal activity due to the month of the year, such as crime patterns being different in the summer months when temperatures are high (Heilmann et al., 2021), changes in criminal activity due to the year of observation, such as criminal activity changing in recessions (Bell et al., 2018), and changes in criminal activity due to holidays and other special days, such as crime being different on New Years Eve.

The key parameters of interest are the δ_k's. The δ_k captures the average number of reported violent and sexual crimes k days after (or before) paydays, relative to the average number of reported violent and sexual crimes 14 days prior to paydays. This specification exploits variation in the timing of the exact date of the payday introduced by variation in what constitutes the last workday of the month.

The key identifying assumptions for δ_k to identify the causal effect of paydays on criminal activity is that, once I condition out daily criminal activity related to the type of day, month and year of a given date, then any deviations from that predicted value is due to the relative distance to the payday and, that there are no simultaneous shocks that impact criminal

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[8]This empirical strategy is similar to that used in Evans and Moore (2012) to investigate mortality patterns around the first of the month in the US, by Lyngse (2020) to study prescription medicine purchasing behavior around welfare benefits pay dates in Denmark, and to study the healthcare consumption among medicare recipients (Gross et al., 2022).

[9]I include separate indicators for the following special days: New Years Eve, New Years Day, Palm Sunday, Maundry Thursday, Good Friday, Easter Sunday, Easter Monday, Prayer day, May first, Ascension day, Whit Sunday, Whit Monday, Constitution day, Christmas eve, Christmas day.

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activity. Importantly, these estimates will capture the direct effect of paydays and associated changes in liquidity for those paid, as well as potential spillover effects to others.

4 Results

4.1 Payday Effects on Violent and Sexual Crime Rates

I first investigate how the number of reported violent and sexual crimes evolves around paydays. Figure 2A shows the average number of reported violent and sexual crimes in Denmark by days since paydays (day 0). The number of reported crimes fluctuates around 60 crimes per day in the period leading up to paydays. On the day following payday, the number of reported crimes increases to approximately 140 and remains elevated for around three days, suggesting that paydays significantly increase violent and sexual crime rates.

Some of the increase in violent and sexual crimes following paydays may reflect that paydays frequently fall on Fridays or New Years Eve, when these crime types are more prevalent. Therefore, I estimate Equation 1, where the dependent variable is the daily number of reported violent and sexual crimes. Estimates of δ_k for $k \in (-14; 13)$ are presented in Figure 2B. There are two main takeaways from the figure. First, in the period leading up to paydays estimates of δ_k are close to zero and insignificant. This indicates that the number of reported violent and sexual crimes remains stable at a level similar to that observed 14 days prior to payday in two weeks leading up to paydays. This stability suggests that the fluctuations in reported violent and sexual crimes are largely accounted for by the included controls, with day-of-the-week and special day fixed effects explaining most of the variation. Second, immediately following paydays, the number of reported violent and sexual crimes increases sharply. On the day after payday, the number of reported crimes increases by 46 or 77%, and the crime rate remains elevated for three days but at a lower level. That the increase occurs the day after paydays reflect that most of the excess violent and sexual crimes are committed after midnight. These patterns indicate a strong link between paydays and violent and sexual crime rates.

I next examine which types of violent and sexual crimes drive the increase following payday, focusing on whether the rise in criminal activity is driven by more or less severe crime types. I present estimates for the day after payday in Table 2.[10] Of the total increase in violent and sexual crimes of 46 after payday, 55% is driven by violent crimes, which increase by 25.2 (Column 2), while the remaining 45% is due to a rise in sexual crimes by

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[10]Table 2 shows estimates for the day after payday. Event study estimates for event times -14 to 13 are shown in Appendix Figures A.2 and A.3.

20.7 (Column 7). For violent crimes, the largest absolute increase is for simple violence (12.5 or 58%), but there are also significant increases for serious violence (3.7 or 44%), threats (6.3 or 56%), and disturbances of the public peace (2.7 or 28%). Similarly, among sexual crimes, the largest absolute increase is for indecent behavior (8.6 or 189%), but there are also significant increases for rape (2.8 or 231%), sexual offenses against children (4 or 536%), and other sexual crimes (5.3 or 282%).

While crime types such as indecent behavior may impose relatively minor costs to victims, more severe crimes, such as rape and severe violence, are likely to be associated with substantial costs to both victims and society as a whole (see e.g., Cohen et al., 2004).

As an alternative measure of the severity of these offenses, Appendix Figure A.4 shows estimates of how the number of hospital contacts due to physical injuries changes around paydays. The figure reveals that the number of hospital contacts due to physical injuries increases by around 70 contacts or 3% on the day after payday. Hence paydays and the increased violent and sexual crime rates also leads to an increased number of hospital contacts.

4.2 Alcohol Consumption, Substance Abuse and Paydays

I next investigate potential mechanisms behind the increased rates of violent and sexual crimes following paydays. I hypothesize that paydays act as a coordination device, amplifying partying behavior and thereby contributing to higher crime rates. In support of this hypothesis, existing studies show that anticipated income shocks influence the activities of liquidity-constrained individuals (e.g., Stephens Jr, 2003), and especially their consumption of alcohol and illegal drugs (e.g., Dobkin and Puller, 2007). Additionally, existing studies highlight substance abuse and alcohol consumption as factors that increase aggression and serve as potential determinants of violence (e.g., Carpenter, 2005; Anderson et al., 2018).

To assess whether increased alcohol consumption, substance abuse, and partying behavior more broadly contribute to the higher rates of violent and sexual crimes following paydays, I investigate proxies for alcohol consumption (the number of recorded incidents of driving under the influence and hospital contacts related to alcohol consumption) and substance abuse (reported crimes related to drug possession and hospital contacts related to substance abuse). Figure 3 shows how each of these proxies changes around paydays.

Both proxies for alcohol consumption (Figures 3A and 3B) show clear evidence of an increase immediately following paydays. The number of incidents involving individuals caught driving under the influence increases by 14% on the day after paydays and remains elevated for 3-4 days. Similarly, hospital contacts related to alcohol consumption increase by 10%. Interestingly, the number of alcohol related hospital contacts persists for nearly 14 days after paydays.

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A similar pattern emerges for proxies of substance abuse (Figures 3C and 3D). Immediately following paydays, the number of incidents in which individuals are caught in the possession of illegal drugs increases by 41%. While the pattern for substance abuse related hospitalizations is less pronounced, the number of substance abuse related hospitalizations increases by 3% on the day following paydays but is insignificant at a five percent level.

Taken together, the results shown in Figure 3 provide strong suggestive evidence that an increased propensity to go out, along with higher consumption of alcohol and substance abuse following paydays, are important drivers of the increased prevalence of violent and sexual crimes.

4.3 Heterogeneity Across Demographic Groups

Existing studies document that paydays can decrease the propensity of welfare benefit recipients to commit economically motivated crimes by alleviating liquidity constraints (e.g., Foley, 2011; Carr and Packham, 2019). The changes in alcohol and substance abuse behavior documented in Section 4.2 could similarly reflect an income effect for liquidity-constrained individuals. Specifically, the increased liquidity following paydays may lead to higher consumption of normal goods, including drugs and alcohol. However, if paydays are anticipated and salient, they may also generate "party effects" similar to those observed for football game days (Rees and Schnepel, 2009; Lindo et al., 2018). In this case the increased rates of violent and sexual crimes following paydays may not be isolated to those with low levels of liquidity.

I therefore investigate which population groups contribute to the higher rates of violent and sexual crimes following paydays, and, in particular, whether increases are only seen for groups likely to be liquidity-constrained, such as social assistance recipients. To do so, I focus on crimes that resulted in a charge, allowing the crime to be linked to the alleged offenders.[11]

Panel A of Table 3 shows the estimated effect of paydays on the number of charges for violent and sexual crimes, focusing on the first day following paydays (Appendix Figure A.5 shows all event study estimates). The number of charges for violent and sexual crimes increases by 35.6, which corresponds to an increase of 0.79 charges per 100,000 in the population (Column 2), and a 81.6% increase relative to the baseline mean (Column 3).

Panel B categorizes criminal charges by the primary income source of the alleged offenders: social assistance, unemployment insurance, study grants, public pensions, wages and profits from self-employment, and others. There is a significant increase in the number of violent and sexual crime charges for all groups the day after payday. Among social assistance recipients, the number of violent and sexual crime charges increases by 4.5 per 100,000 recipients on the

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[11]I can link at least one offender to 68% of the reported violent and sex crimes, see Table 1.

day following payday (Column 2). In comparison, the increase is just 0.6 per 100,000 for wage earners and the self-employed, while the increases for other groups range from 0.3 per 100,000 (for public pension recipients) to 1.8 per 100,000 (for unemployment insurance recipients), making social assistance recipients the group with by far the largest per-individual increase.

However, because social assistance recipients represent a relatively small group, they account for just 22.5% of the total increase in violent and sexual crime charges after payday. In contrast, wage earners and the self-employed, despite their relatively small per-individual increase in criminal charges, are responsible for 48% of the total increase due to the much larger size of this group compared to social assistance recipients.

The fact that the rise in criminal activity following paydays is also observed among wage earners and the self-employed suggests that this phenomenon is not exclusive to benefit recipients and raises questions about whether the change in behavior is solely driven by changes in liquidity after paydays.

Panel C presents estimates separately by gender, Panel D by educational attainment, and Panel E by past criminal behavior. Men, those with low educational attainment, and those with a history of criminal charges contribute the most to the overall increase in the number of charges for violent and sexual crimes committed following paydays.

Panel E reveals that the increase in charges for violent and sexual crimes committed after payday is especially dramatic for those who have been charged with crimes committed within the last year. For this group, the number of violent and sexual crime charges increases by 22 per 100,000, accounting for 37% of the total increase in such charges after payday. Collectively, individuals with a history of criminal charges account for 68% of the total increase, despite constituting just 11% of the population. These results suggest that targeting individuals with a history of criminal charges may be an effective strategy to reduce the concentration of crime after payday.

However, all groups contribute to the rise in the number of violent and sexual crime charges, with average increases from 48% to 148% (see Column 3).

These results highlight the breadth of this phenomenon, suggesting that the underlying explanations are unlikely to stem solely from changes in liquidity among low-income groups.

4.4 Additional Results and Robustness

4.4.1 Other Crime Types

The results presented so far focus on changes in violent and sexual crime rates around paydays. However, existing studies suggest that the propensity of especially liquidity constrained individuals to commit economically motivated crimes decreases following paydays (see e.g.,

Foley, 2011). Consequently, the observed rise in violent and sexual crimes after paydays may be offset by a corresponding decrease in economically motivated crimes, potentially reducing overall pressure on police resources.

To examine this, Table 4 presents estimates of the effect of paydays on overall crime, focusing again on the first day after paydays (Column 1). The total number of reported crimes increases by more than 300 cases, or 21%, following paydays. This rise is primarily driven by an increase in property crime (Column 2), particularly pickpocketing and bike theft. Furthermore, Table 4 shows that all categories of crime increase following paydays, with the largest relative change occurring for sexual crimes.

Thus, changes to property crime rates amplify the increase in crime following paydays, likely placing additional pressure on police resources. The rise in property crime could reflect both that theft on paydays may yield higher expected payoffs, and that more potential victims are present in public spaces due to payday-related activities.

4.4.2 Payday Effects by Payment Day

The results illustrated in Figure 2B averages across all paydays between 2003 and 2018, with paydays most frequently falling on a Friday (see Figure 1). However, the effect of paydays on violent and sexual crime rates may depend on the day of the week the payment falls on.

On the one hand, payments falling on Fridays may increase partying behavior more than other paydays, because most individuals have the following days off work. On the other hand, individuals may be more inclined to go out on weekends irrespectively of paydays, which could lead to lower excess crime following payments falling on Fridays.

I investigate this, by estimating specifications where I interact the event time dummies in Equation 1, with indicators for the day of the week the payment falls on.[12]

Appendix Figure A.6 shows the corresponding event study estimates and Table A.1 shows the total increase in violent and sexual crimes in the first three days following paydays. There are no significant differences in the increase in violent and sexual crime rates in the three days following paydays, by the day of the week the payment falls on. If anything, the increase is largest for payments falling on Thursdays. Interestingly, the increase in violent and sexual crime rates following payments falling on Fridays tend to be spread out over more days. This could reflect that when payments fall on Fridays, individuals are more likely to go out the following weekend, but not necessarily on payday. In contrast, for payments falling on Mondays individuals are more likely to go out on that day but not the following days.

Together, these results suggests that simply changing the day of the week that payments

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[12]I omit event time dummies for relative days −14 to −8 from this regression, such that, I can still identify day of the week fixed effects.

fall on, such as never having paydays on Fridays, will have little effect on the level of crime following paydays.

4.4.3 Placebo Regressions

One concern with the event study estimates presented is, that the included controls may not sufficiently control for general crime trends in criminal activity around paydays. Specifically, one may worry that the change in criminal activity in part reflects the fact, that paydays are more likely to fall on Fridays where crime rates are higher. To investigate this further, I construct a new dataset, where paydays are randomized within the month keeping the distribution of the day of the week payments fall on constant.[13] I then add information on the number of reported violent and sexual crimes on days relative to these placebo paydays. Appendix Figure A.7B reports estimates from estimating the specification in Equation 1 on this placebo sample, and shows no evidence of a change in criminal activity around these placebo paydays. This suggests that the set of included control variables sufficiently controls for general time trends in criminal behavior around pay days.

4.5 Do Paydays Place Strain on Police Forces and Hospitals?

The high concentration of violent and sexual crimes, the increase in other crime types, and the increased number of hospital admissions following paydays, may place significant strain on police forces and hospitals constrained by fixed resources. Specifically, with a fixed police force, the likelihood of clearing a crime is expected to decrease as the number of reported crimes rises. In the presence of such effects, the increased crime rates following paydays are likely to impose greater costs to society and individuals.

I investigate the presence of such effects, by estimating whether the clearance rate changes following paydays. Specifically, I estimate regressions of the same form as Equation 1, where the dependent variable is the share of reported crimes that lead to a charge (the clearance rate). Because the composition of reported crimes changes following paydays, which may mechanically affect clearance rates, I adjust for these changes by conditioning on detailed crime categories.[14] This approach ensures that changes in clearance rates are estimated within detailed crime types, and do not simply reflect changes to the crime composition.

I report estimates from these regressions separately for violent, sexual and property crimes in Table 5, focusing on changes in clearance rates for crime committed on the day following

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[13]Appendix Figure A.7A shows the distribution of pay dates by the day of the week these placebo payments fall on. The distribution is identical to the one presented in Figure 1 representing the actual pay days.

[14]For instance, imagine that violent crimes have a higher clearance rate than property crimes. Then even for fixed clearance rates higher levels of violent crimes will lead to increases in overall clearance rates.

paydays where the crime concentration is highest. When I do not condition on crime composition, the estimates presented in columns 1, 3 and 5, suggest that clearance rates increase for sexual and property crimes committed on the day after payday, while clearance rates are unaffected for violent crimes. However, once I condition on crime composition (columns 2, 4 and 6), the estimated change in clearance rates for sexual crimes decreases in magnitude and becomes insignificant. This indicates that changes in the types of sexual crimes committed following paydays drive the observed change in clearance rates, rather than changes to the probability that police clears a crime of a given type. Once I condition on crime composition, the estimated change in clearance rates for property crime reverses sign and becomes negative. In terms of magnitudes, the results show that the probability of clearing a property crime is 1.1 percentage points (or 6%) lower for crimes committed on the day after payday.

Appendix Table A.2 reports estimates separately by detailed crime types and distinguishes between changes in the probability that offenders are caught red-handed (charged on the day of the offense) and changes in the probability that offenders are caught and charged later. Clearance rates for vehicle theft, robbery, burglary, and threats of violence decrease following paydays. In contrast, clearance rates for simple violence, and indecent behavior increase. All of these changes are driven by changes in the probability that offenders are caught red-handed. One interpretation of these results is that police prioritize street presence following paydays, leading to increased focus on crime types associated with heightened partying behavior – such as indecent behavior – while fewer resources are allocated to other crime types, such as property crime. Together, these results provide suggestive evidence that the high concentration of crime following paydays places strain on police forces, leading to lower clearance rates – particularly for property crimes.

Although I lack a good measure of hospital performance to directly assess whether the increased number of hospital admissions following paydays places strain on hospitals, the dramatic rise in hospital admissions (see Figures, A.4, 3B and 3D) suggests that hospitals may face significant pressure during these days as well.

5   Discussion and Conclusion

This paper exploits variation in the exact timing of paydays to document that the number of violent and sexual crimes increases by 77% following paydays. This increase reflects both increases in very severe crime types such as rape and serious violence as well as increases in less severe crime types, such as indecent behavior. The rise in violent and sexual crimes after paydays is a broad-based phenomenon that occurs for most subgroups and is unlikely to be explained solely by changes in liquidity following paydays.

Additional results shows that proxies for alcohol consumption, substance abuse, and broader partying behavior also increase immediately following paydays. I interpret this as evidence that paydays increase violent and sexual crime rates by amplifying partying behavior, creating "party effects" akin to those documented for football game days (Rees and Schnepel, 2009; Lindo et al., 2018). Specifically, paydays appear to act as a coordination device, leading to larger concentrations of potential victims and perpetrators in the nightlife, and increasing the number of volatile social interactions.

The high concentration of crime, and the rise in hospital admissions following paydays, put unnecessary stress on public resources such as hospitals and police forces, that are fixed in the short run. Indeed, I show that crime clearance rates fall on paydays, especially for property crimes.

These findings suggest that it may be worth considering alternative staggered payment schedules, that pay different segments of the population at different times. By spreading out partying behavior over several paydays, such alternative schedules will most likely lead to smaller increases in levels of violent and sexual crimes following each individual payday due to those receiving payments, and lead to a smoother aggregate monthly crime and hospital admission cycle. This could alleviate strain on hospitals and police forces constrained by fixed resources, and improve crime clearance rates. Furthermore, because the number of potential volatile social interactions rises quadratically with the number of individuals who are out at the same time, staggered paydays might not only smooth the monthly crime profile but also reduce overall levels of violent and sexual crime. While it may not be feasible to influence the timing of wage payments, other than for public sector employees, changing paydays for individuals on various types of public transfer could have the same effect.

However, with most bills being paid close to the first of the month, such alternative payment schedules should take into account that liquidity constrained recipients might have increased expenses on these days. Specifically, alternative systems should aim at aiding myopic individuals with having sufficient funds to pay bills towards the end of the month.

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# 6 Figures and Tables

Figure 1: Paydays by Day of the Week
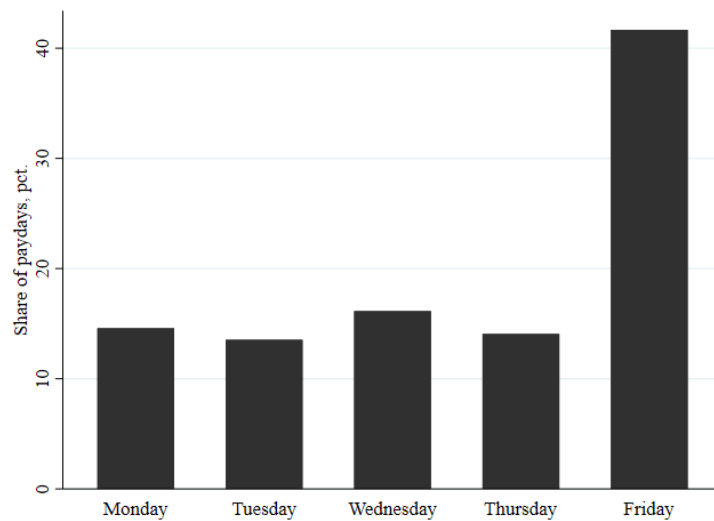
Note: The figure shows the distribution of paydays by the day of the week they fall, for all pay dates occurring between 2003 and 2018.

Table 1: Descriptive Statistics: Reported Violent and Sexual Crimes

	Daily avg.	Per 100.000	Group size
Panel A. Total			
Reported crime	73.4	1.6	4,516,767
Any charge	49.6	1.1	4,516,767
Total charges	54.4	1.2	4,516,767
Panel B. Income type			
Social assistance	15.1	8.4	179,261
Unemployment insurance	2.4	1.9	123,650
Study grant	2.4	1.6	155,337
Public pension	7.7	0.6	1,188,924
Wage-earners and self-employed	22.1	0.8	2,713,945
Other	4.7	3.0	155,649
Panel C. Gender			
Males	49.0	2.2	2,226,019
Females	5.3	0.2	2,290,748
Panel D. Educational attainment			
Compulsory or lower	39.9	2.5	1,622,523
Vocational	9.4	0.7	1,430,552
Upper secondary	2.4	0.7	354,816
Higher education	2.7	0.2	1,108,876
Panel E. Prior criminal charges			
No prior charges	13.1	0.3	4,031,388
Within last year	25.0	42.1	59,404
Within last 1-2 years	5.3	12.8	41,396
Before 2 years prior	10.9	2.8	384,578

Note: The table shows the average daily number of reported violent and sexual crimes in Denmark (Column 1), the average daily number of reported violent and sexual crimes per 100,000 in the population (Column 2), and the average number of individuals in a given population group (Column 3). Statistics are shown for all reported crime, crimes leading to a charge and the total number of charges in Panel A. Panel B reports statistic by individuals main income group, Panel C by gender, Panel D by highest completed education and Panel E by measures of past criminal behavior. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each payday.

Figure 2: Number of Reported Violent and Sexual Crimes around Paydays

(A) Raw averages

(B) Estimated changes
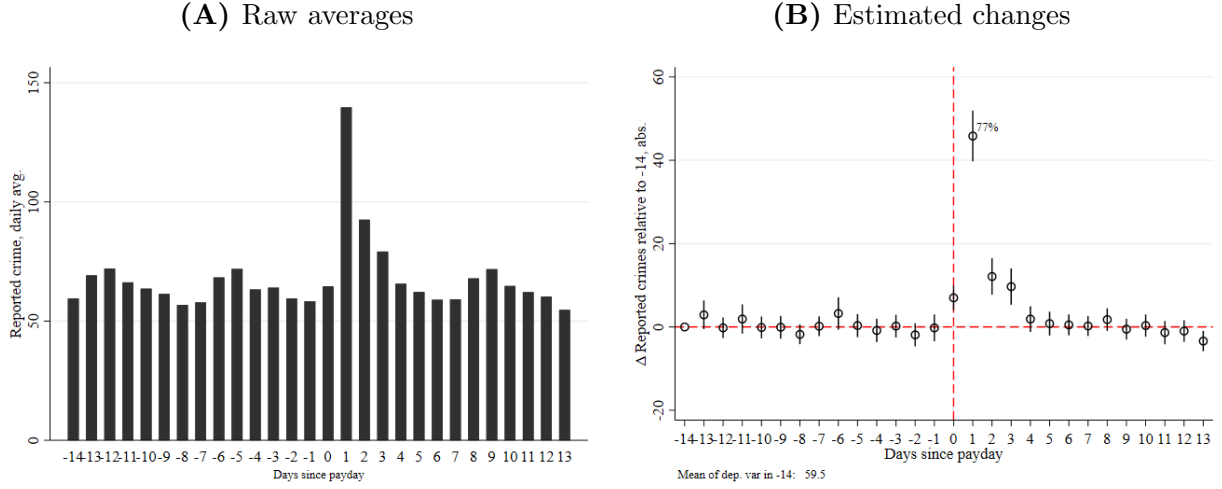
Note: Panel A shows the average number of reported violent and sexual crimes around paydays occurring at time 0. Panel B shows estimates of changes to the daily number of reported violent and sexual crimes due to paydays occurring at time 0. The estimates are from an event study specification where I regress the daily number of reported violent and sexual crimes, on a series of event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean crime rate at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Table 2: Payday Effects on Reported Violent and Sexual Crimes by Crime Type

|	(1) Violent or	(2)	(3)	(4) Violent crime	(5)	(6)	(7)	(8)	(9) Sexual crime	(10)	(11)
	sexual	Any	Simple	Serious	Threats	Public dist.	Any	Rape	Against children	Indecent behavior	Other
Payday +1	45.830***	25.166***	12.536***	3.709***	6.250***	2.672*	20.664***	2.815***	3.990***	8.572***	5.287***
	(3.092)	(2.344)	(1.069)	(0.618)	(0.591)	(1.253)	(1.411)	(0.281)	(0.493)	(0.685)	(0.516)
Change in %	77	49	58	44	56	27	247	231	536	189	282
Mean of dep. var in -14	59.5	51.1	21.7	8.4	11.1	9.9	8.4	1.2	0.7	4.5	1.9
N	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376	5376

Note: The table shows estimates of changes to the number of reported violent and sexual crimes the day after paydays due to paydays. Estimates are shown separately by types of violent and sexual crimes both in absolute terms and in percent of the mean 14 days before paydays. These are estimated using daily data, and an event study specification where the daily number of reported violent and sexual crimes is regressed on a series of dummies indicating the number of days since payday, day of the week fixed effect, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$.

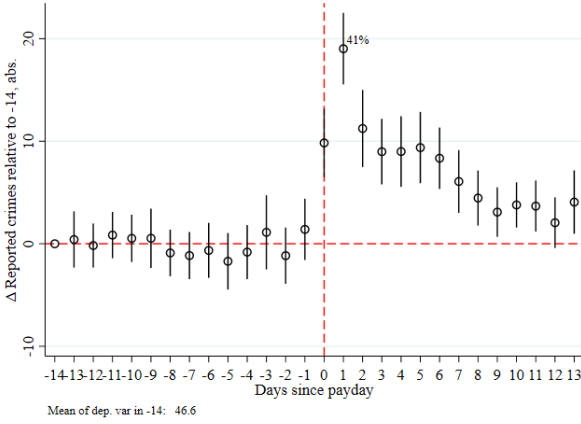**Figure 3:** Paydays, Alcohol Consumption and Substance Abuse
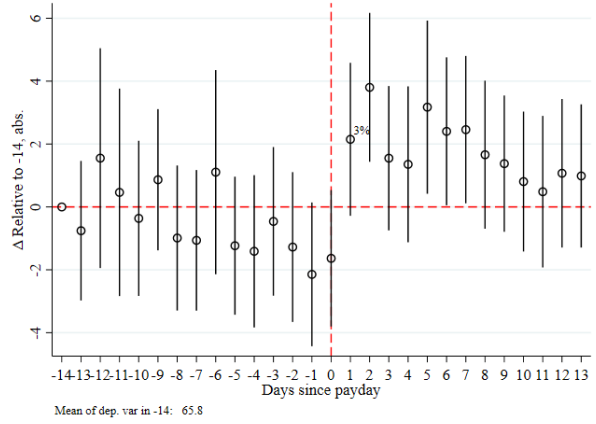
(A) Charges for driving under the influence

Mean of dep. var in -14: 37.8
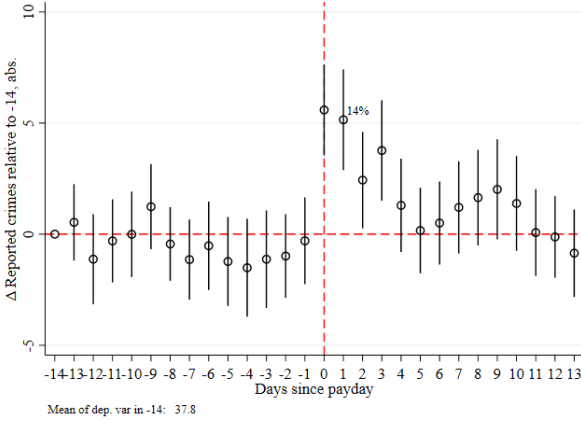
(B) Alcohol related hospital contacts

Mean of dep. var in -14: 109.2
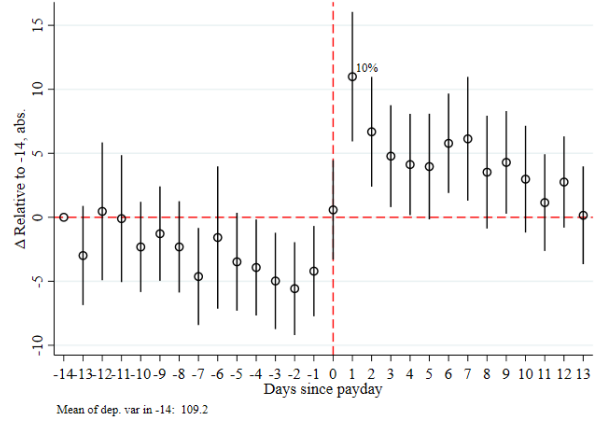
(C) Charges for drug possession

Mean of dep. var in -14: 46.6

(D) Substance abuse related hospital contacts

Mean of dep. var in -14: 65.8

Note: The figure shows estimates of changes to the daily number of reported incidents of driving under the influence (Panel A), the number of hospital contacts related to alcohol (Panel B), the number of reported cases of drug possession (Panel C), and the number of hospital contacts related to substance abuse (Panel D), due to paydays occurring at time 0. Estimates are from event study specifications where I regress the daily number of the relevant incidence on a series of event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean of the dependent variable at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Table 3: Payday Effects on Reported Violent and Sexual Crimes by Perpetrator Characteristics

	(1) Absolute	(2) Per 100 thousand	(3) Relative
Panel A. Baseline			
All charges	35.577***	0.788***	81.598***
	(2.537)	(0.055)	(5.819)
Panel B. Income type			
Social assistance	8.013***	4.488***	62.114***
	(0.789)	(0.425)	(6.120)
Unemployment insurance	2.231***	1.750***	123.946***
	(0.255)	(0.206)	(14.171)
Study grant	1.972***	1.163***	116.007***
	(0.348)	(0.199)	(20.493)
Public pension	3.726***	0.317***	56.450***
	(0.810)	(0.065)	(12.274)
Wage-earners and self-employed	16.995***	0.626***	103.630***
	(1.396)	(0.051)	(8.514)
Other	2.640***	1.720***	61.395***
	(0.417)	(0.260)	(9.696)
Panel C. Gender			
Males	32.534***	1.465***	83.852***
	(2.264)	(0.101)	(5.836)
Females	2.929***	0.126***	63.667***
	(0.502)	(0.021)	(10.914)
Panel D. Educational attainment			
Compulsory or lower	21.940***	1.352***	67.507***
	(1.765)	(0.112)	(5.432)
Vocational	7.947***	0.556***	111.925***
	(0.643)	(0.045)	(9.054)
Upper secondary	2.284***	0.618***	142.749***
	(0.407)	(0.105)	(25.450)
Higher	3.406***	0.313***	148.099***
	(0.412)	(0.034)	(17.899)
Panel E. Prior criminal charges			
No prior charges	10.514***	0.261***	106.199***
	(0.874)	(0.022)	(8.833)
Within last year	13.060***	22.092***	57.788***
	(1.248)	(2.071)	(5.524)
Within last 1-2 years	3.798***	9.226***	105.493***
	(0.361)	(0.883)	(10.018)
Before 2 years prior	8.205***	2.257***	110.883***
	(0.856)	(0.201)	(11.566)

Note: The table shows estimates of changes to the number of charges associated with reported violent and sexual crimes on the day after paydays due to paydays. Estimates are shown separately by characteristics of the charged perpetrator. Column 1 shows the total increase in charges for all individuals in a group, Column 2 shows the increase in charges per 100,000 individual in a group, and Column 3 shows the increased number of charges in percent of the mean 14 days prior to paydays. Estimates are shown for the full population (Panel A), by income group (Panel B), by gender (Panel C), by educational attainment (Panel D), and by past criminal behavior (Panel E). These are estimated using daily data, and an event study specification. Here the daily number of charges from reported violent and sexual crimes for a given group or the number per 100,000 individual in the group is regressed on a series of dummies indicating the number of days since payday, day of the week fixed effect, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4: Payday Effects on Reported Crimes

	(1) Total crime	(2) Property	(3) Drug	(4) Violent	(5) Sexual	(6) Other
Payday +1	304.790***	196.686***	33.573***	25.166***	20.664***	28.700***
	(26.650)	(22.500)	(2.475)	(2.344)	(1.411)	(6.025)
Change in %	21	15	56	49	247	64
Mean of dep. var in -14	1448.7	1284.5	59.8	51.1	8.4	44.9
N	5376	5376	5376	5376	5376	5376

Note: The table shows estimates of changes to the number of reported crimes on the day after paydays due to paydays. Estimates are shown separately by types of crime both in absolute terms and in percent of the mean 14 days before paydays. These are estimated using daily data, and an event study specification where the daily number of reported crimes is regressed on a series of dummies indicating the number of days since payday, day of the week fixed effect, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5: Paydays and Crime Clearance Rates

	(1)	(2)	(3)	(4)	(5)	(6)
	Violent crime		Sexual crime		Property crime	
Payday +1	0.002	-0.009	0.092***	0.020	0.012**	-0.011***
	(0.006)	(0.006)	(0.022)	(0.023)	(0.004)	(0.003)
N	5376	5376	5353	5353	5376	5376
Mean of dep. var in -14	0.763	0.763	0.669	0.669	0.185	0.185
Cond. on crime composition		X		X		X

Note: The table shows estimates of changes to crime clearance rates on the day after paydays due to paydays. Estimates are shown separately by types of crime, unconditional and conditional on crime composition. These are estimated using daily data, and an event study specification where the daily crime clearance rate is regressed on a series of dummies indicating the number of days since payday, day of the week fixed effect, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
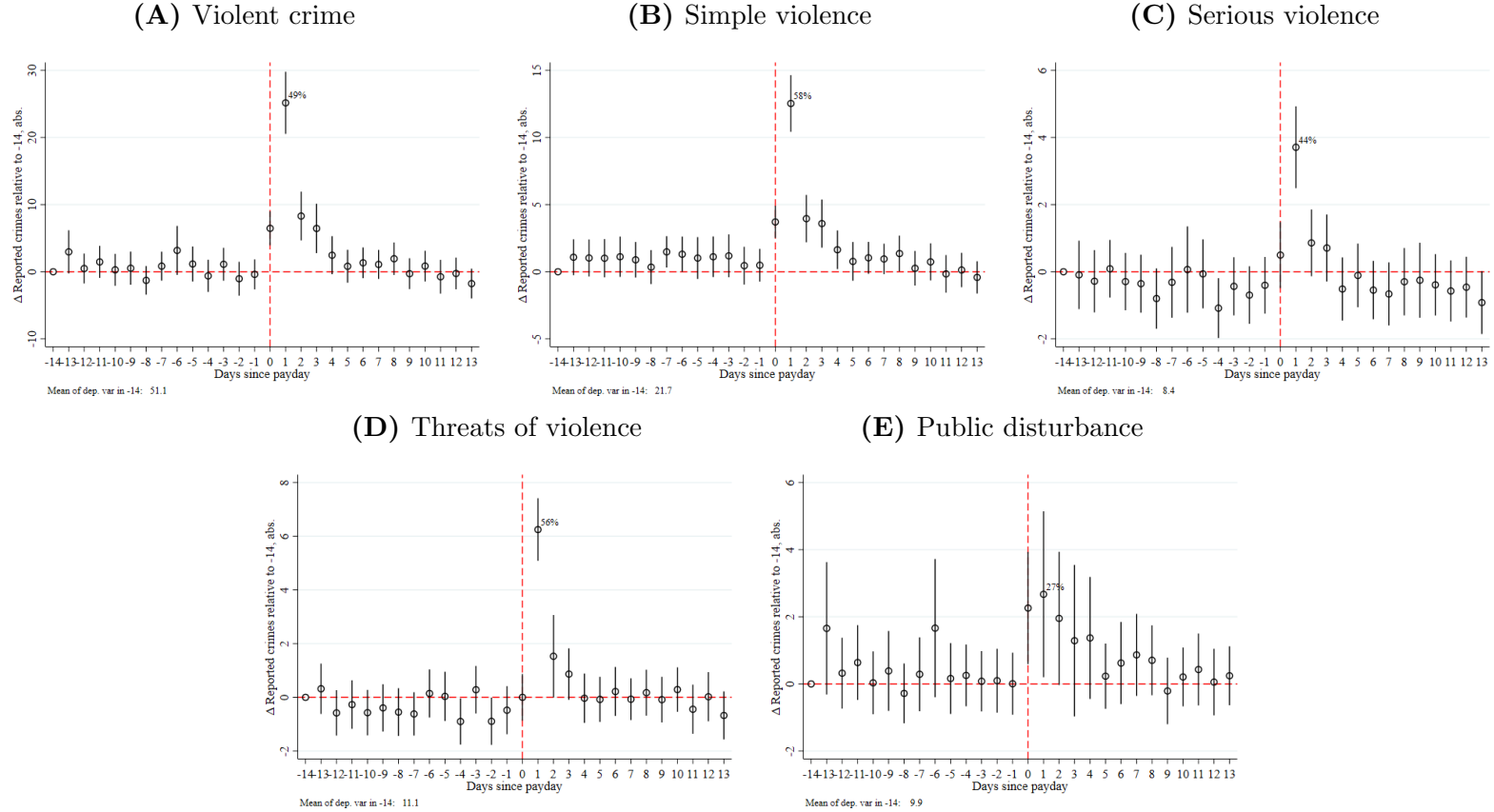
A   Appendix

Figure A.1: Reported Violent and Sexual Crimes by Day of the Week
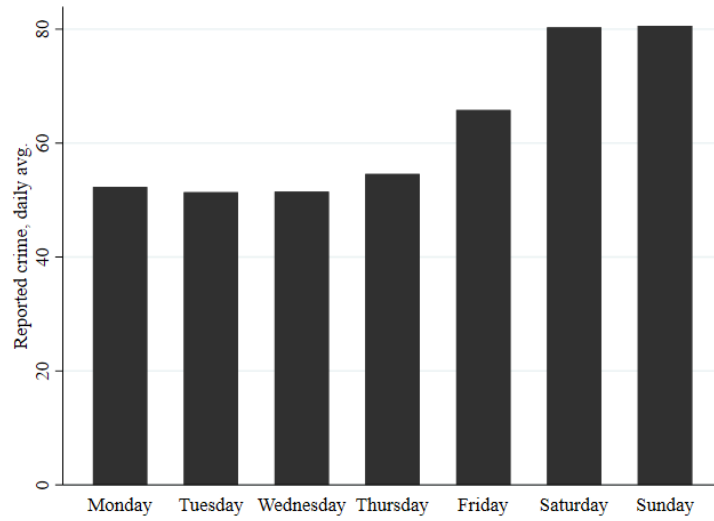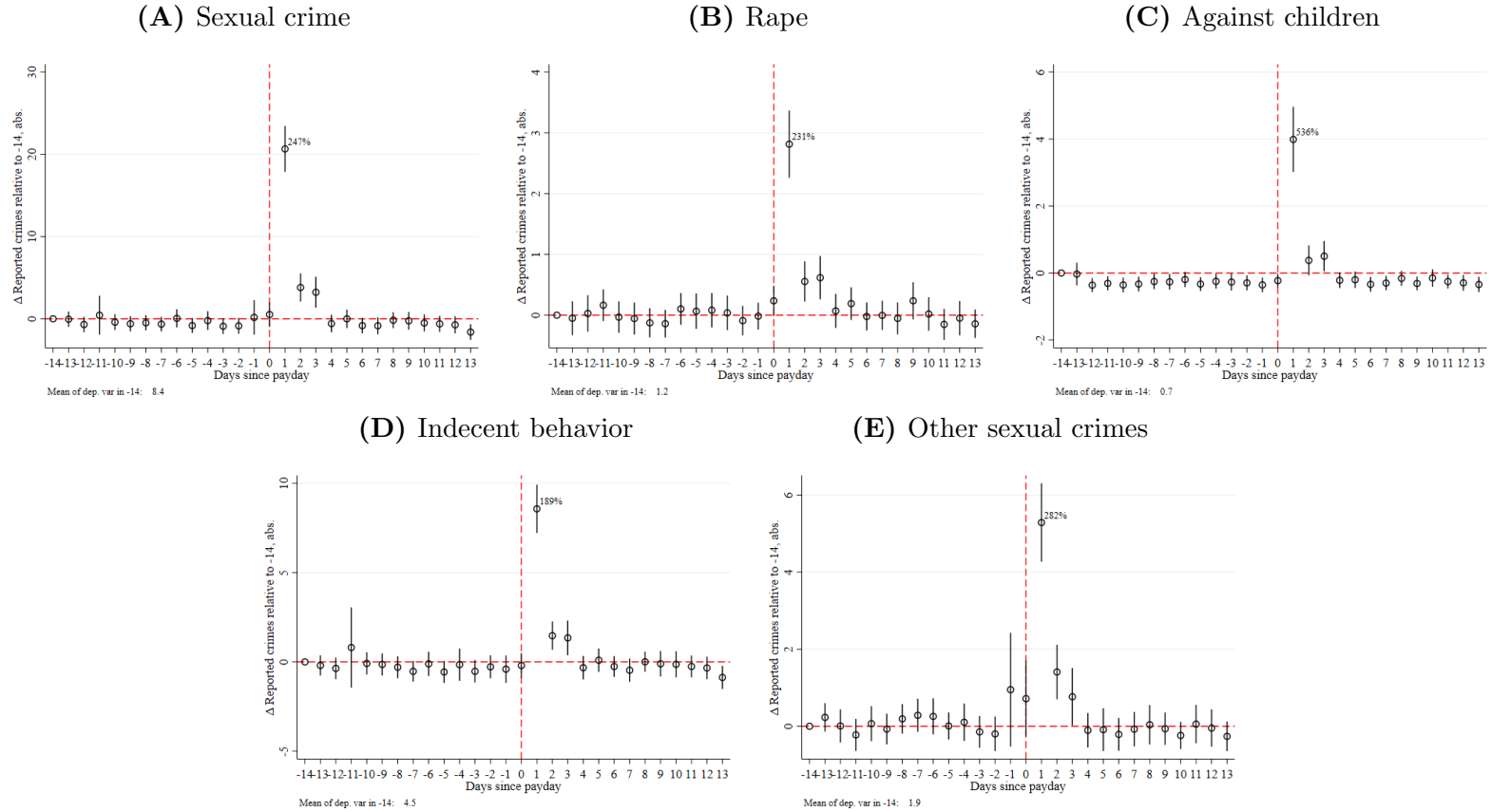

Note: The figure shows the average number of reported violent and sexual crimes by the day of the week they are committed. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each payday.

Figure A.2: Number of Reported Violent Crimes around Paydays

(A) Violent crime

(B) Simple violence

(C) Serious violence

Mean of dep. var in -14: 51.1

Mean of dep. var in -14: 21.7

Mean of dep. var in -14: 8.4

(D) Threats of violence

(E) Public disturbance

Mean of dep. var in -14: 11.1

Mean of dep. var in -14: 9.9

Note: Panel A shows estimates of changes to the average number of reported violent crimes due to paydays occurring at time 0. Panels B-E show estimates of changes to the daily number of reported violent crimes by detailed crime types. The estimates are from event study specifications where I regress the daily number of reported violent crimes, on a series of event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean crime rate at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Figure A.3: Number of Reported Sexual Crimes around Paydays

(A) Sexual crime

(B) Rape

(C) Against children

**(D)** Indecent behavior

(E) Other sexual crimes

Note: Panel A shows estimates of changes to the average number of reported sexual crimes due to paydays occurring at time 0. Panels B-E show estimates of changes to the daily number of reported sexual crimes by detailed crime types. The estimates are from event study specifications where I regress the daily number of reported sexual crimes, on a series of event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean crime rate at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Figure A.4: Number of Hospital Contacts Due to Physical Injuries

Mean of dep. var in -14: 1997.2
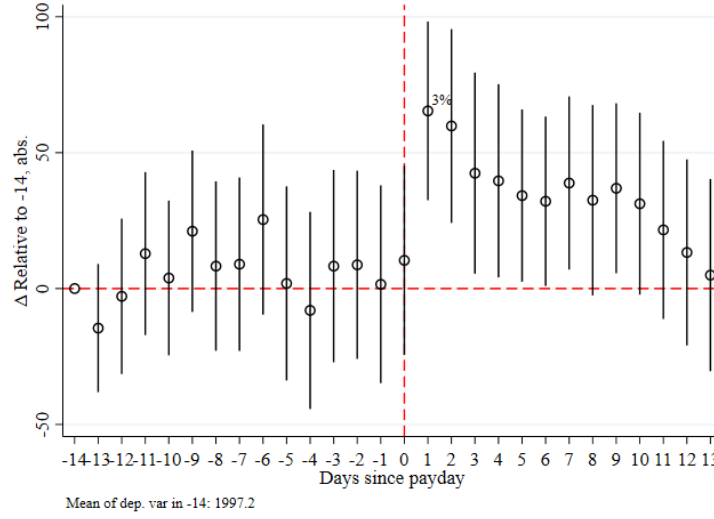
Note: The figure shows estimates of changes to the daily number of hospital contacts related with physical injuries due to paydays occurring at time 0. The estimates are from an event study specification where I regress the daily number of contacts with hospitals due to physical injuries, on a series of event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Figure A.5: Number of Charges for Violent and Sexual Crimes around Paydays
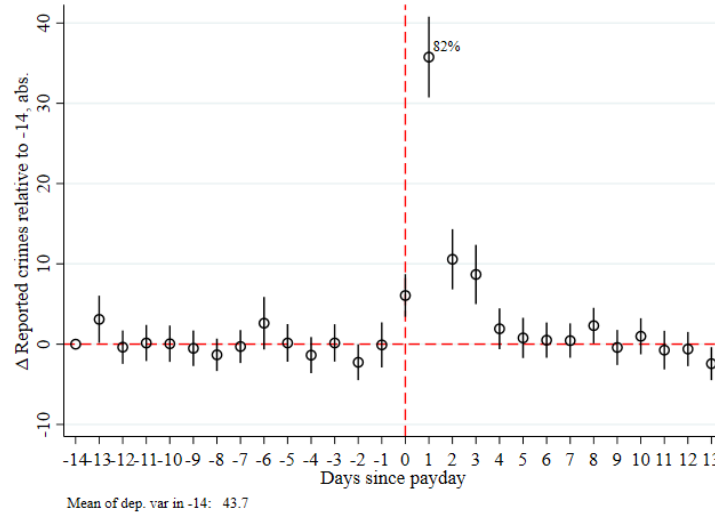
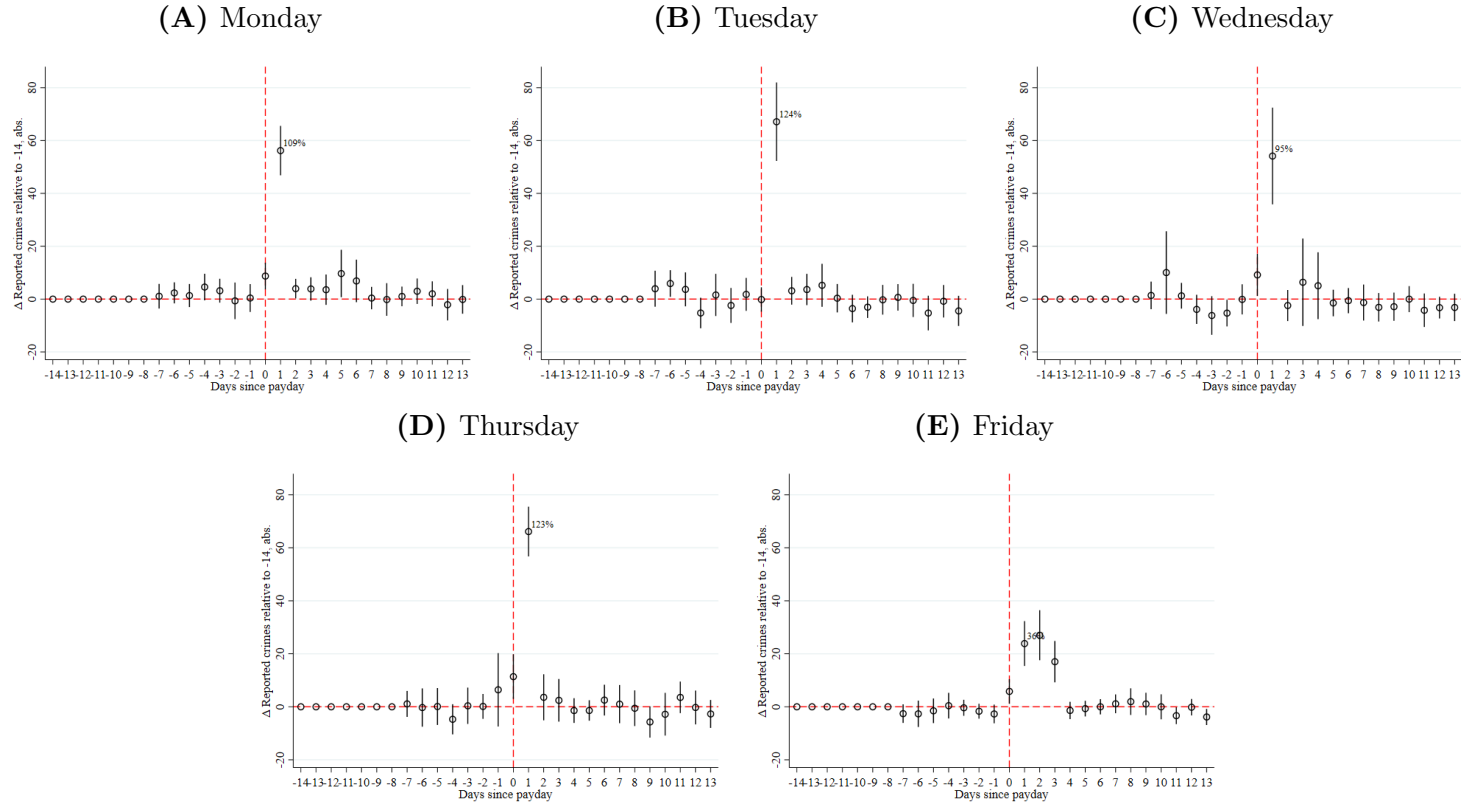
Mean of dep. var in -14: 43.7

Note: The figure shows estimates of changes to the daily number of charges associated with reported violent and sexual crimes due to paydays occurring at time 0. The estimates are from an event study specification where I regress the daily number of charges for violent and sexual crimes committed on a day, on a series of event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Table A.1: Payday Effects on Violent and Sexual Crimes by Day of Payday

	(1) Monday	(2) Tuesday	(3) Wednesday	(4) Thursday	(5) Friday
Payday 0 - 3	72.719	73.742	67.228	83.532	73.689
	(6.904)	(10.847)	(17.161)	(10.124)	(6.672)
Mean at -14	51.643	54.038	57.129	53.630	66.925

Note: The table shows estimates of the effect of paydays on the daily number of reported violent and sexual crimes in the first three days following payday. Estimates are shown separately by the day of the week the payment falls on. These are estimated using daily data, and an event study specification where the daily crime clearance rate is regressed on a series of dummies indicating the number of days since payday interacted with indicators for the day of the week the payday falls on, day of the week fixed effect, month fixed effects, year fixed effects and special day fixed effects. Days -14 to -8 are omitted as the reference category. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. * p < 0.05, ** p < 0.01, *** p < 0.001.

Figure A.6: Effects of Payday on Violent and Sexual Crime Rates and Day of Payday

(A) Monday

(B) Tuesday

(C) Wednesday

(D) Thursday

(E) Friday

Note: The figure shows estimates of changes to the average number of reported violent and sexual crimes due to paydays occurring at time 0. Estimates are shown separately by the day of the week paydays fall on. The estimates are from an event study specification where I regress the daily number of reported violent and sex crimes, on a series of event time dummies interacted with indicators for the day of the week the payday falls on, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Days -14 to -8 are omitted as reference categories. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean crime rate at event time -14 (the omitted category) for reference. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. Vertical lines indicate 95% confidence intervals.

Figure A.7: Placebo Regressions

(A) Placebo Pay Dates by Day of the Week

(B) Placebo Paydays and Violent and Sexual Crime Rates
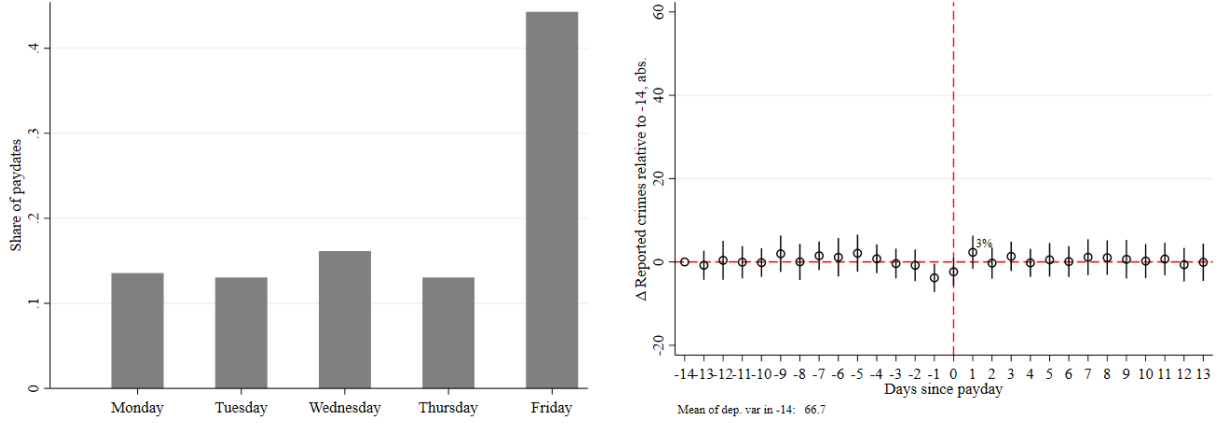
Note: Panel A of the figure shows the distribution of placebo paydays by the day of the week they fall. These placebo dates are drawn, such that, the distribution of pay dates across the week resembles that of the actual pay dates occurring between 2003 and 2018 (see Figure 1). Panel B shows estimates of changes to the daily number of reported violent and sexual crimes around the placebo paydays in Panel A, occurring at time 0. The estimates are from an event study specification where I regress the daily number of reported violent and sexual crimes, on a series of pseudo event time dummies, day of the week fixed effects, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. Estimates are shown in absolute changes but the increase at event time 1 is also reported in percent of the mean at event time -14 (the omitted category) for reference. The sample includes all pseudo paydays and the 28 days surrounding each. Standard errors are clustered at the pseudo payday level. Vertical lines indicate 95% confidence intervals.

Table A.2: Paydays and Crime Clearance Rates by Detailed Crime Types

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A: Property crime				
	Any	Theft	Vehicle theft	Robbery	Burglary	Arson	Vandalism	Other
Payday +1	-0.011***	-0.003	-0.010***	-0.058*	-0.008*	0.024	0.011	-0.004
	(0.003)	(0.003)	(0.003)	(0.024)	(0.004)	(0.042)	(0.007)	(0.007)
Mean in -14	0.185	0.181	0.061	0.505	0.106	0.420	0.137	0.770
Red handed +1	-0.013***	-0.002	-0.008**	-0.053*	-0.005	0.058	0.012*	-0.016
	(0.003)	(0.003)	(0.002)	(0.022)	(0.003)	(0.041)	(0.006)	(0.009)
Mean in -14	0.150	0.146	0.048	0.452	0.085	0.374	0.120	0.624
Not red handed +1	0.002	-0.002	-0.002*	-0.005	-0.002	-0.034*	-0.001	0.011
	(0.001)	(0.001)	(0.001)	(0.012)	(0.002)	(0.014)	(0.003)	(0.007)
Mean in -14	0.035	0.035	0.013	0.054	0.021	0.046	0.017	0.146
				Panel B: Violent crime				
	Any	Simple	Serious	Threats	Public dist.			
Payday +1	-0.009	0.019*	0.003	-0.050***	0.021			
	(0.006)	(0.009)	(0.014)	(0.015)	(0.016)			
Mean in -14	0.763	0.721	0.829	0.772	0.803			
Red handed +1	-0.017*	0.016	-0.011	-0.043**	0.020			
	(0.008)	(0.010)	(0.016)	(0.015)	(0.018)			
Mean in -14	0.711	0.672	0.794	0.718	0.727			
Not red handed +1	0.008	0.003	0.014	-0.007	0.001			
	(0.005)	(0.006)	(0.009)	(0.008)	(0.011)			
Mean in -14	0.052	0.049	0.035	0.054	0.076			
				Panel C: Sexual crime				
	Any	Rape	Against children	Indecent behavior	Other			
Payday +1	0.020	-0.028	-0.007	0.137***	0.000			
	(0.023)	(0.043)	(0.034)	(0.030)	(0.031)			
Mean in -14	0.669	0.741	0.891	0.563	0.845			
Red handed +1	0.017	-0.015	-0.040	0.121***	-0.013			
	(0.025)	(0.045)	(0.039)	(0.031)	(0.036)			
Mean in -14	0.598	0.694	0.866	0.489	0.766			
Red handed +1	0.003	-0.013	0.033	0.016	0.014			
	(0.012)	(0.015)	(0.020)	(0.016)	(0.020)			
Mean in -14	0.071	0.048	0.025	0.074	0.079			

Note: The table shows estimates of changes to crime clearance rates on the day after paydays due to the payday. Estimates are shown separately by detailed crime types. These are estimated using daily data, and an event study specification where the daily crime clearance rate is regressed on a series of dummies indicating the number of days since payday, day of the week fixed effect, month fixed effects, year fixed effects and special day fixed effects. Day -14 is omitted as the reference category. The sample includes all paydays from 2003 to 2018 and the 28 days surrounding each paydate. Standard errors are clustered at the payday level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.