

Clash of norms

Judicial leniency on defendant birthdays¹

Daniel L. Chen

Arnaud Philippe

Abstract

We document judicial leniency on defendant birthdays across 5 million decisions. Our results are consistent with reference-dependent social preferences. First, French sentences are 1% fewer and around 5% shorter. Second, U.S. federal judges also round down sentences except when rounding up makes available sentencing reductions for good behavior. No leniency appears on the days before or after a defendant's birthday. Judges' experience and economic reasoning seem to mitigate the effect, consistent with isolating a judicial channel.

1. Introduction

Individuals frequently have to evaluate others' productions, acts or personhood. In professional settings, those evaluations usually have to be done in an impartial way. Professors marking exams, loan officers evaluating demands, judges deciding cases are supposed to follow precise rules and to only evaluate some defined material. While they are supposed to be independent, surrounding norms could affect those evaluations. National or religious holidays, birthday of the evaluated person, birth or death of one of the person's relatives could change the evaluators' judgment.

¹ Daniel L. Chen, daniel.chen@iast.fr, Toulouse School of Economics, Institute for Advanced Study in Toulouse, University of Toulouse Capitole, Toulouse, France; dchen@law.harvard.edu, LWP, Harvard Law School. Arnaud Philippe, arnaud.philippe@iast.fr, Institute for Advanced Study in Toulouse, Toulouse School of Economics, University of Toulouse Capitole, Toulouse, France. First draft: June 2017. Current draft: June 2018. Latest version at: http://users.nber.org/~dlchen/papers/Clash_of_Norms.pdf. Work on this project was conducted while Chen received financial support from the European Research Council (Grant No. 614708), Swiss National Science Foundation (Grant Nos. 100018-152678 and 106014-150820), and Agence Nationale de la Recherche. Support through ANR Labex is gratefully acknowledged.

In this paper we examine the effect of defendant's birthday on judicial decisions. This event is interesting for at least three reasons. First, birthdays are associated with a strong societal norm. Indeed, birthdays elicit expectations of favorable treatment for the individual whose birthday it is (Greene et al. 1987). For example, patients expect celebration on their birthday (Phillips et al. 1973), teachers use birthday parties to integrate refugees (Windzio 2015), and unmet expectations on birthdays are associated with suicide (Williams et al. 2011). Second, judicial decisions are associated with a very strong professional norm of independence from extrajudicial factors. Across different societies, various norms and institutional mechanisms are designed to limit the influence of extrajudicial factors: oaths to uphold duty to be impartial, disclosure of conflicts of interest, recusal from cases, random assignment to prevent judge shopping, ethics committees, appeals, transparency and accountability, tenure, and prohibitions on honoraria, political speeches, or campaign donations. These professional norms are supposed to mute personal and general societal norms. Third, as judicial decisions dates are usually set in advance and follow precise rules (for organizational purposes), birthdays are orthogonal to cases characteristics, as the statistical tests confirm. Then, defendant's birthdays present a good setting for measuring if and how professional norms mute social norms.

Using two different countries, France and the U.S., we show that deciding cases on defendant birthdays is likely to be effectively random. The two countries provide independent evidence across a very large sample size of decisions. Each country offers unique advantages for exploring mechanisms in terms of data analysis that taken together portray a picture of judicial leniency on defendant birthdays.

First, we test whether French judges are more lenient on defendant birthdays. The French court setting offers administrative data on 4.6 million decisions where proceedings begin with opening statements by the judge stating the identity and birthday of the defendant.² The setting is also convenient because there are no sentencing guidelines (only a maximum far above the pronounced sentences) and they are usually decided through trial (there is a limited plea bargaining mechanism). We estimate that judges are 1% less likely to assign any prison sentence to defendants on their birthday if they appear in court. This effect appears throughout the distribution, except at the very top. Having a decision on one's birthday reduces the sentence by 3.6% to 6.6%. The effect seems at least partly driven by the fact that the birthday

² Article 406 of the criminal code says that the judge starts the trial by verifying the identity of the defendant, which basically means first name, last name and date of birth.

defendants are convicted of a less severe crime, a proxy for partial acquittal or re-qualification in court, effectively amounting to a shorter maximum sentence length of 27 days out of 1,283 (a 2% reduction).

Second, we test whether U.S. judges are also more lenient on defendant birthdays. In the federal district courts, we observe 600,000 decisions. Judges have to report the number of months and, the number of additional days of the sentence (i.e. “3 months and 2 days”. While the month component is not affected, we find that the day component of federal sentences is reduced by 33% (0.13 days out of an average 0.36 days) on defendant birthdays, mostly by assigning 0s. This is consistent with an interpretation of mental categories or accounts for different components of decisions. We also leverage a feature of the district courts as a mechanism check: judicial sentences of more than a year are eligible for sentencing reduction for good behavior, which effectively reduces sentences to be under a year. Notably, we find that defendant birthdays do not increase the likelihood of the 0 day component of federal sentences when the month component is 12.

Third, the characteristics of the samples allow us to further dig into the mechanisms. We find that the effect of defendant’s birthday is potentially intentional rather than due to behavioral biases as it is more present when judges have more time to take decisions.

Lastly, we find that the effect varies with judges’ characteristics and experience. First, in U.S. federal district courts, where we observe race, we find significant birthday leniency only if the judge and defendant share the same race. Second, using the available sample of 90,000 decisions in New Orleans courts, where judges are deemed to be less professional (elected) than the federal district court judges (appointed by the U.S. President and confirmed by the Senate), we find that the birthday effect can be large, representing up to 40% of the sentence (unprecisely estimated), consistent with professionalization reducing some of the societal norm. On the contrary, highly professional and independent French appeal court judges are not affected by defendant’s birthday. Third, in U.S. federal district courts, where we observe judicial writing in unrelated cases, we can see that economic thinking eliminates the birthday effect, as reflected in the frequency of the term “deterrence” in their civil case writings. Deterrence thinking eroding sympathy or empathy is consistent with a trade-off between economical and emotional thinking. This last finding is consistent with the judicial channel as mechanism for our results. Moreover, it suggests that economic training, along with professionalism, may mitigate behavioral tendencies of judges.

Altogether, we show that birthday leniency in two different countries is unrelated to the quality or merits of the case considered. We exploit high-frequency variation from birthdays, which are defendant-specific. Consequently, the decision-maker has no other reason to be affected by the current day. We test whether coordination (a societal signal) (Chwe 2013), like birthdays, can bias high-stakes decision-making in real-world or field settings such as those involving judges making decisions in their primary occupations. Our analysis also differs from the existing literature on coordination in that most of the existing literature does not have random assignment or large samples (Greene et al. 1987, Phillips et al. 1973, Windzio 2015, Williams et al. 2011).

Our setting with life-tenured judges not likely to interact again with the defendant rules out models of social preferences with direct reciprocity motives (Sugden 1984). Our results are consistent with more general indirect reciprocity theory. Indeed, societal norms to generate benefits for society at large has been linked to indirect reciprocity norms that overcome the prisoner's dilemma and individual-level cost-benefit analysis. Our setting involves two very distinct groups, as the probability a judge lives in the same neighborhood as the defendant is small. Our finding that judicial in-group favoritism increases with defendant birthdays echoes Shayo and Zussman (2011)'s finding that judicial in-group bias increases after terrorism.³

Our research also contributes to the sizable psychology literature using vignette studies of small samples of judges that suggest unconscious heuristics (e.g., anchoring, status quo bias, availability) play a role in decision-making (e.g., Guthrie et al. 2007). In addition, our results contribute to the theoretical literature on decision-making (e.g., Bordalo et al. 2014), which models how judges can be biased by legally irrelevant information.⁴ Our analysis differs from the existing literature on extraneous factors in legal outcomes in that our setting offers greater control over omitted case characteristics (Danziger et al. 2011; Weinshall-Margel et al. 2011), isolates mechanisms via the judicial decision-maker rather than the lawyers or litigants (Eren

³ Our results are also related to "guilt aversion" theory (Charness and Dufwenberg 2010). Khalmetski (2016) finds some lab evidence of it while Ellingson et al. (2010) and Vanberg (2008) find little role in other experiments, it is worth noticing that our field results are consistent with guilt aversion. The birthday leniency effect could be based on the judge's beliefs about the defendant's reference point and expectation for leniency on their birthday.

⁴ See also research on the effect of football games and weather (Chen 2017; Chen and Loecher 2018), on the effect of political orientation of the judges (Anwar et al 2015), examining the effect of presidential elections (Berdejo and Chen 2017), examining the effect of the gambler's fallacy (Chen et al. 2016).

and Mocan. 2016) or jurors (Anwar et al. 2012; Philippe et al. 2017) and does so with a sample size larger than previous studies of behavioral judging.⁵

These effects are very significant for the affected defendants, which raises questions about other margins of behavioral change not observed by the econometrician and whether professional norms are enough to mute social norms. Whether society wants judges to be lenient on defendant birthdays is an open question, though gift giving to defendants who share the same race is arguably already prohibited. The rest of the paper is organized as follows. Section 2 presents the data and setting. Section 3 presents the identification strategy. Section 4 presents the results. Section 5 presents mechanisms. Section 6 concludes.

2. Data and setting

2.1. France

We focus on crimes that can be punished by prison sentences of up to ten years.⁶ This criminal category – called “délits” in French – contains the vast majority of what are commonly perceived as crimes: theft, violence, drug consumption or drug dealing, and road-related offenses. Our time frame from 2002–2014 covers 320,000 and 500,000 convictions per year in the 186 courts of first instance (non-appeals).⁷

The term “prison” in the French criminal code is the sum total of the defendant’s real prison sentence (i.e. the maximum amount of time a person could spend in prison because of the crime): 1) prison time, 2) a probation sentence (if given), and 3) the suspended prison time. The court promulgates the sum of the three parts, before discussing each subcategory in turn.⁸ Probation sentences are prison time for violation of probation.⁹ Suspended prison time is

⁵ Our sample of 5 million exceeds the next largest sample of 1.5 million (Chen 2017).

⁶ There are two additional categories: minor infractions that cannot be punished by prison (e.g., parking infractions) and the most severe crimes (“felonies”) – e.g., murder and rape – that can be punished by up to life imprisonment and are judged by specific courts.

⁷ Juveniles are judged by specific courts. They are dropped in the analysis.

⁸ For example, a decision like “one year of prison and two years of suspended prison” is presented as a “three-years sentence including one year of prison”.

⁹ Probation lengths are not recorded in the database.

imposed if the same crime is committed within five years of the original sentence. All sentences are decided after a trial.¹⁰ In this paper we will mainly analyze the sum total of sentences.

The correctional courts (for misdemeanor) are composed of three professional judges: one “president” that leads the hearing and two assistants.¹¹ Judges have no control over their schedule. For each case, when the investigations are finished, the prosecutor in charge of it chooses the type of procedure (accelerated/normal) and, based on this, picks the next session of the relevant type. The head of the court decides, in the beginning of the year, the number and type of audiences per week.

The original dataset is a compilation of criminal records from the statistics service of the French Ministry of Justice (Sous Direction de la Statistique et des Etudes). It contains a detailed description of every criminal case judged each year, including the date, place, and procedural detail of the trials, the date the defendant is notified of the sentencing decision (frequently identical to the trial date if the defendant is present), the date of the crime (if known), its exact category based on the criminal code, the sentence decided (e.g., prison, probation, and suspended prison), and, finally, sex, nationality and birth date of the defendant. Acquittals are not recorded.

We use the years 2002-2014 and our final dataset is composed of 4,608,209 observations.¹² The descriptive statistics of this data set are presented in the first two columns of Table 1. Defendants are mainly male (90%), French (81%), and relatively young (33 years old on average). Plea-bargaining is rare (only 11% of the cases) and defendants are usually present at trial (78% of the cases). Road-related infractions are the most frequent crimes (32%) followed by property crimes (26%), violence (20%), and drug offenses (9%). Lastly, sentences are short compared to those in the United States. It is on average equal to 127.2 days (57.9 prison days, 36.7 probation days, 32.6 suspended prison days). The first number that is mentioned by the judge is the maximum amount of time the defendant could spend incarcerated following the

¹⁰ An exception is for plea-bargaining, which was introduced in France in March 2004. It could only be used for a subset of crimes – those with a maximum prison sentence below or equal to five years – and sentences could not exceed one year. Plea-bargaining has never exceeded 12.5% of case resolutions in a year since its introduction.

¹¹ For minor crimes, the French criminal code allows an accelerated procedure that is similar to the normal one except that the investigation term is extremely short (less than a week). The prosecutor conducts the investigations – and eventually imposes pre-trial detention (another judge controls this decision) – chooses the charges and goes for an accelerated procedure if it seems appropriate.

¹² 1.5 million cases are excluded from the analysis as they could not lead to any prison time (“compositions pénales” and “procédures simplifiées”)

decision, i.e., the sum of the prison, probation, and suspended prison sentences.¹³ 72% get sentences that could lead to prison. Lastly, people have trials on their birthday 0.27% (1 out of 365) of the time, which is what we would expect with an even distribution of trial days across birthdays.

2.2. USA.

The United States District Courts (USDC) are the judicial backbone for hearing and sentencing federal crimes in the United States. Federal crimes include illegal activity committed on federal land, crimes committed by or against federal employees in particular roles, matters involving federal government regulations (e.g., illegal immigration, federal tax fraud, counterfeiting), or crimes against the U.S. that occur outside of the United States, such as terrorism. Federal crimes comprise 8% of the U.S. prison population and constitute the most serious crimes. Among federal crimes, the most frequently heard cases involve immigration, drug trafficking, firearms, and fraud.

In almost every case, the defendant enters a plea agreement with the prosecutor, which is then approved of, or denied, by the judge. Otherwise, a sentencing trial is held, and the judge determines the sentence for the criminal to serve: probation, federal prison, or both. Whether or not there is a plea bargain, the judge has final say on the criminal sentence. We expect the effect of birthday to be more limited than in France where judges have more discretion.

Judges have some control over their schedule. They mainly determine the days when they want to hear cases or discuss plea agreements. Once the schedule is determined, their courtroom deputies fill the calendar with cases.¹⁴ Then, if selection based on birthday is, in theory, possible, the schedule is strongly constrained – postponing a case means a delay of several weeks – and the concrete allocation of the case is not done by the judge himself. This organization makes the selection on birthday unlikely.

¹³ For example, “3 years of imprisonment, of which 2 suspended” would mean a sentence equal to one year of prison and two years of suspended prison.

¹⁴ According to a judge we talked with: “Most judges will set a bunch of things back to back on a given day – guilty plea, sentencing, supervised release or probation violations, etc. One judge hears criminal matters only 1-2 days a month. Others have criminal calendars much more regularly. The judges set things according to their own calendars and then their courtroom deputies notify us of the dates. (If we have a conflict, we have to file a motion to continue.)”

Importantly for our study, offenders are eligible to get good time credit if they are sentenced to more than a year, i.e., to at least one year and one day. Then, one-year plus one day sentences could be considered as less severe than one-year sentences, as the maximum amount of good time earned can reduce a one year and one day long sentence by 54 days.

There are 94 district courts in the United States. At least one district court is located in each state or U.S. territory. States that are large or have a large population have sub-state regional courts. Cases are randomly assigned to a single judge. The United States Sentencing Commission (USSC) produces the sentencing guidelines for federal judges to use when they make their sentencing decisions. The judges are given a guideline range for the criminal sentence that is based upon the severity of the crime and the defendant's criminal history. Due to these guidelines, the largest factor determining sentence range is the criminal charges brought to the judge by the prosecutor.

We use the period from October 1991 to September 2003 and our final dataset is composed of 602,908 observations¹⁵. Descriptive statistics are presented in the last two columns of Table 1. Offenders are 35 years old on average and they are mainly male (85%) and U.S. citizens (70%). Black and white offenders are equally numerous – around 34% – while Hispanics are slightly less numerous (29%). Only 7% of defendants go to trial. Prison sentences are divided into a month component, on average equal to 45 months, and a day component, on average equal to .36 (6% of cases have sentencing days exceeding 0). 56% of the day components that are not equal to zero are equal to one. 80% of those “one-day parts” are associated with 12 months sentences leading to one year plus one day sentences, the minimum sentences that make offenders eligible to good time credits. Lastly, offenders are sentenced on their birthday 0.28% of the time, again roughly 1 in 365.

We also examine a small sample of 87,319 decisions in New Orleans courts. New Orleans is the largest city and metropolitan area in the state of Louisiana. The Orleans Parish District Attorney’s Office and the New Orleans District Attorney (NODA), and their attorneys, are responsible for enforcing state criminal laws in New Orleans and the surrounding areas. In January 1988, the Orleans Parish District Attorney established and instituted an office-wide computerized system to collect data on every case that was processed through the office. The

¹⁵ Unfortunately, while district courts decisions are available over a longer time period, the exact date of birth is not available outside the studied sample.

data collection system was designed as an internal office management tool. Our data spans from 1989 to 1999. The dataset includes detailed information regarding each individual offender and the judge that handled his or her case. Once the cases went to the court, they were randomly assigned to a court section by the clerk’s office.¹⁶ Each section is composed of a single judge.

3. Identification strategy

In order to measure the effect of defendants’ birthday we use regressions of the form:

$$Sent_{i,t} = \beta_0 + \beta_1 \mathbb{1}_{bday=t} + \beta_2 \mathbb{1}_{|Bday-t|=1} + \beta_3 \mathbb{1}_{|Bday-t|=2} + \beta_4 \mathbb{1}_{WeekBday} + X_i + \epsilon_{i,t}$$

where:

- $Sent_{i,t}$ is the sentence pronounced against i at t . It is measured as the total sentence (in days, day winsorized¹⁷, or with threshold dummies) in France; the number of months, number of days, or departure from guidelines in the U.S. federal district courts; or the number of days in New Orleans courts
- $\mathbb{1}_{bday=t}$ is a dummy equal to one if the decision is taken on defendant’s birthday
- $\mathbb{1}_{|Bday-t|=1}$ and $\mathbb{1}_{|Bday-t|=2}$ are dummies equal to one if the decision is taken on one (respectively, two) days before or after defendant’s birthday
- $\mathbb{1}_{WeekBday}$ is a dummy equal to one if the decision is taken in the week of defendant’s birthday
- X_i is a set of control variables (used in the robustness checks): crime category, gender, citizenship, plea, recidivist. In the French data and the U.S. federal district data, we can add day-of-year fixed effects. In the latter, we can also add education, age, race, judge as dummy indicators.

In this regression, β_1 is the parameter of interest. β_2 , β_3 and β_4 are expected to be 0.

¹⁶ The Orleans Parish rule was written as follows: “All cases pending in the criminal district court shall be allotted equally among Sections A, B, C, D, E, F, G, H, I, and J of the court. Except on Sundays, legal holidays, and legal half-holidays, the allotment of cases shall be made publicly by classes daily at noon by the clerk or a deputy clerk selected by him, in the presence of the district attorney. The fact the accused was committed for trial at a preliminary examination shall not be grounds for the recusation of the trial judge who held the preliminary examination.” 1991 La. R.S. 13:1343.

¹⁷ We winsorize at the 5% level, meaning we replace the outliers exceeding the top 5% with the 5% threshold value.

This strategy is valid only if birthdays are orthogonal to decisions. We have argued that it is most likely true for procedural reasons. Moreover, the proportion of decisions taken on defendant's birthday represents exactly $1/365$. In order to further investigate this question, we also run balancing checks, i.e., regressions of the form presented in equation 1 with socio-demographic characteristics or procedural variables as outcomes. Those exercises are presented for both France and the U.S. in Table 2. They confirm that birthday is not correlated with observable characteristics. Panel A shows that 1 out of 8 tests are significant at the 10% level for France and Panel B shows that none of the 7 tests are significant at conventional levels.

4. Main results

4.1. France

Figure 1.a. shows that the average logarithm of sentences declines for birthday sentences, but not for trial days on days other than the defendant's birthday. Table 3 presents our baseline specification. Column 1 indicates on defendant birthdays, the likelihood of receiving any sentence falls by 1 percentage point. Column 2 shows that sentences of longer than 6 months are also 1% less likely. Column 3 shows that the birthday effect becomes insignificant for sentences longer than 12 months. This means that sentences are shorter throughout the distribution except at the very top, since the average sentence length is 127 days. Column 4 shows that the number of days is reduced by roughly 4. Column 5 presents the effect when using the logarithm of the quantum (plus 1). On average, sentences are up to 6.6% shorter on birthday. No significant impact appears for the placebos. The standard errors indicate that these coefficients are similarly precisely estimated, but the point estimates are a magnitude smaller than the birthday effect.

We then explore the mechanisms. Column 6 of Table 3 shows that defendants are 1% more likely to be present or represented by their lawyers on their birthday. If we restrict to the defendants who are present or represented (as obliged), the birthday gift increases to 7.8% in Column 7, but there is no gift for defendants who did not answer to the court's summon in Column 8. This distinction suggests that it is not the scheduler who selects cases more deserving of shorter sentences for trial dates coinciding with the defendant's birthday, because the absent defendants do not receive shorter sentences.

Column 9 shows that part of the mechanism appears to be that judges convict defendants of a less severe charge, finding them guilty for a crime that has on average 27 day-shorter maximum sentence length¹⁸, a proxy for partial acquittal or the court requalifying the defendant's crime. The average maximum sentence length is 1,283 days. In the appendix, we show that the results are robust to perturbations of the main specification - removing controls, adding controls¹⁹ for case and defendant characteristics, dropping crimes conducted on defendant birthdays, or adding day fixed effects in Table A1. In Table A2, we show that the effect mainly comes from a decrease in prison sentences. Suspended prison sentences are not affected. In Table A3, we show that drug offenses—but not violent offenses—benefit from the judicial leniency. In Table A4, we report larger effects for male defendants and non-citizens.

4.2. USA

Figure 1.b. shows that the number of days in a federal sentence declines on the defendant's birthday, but not the days before or after the birthday. In Table 4, Column 3, we present results for the baseline specification and find that judges are assigning 0.13 fewer days if the decision occurs on the defendant's birthday, all else equal. The effect of 0.13 is about one-third the average number of days (0.36). Columns 1 and 2 show that there is no impact on downward departures from the guideline nor on the month component of the sentence. We also see no impact on the days before or after the birthday. In the appendix, we show the results are robust perturbations of the main specification, removing controls or adding controls for case and defendant characteristics, judge fixed effects, or day fixed effects in Table B1.

However, as we previously mentioned, the meaning of the days component of the sentence differs depending on the month component it is associated with. While having some days in addition to the months is usually harsher, it is not the case if the month part is equal to one year, when having one day instead of zero make offenders eligible to get good time credit. In order to further investigate the effect of birthday on the day component of the sentences we split our sample into offenders sentenced to 12 months and other offenders. The probabilities to get at least one day around birthday for those two subsamples are presented in Columns 5 and 6. A clearer pattern emerges. While the probability to get any days is smaller (by 33% of the average

¹⁸ As mentioned in the introduction, this maximum is defined, for each crime, in the criminal code.

¹⁹ Effects are smaller when controlling for the full set of crime fixed effects as the effect on charges is ruled out.

likelihood to receive any amount of days) when the month component is not equal to 12, it is higher when the month part is equal to twelve. Then, in both cases, sentences seem more lenient on birthday. Column 7 shows an insignificant decrease in the day component of sentence lengths when the month component is equal to 12.²⁰ The placebo coefficients are again far smaller and also insignificant. In Table B2, we show that property offenses—but not drug offenses—benefit from the judicial leniency. We also report larger effects for those who do the normal procedure and plea guilty and for those who are male (Table B3).

5. Mechanisms

5.1. Thinking fast or thinking slow

We first want to understand if the effect of the norm is a behavioral bias – close to what could be observed with events affecting a judge’s mood – that could be eliminated with nudges or longer deliberation, or if it could be intentionally taken into account. In order to discriminate between those two hypotheses, we measure the effect of birthday depending on the time taken by the court to decide the case. If birthdays affect decisions taken in a very short time it will support the idea of a behavioral bias. On the contrary, if birthdays mainly affect decisions taken when judges have time to decide, it will be in line with a more intentional mechanism.

We use two proxies to measure the time judges take to decide the case. First, we use the caseload at the individual level (USDC) or at the court level (France). Second, in France, we compare decisions taken under an accelerated procedure or under a normal procedure. Accelerated procedure is a legal mechanism to ensure only a short delay between the crime and trial and is used for reasonably simple cases. This procedure is well known for inducing overcrowded sessions (Christin 2008) and very short hearing of the cases (29 minutes on average according to Raoult and Azoulay, 2016).

The results are presented in Table 5. Columns 1 and 2 present the effect of birthdays when caseloads are above or below the median (respectively). In both France (Panel A) and the USDC (Panel B) the effect is larger when the caseload is smaller than the median. Columns 3 and 4

²⁰ We check if this is due to judges shifting sentences in the region between 10 months and 8 days (sentences equal to 12 months plus one day are eligible to 54 days reductions i.e. could be equal to 10 months plus 8 days) to 12 months to the region above 12 months. We find that 0.22% of sentences have a birthday in the region, while 0.31% of sentences in the region above 12 and 13 months have a birthday.

present the results for accelerated and normal procedure (respectively) in France. The effect of birthdays in accelerated procedure is not significant even if the coefficient is in negative and sizable.²¹ Taken together those results support the idea of an intentional effect.

5.2. In-group bias

In the U.S. district court data, we have the judicial identity, which allows further exploration of the effect depending on judges' and defendants' characteristics. Table 6, Columns 1 and 2 examine the role of in-group bias. Column 1 shows that individuals who share the same race as the judge receive fewer sentencing days. However, the effect is multiplied by 4 when it is the defendant's birthday. The level term of the birthday effect indicates that it is largely driven by same-race gift-giving.²² Column 2 finds no in-group effects when it comes to gender with or without the birthday sentences.

5.3. Judges' experience and deterrence thinking

Lastly, we measure how experience and training affect how birthday is taken into account. We first measure the effect in two types of court composed of either extremely selected judges or less professional ones. In Table 6, column 3, we measure the effect of birthday in French appeal courts. Judges sitting in those courts are strongly selected and their promotion should be validated by a national independent commission (the "Conseil Supérieur de la Magistrature"). We do not observe any birthday effect in those courts. This null result could be explained by several mechanisms – especially the fact that an anchor has been settled at the first trial – but it is consistent with the idea that more professional judges are not affected by birthday. However, we suspect anchoring is less likely the explanation since U.S. district judges have sentencing guidelines to anchor their decisions, yet are still affected by defendant birthdays.

For contrast, in Column 4, we use data from criminal courts in New Orleans Parish. Those courts are characterized by less professional judges who run for election in comparison to U.S.

²¹ If we use a dummy equal to one if the defendant gets at least one day (instead of the number of days) the coefficient of birthday under accelerated procedure is positive and not significant. The coefficient for normal procedure remains negative and significant (result not shown).

²² The sample size is reduced in this Table because we do not have the judge identity in every case.

federal district court judges, who are appointed with life tenure by the U.S. President and confirmed by the Senate. The birthday effect appears to be very large, while unprecisely estimated, decreasing the sentences by 40%). No significant impact appears for the placebos.²³

Lastly, in Column 5 we measure how judicial thinking changes the effect of birthday. We investigate this question by using the presence of deterrence language in civil cases, a proxy for economic thinking. As normalization steps, judicial opinions are removed of punctuation, capitalization, functional stopwords, numbers, and word endings. Then, for each district judge's civil case opinion i is scored by the relative frequency of deterrence. This opinion-level score is normalized by the word frequency in Google Books. Then, the average deterrence score for judges in a year is constructed relative to other judges in a district-year. Then an average score is computed for a judge's career. We find that judges below-median in economic thinking are affected by birthdays, decreasing the days component by 0.17, while those above-median in economic thinking are essentially unaffected by birthdays.²⁴ This result is consistent with isolating the judicial channel. Any potential behavioral changes by the litigant on their birthday is likely to be present even for an economic-thinking judge.

6. Conclusion

We document strong birthday effects on decision-makers, unrelated to the quality of cases in French and U.S. courts. We find consistent evidence with many common links across the two countries. The judges find ways to be more lenient on defendant birthdays. We show that the birthday effect is more consistent with gift giving. We can rule out general mood effects and reciprocity concerns that motivate typical models of gift giving. Beyond the three court settings we study, our findings could have broader implications. Almost all individuals make decisions embedded in everyday life. Our results suggest that social norms transmitted through rituals can perversely lead to unfair or incorrect decisions in important situations even when professional norms have been designed to mute them.

²³ Robustness checks of this result are presented in Appendix D table D2, where we perturb the specification.

²⁴ Data on deterrence language comes from Ash et al. (2017), which documents the spread of the concept of deterrence in the federal judiciary. A description of how the measure is constructed is in the appendix.

References

- Althusser, Louis** (1970). "Idéologie et appareils idéologiques d'État (Notes pour une recherche)". *La Pensée* (151).
- Anwar, Shamena, Patrick Bayer, and Randi Hjalmarsen**. "The impact of jury race in criminal trials." *The Quarterly Journal of Economics* 127.2 (2012): 1017-1055.
- Anwar, Shamena, Patrick Bayer, and Randi Hjalmarsen**. (2015). "Politics in the courtroom: Political ideology and jury decision making" National Bureau of Economic Research Working Paper No. w21145.
- Ash, Elliott, Daniel L. Chen, and Suresh Naidu**. (2017). "Ideas Have Consequences: The Impact of Law and Economics on American Justice." Mimeo.
- Battigalli, Pierpaolo, and Martin Dufwenberg**. "Guilt in Games." *American Economic Review*, 2007, 97(2): 170-176.
- Berdejo, Carlos and Daniel L. Chen**, "Electoral Cycles Among U.S. Courts of Appeals Judges," *Journal of Law and Economics*, forthcoming.
- Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer**, Saliency Theory of Judicial Decisions, *Journal of Legal Studies* Forthcoming, 2014.
- Charness, Gary, and Martin Dufwenberg**. "Bare promises: An experiment." *Economics letters* 107.2 (2010): 281-283.
- Chen, Daniel L.**, "Mood and the Malleability of Moral Reasoning," 2017. TSE Working Paper No. 16-707.
- , "Is Justice Really Blind? And Is It Also Deaf?," in *Computational Analysis of Law*, Santa Fe Institute Press, ed. M. Livermore and D. Rockmore, forthcoming.
- and **Markus Loecher**, "Events Unrelated to Crime Predict Criminal Sentence Length," Working Paper, 2018.
- , **Tobias J. Moskowitz, and Kelly Shue**, "Decision Making Under the Gambler's Fallacy: Evidence from Asylum Judges, Loan Officers, and Baseball Umpires," *The Quarterly Journal of Economics*, 2016, 131 (3), 1181–1242.
- Chwe, Michael Suk-Young**. *Rational ritual: Culture, coordination, and common knowledge*. Princeton University Press, 2013.
- Danziger, Shai, Jonathan Levav, and Liora Avnaim-Pesso**, "Extraneous factors in judicial decisions," *Proceedings of the National Academy of Sciences of the United States of America*, 2011, 108 (17), 6889–6892.
- , ---, --- and ---, "Reply to Weinshall-Margel and Shapard: Extraneous factors in judicial decisions persist," *Proceedings of the National Academy of Sciences of the United States of America*, 2011, 108 (42), E834.

Durkheim, EC, “The Elementary Forms of the Religious Life, trans. Karen Fields,” 1912.
Eren, Ozkan and Naci Mocan, “Emotional Judges and Unlucky Juveniles,” Working Paper 2016.

Ellingsen, Tore, et al. "Testing guilt aversion." *Games and Economic Behavior* 68.1 (2010): 95-107.

Eren, O., & Mocan, N. (2016). *Emotional judges and unlucky juveniles* (No. w22611). National Bureau of Economic Research.

Greene, Dayle, Linda Barber, Mona Chorney, Bonnie Martyn, Arlene Tanney, Norma Thurston, and Judith Tompkins, “Birthdays,” *Journal of Psychosocial Nursing and Mental Health Services*, 1987, 25 (10), 8–9.

Guthrie, Chris, Jeffrey J. Rachlinski, and Andrew J. Wistrich, “Blinking on the Bench: How Judges Decide Cases,” *Cornell Law Review*, 2007, 93 (1), 1–44.

Hastings, Justine S. and Jesse M. Shapiro, “Fungibility and Consumer Choice: Evidence from Commodity Price Shocks” *The Quarterly Journal of Economics*, Volume 128, Issue 4, 1 November 2013, Pages 1449–1498,

Khalmetski, Kiryl. "Testing guilt aversion with an exogenous shift in beliefs." *Games and Economic Behavior* 97 (2016): 110-119.

Moore, Celia and Lamar Pierce, “Reactance to transgressors: why authorities deliver harsher penalties when the social context elicits expectations of leniency,” *Frontiers in psychology*, 2016, 7.

Philippe, Arnaud and Aurélie Ouss, ““No Hatred or Malice, Fear or Affection”: Media and Sentencing,” *Journal of Political Economy*, forthcoming.

Phillips, David P and Kenneth A Feldman, “A dip in deaths before ceremonial occasions: some new relationships between social integration and mortality,” *American Sociological Review*, 1973, pp. 678–696.

Rachlinski, J. J. Sheri Lynn Johnson, Andrew J. Wistrich, and Chris Guthrie, “Does Unconscious Racial Bias Affect Trial Judges?,” *Notre Dame Law Review*, 2009, 84, 1195–1246.

Raoult, S., and Azoulay, W. (2016). Les comparutions immédiates au Tribunal de Grande Instance de Marseille. *Les rapports de recherche de l'ORDCS*, (8).

Sugden Robert, *Reciprocity: The Supply of Public Goods Through Voluntary Contributions*, *The Economic Journal*, Vol. 94, No. 376, 1984, pp. 772-787

Shayo, Moses, and Asaf Zussman. "Judicial ingroup bias in the shadow of terrorism." *The Quarterly Journal of Economics* 126.3 (2011): 1447-1484.

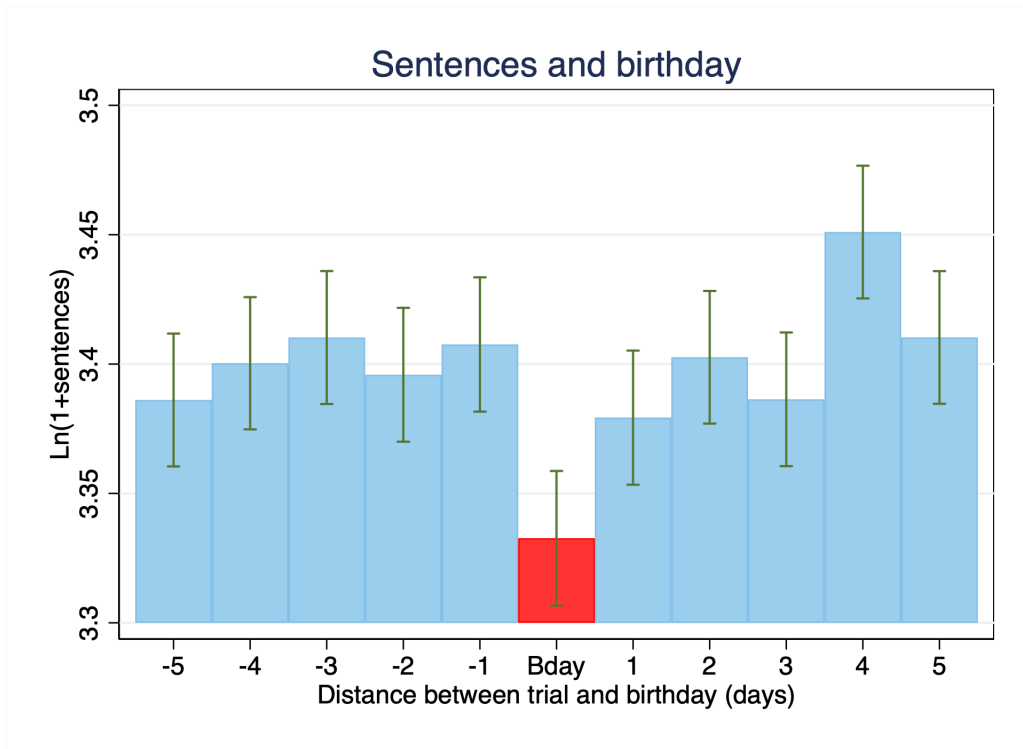
Vanberg, Christoph. "Why Do People Keep Their Promises? An Experimental Test of Two Explanations 1." *Econometrica* 76.6 (2008): 1467-1480.

Weinshall-Margel, Keren and John Shapard, “Overlooked factors in the analysis of parole decisions,” *Proceedings of the National Academy of Sciences of the United States of America*, 2011, 108 (42), E833.

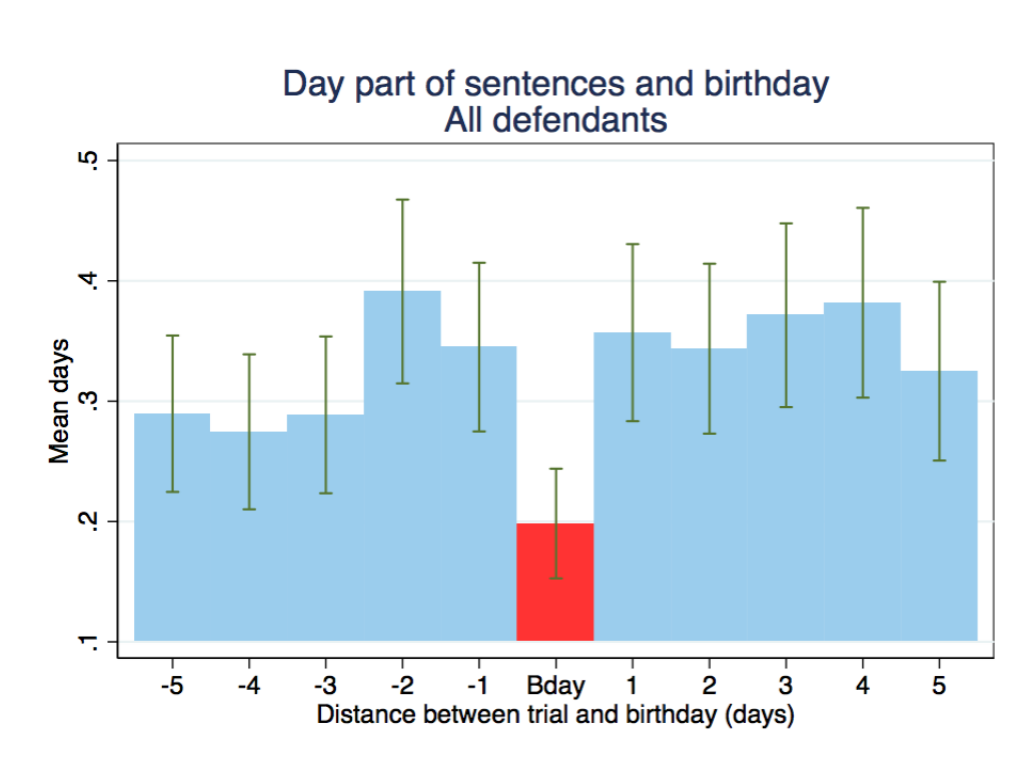
Williams, Alyson, David While, Kirsten Windfuhr, Harriet Bickley, Isabelle M Hunt, Jenny Shaw, Louis Appleby, and Navneet Kapur, “Birthday blues,” *Crisis*, 2011.

Windzio, Michael, “Immigrant children and their parents: Is there an intergenerational interdependence of integration into social networks?,” *Social Networks*, 2015, 40, 197–206.

Figures



(a : France)



(b : U.S.)

Figure 1: Main Results, Visual.

	France		U.S.	
	Mean	Sd	Mean	Sd
Male	.9	.29	.85	.36
Age	33.0	12.0	35.2	11.6
Citizen	.83	.37	.70	.46
White			.35	.48
Hispanic			.27	.44
Black			.35	.48
Plea bargaining	.11	.31	.93	.26
Present at trial	.78	.41		
Investigation length	353.3	519.43		
Time pre trial detention	7.49	52.8		
Crime				
Property	.26	.44	.29	.45
Road	.32	.47		
Violence	.2	.4	.1	.30
Drug	.09	.28	.41	.49
Max. possible sentence	1283.3	883.49		
Sentence				
Sentence (dummy)	.72	.45		
Sentence (day)	127.21	222.4		
Prison (USA month part)			45.9	64.4
Prison (USA day part)			.36	2.4
Bday	.0027	.0517	.0028	.0528
N	4,608,209		602,908	

Table 1: Descriptive Statistics.

Columns 1 and 2 present the statistics for French criminal courts while columns 3 and 4 present statistics for U.S. District courts.

	(1) Male	(2) Citizen	(3) Age	(4) Black	(5) Property crimes	(6) Road crimes	(7) Violence	(8) Drug crimes	(9) Invest. Length
Panel A: France									
Bday	0.0034 (0.0032)	0.0024 (0.0041)	0.22* (0.13)		-0.00045 (0.0048)	-0.0015 (0.0051)	-0.0010 (0.0044)	0.00079 (0.0031)	4.65 (5.76)
1 day before/after	-0.00023 (0.0027)	0.0075** (0.0033)	0.16 (0.11)		-0.0010 (0.0039)	0.00086 (0.0042)	0.0028 (0.0036)	0.0015 (0.0025)	5.08 (4.66)
2 days before/after	-0.00018 (0.0027)	0.0030 (0.0033)	0.18* (0.10)		0.0014 (0.0039)	0.0023 (0.0042)	0.00038 (0.0036)	-0.0034 (0.0025)	-0.72 (4.64)
Bday's week	-0.00074 (0.0019)	-0.0016 (0.0024)	-0.16** (0.074)		-0.0035 (0.0028)	0.0018 (0.0030)	0.0027 (0.0026)	-0.000043 (0.0018)	-0.83 (3.27)
Observations	4,608,209	4,608,209	4,608,209		4,608,209	4,608,209	4,608,209	4,608,209	4,608,209
Panel B: USDC									
Bday	-0.0098 (0.011)	0.0082 (0.014)	0.30 (0.33)	-0.0068 (0.014)	-0.0042 (0.013)		0.0038 (0.0090)	0.00077 (0.015)	
1 day before/after	-0.0076 (0.0087)	-0.00037 (0.011)	0.45* (0.27)	-0.014 (0.012)	0.012 (0.011)		-0.0029 (0.0073)	-0.013 (0.012)	
2 days before/after	-0.024*** (0.0088)	0.0095 (0.011)	0.28 (0.27)	-0.022* (0.012)	0.0072 (0.011)		0.0012 (0.0073)	-0.0038 (0.012)	
Bday's week	0.0077 (0.0061)	-0.0032 (0.0081)	-0.52*** (0.19)	0.010 (0.0084)	-0.0025 (0.0079)		-0.0019 (0.0052)	0.0013 (0.0086)	
Observations	602,113	585,199	602,790	593,238	602,804		602,804	602,804	

Table 2: Balancing checks.

All columns present the effect on the variable mentioned in the header. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Sentences (prison+probation+suspended prison)					Present	Sentences (prison+probation+suspended prison)		Severity of charges
	non 0	>6 months	>12 months	Quantum	ln(1+quantum)		Present ln(1+quantum)	Absent ln(1+quantum)	
Birthday	-0.011** (0.0050)	-0.0087** (0.0038)	-0.0028 (0.0026)	-4.13* (2.48)	-0.066*** (0.025)	0.013*** (0.0045)	-0.078*** (0.029)	-0.014 (0.049)	-26.8*** (9.62)
1 day before/after	-0.0025 (0.0040)	0.00078 (0.0032)	-0.0013 (0.0021)	0.78 (2.06)	-0.0049 (0.020)	0.0023 (0.0037)	-0.0043 (0.023)	-0.0066 (0.039)	2.84 (7.96)
2 days before/after	0.0013 (0.0040)	0.0014 (0.0032)	-0.000049 (0.0021)	-2.32 (1.98)	0.00091 (0.020)	0.00020 (0.0037)	0.014 (0.023)	-0.046 (0.039)	-8.24 (7.91)
Birthday week	0.0022 (0.0028)	0.0038* (0.0023)	0.0013 (0.0015)	2.60* (1.43)	0.018 (0.014)	0.0042 (0.0026)	0.015 (0.017)	0.030 (0.027)	1.66 (5.61)
Constant	0.72***	0.14***	0.058***	127***	3.38***	0.78***	3.37***	3.42***	1,283***
Observations				4,608,209			3,597,969	1,010,240	4,608,209

Table 3: Main results, France.

The dependent variable in columns 1 to 3 is a dummy equal to one if sentences - i.e., the sum of prison quantum, probation quantum and suspended prison quantum - is greater than 0 (respectively, 6 months, 1 year). Column 4 presents the effect on the overall quantum while column 5 presents the effect on the logarithm of the quantum. Column 6 presents the effect on a dummy equal to one if the defendant appears for arraignment. Columns 7 and 8 present the effect on quantum for defendants who appear/do not appear for arraignment respectively. Lastly, the dependent variable in column 9 is the maximum possible sentence (in days) of the main charge convicted. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Downward departure from guideline	Month component	Day component	Day >0	Prison		Day component	Day >0
	All				Without 12m sentences		12m sentences only	
					Day component	Day >0	Day component	Day >0
Birthday	-0.00096 (0.015)	-0.66 (1.86)	-0.13** (0.053)	-0.0049 (0.0066)	-0.13** (0.055)	-0.0093* (0.0048)	-0.12 (0.12)	0.030 (0.070)
1 day before/after	0.0073 (0.013)	-0.81 (1.58)	0.020 (0.056)	0.0033 (0.0057)	0.023 (0.058)	0.00075 (0.0044)	-0.12 (0.15)	-0.059 (0.058)
2 days before/after	-0.0033 (0.012)	-0.19 (1.62)	0.037 (0.056)	0.0039 (0.0057)	0.041 (0.058)	0.0053 (0.0045)	-0.097 (0.18)	-0.077 (0.059)
Birthday week	0.0049 (0.0089)	0.043 (1.10)	-0.036 (0.039)	-0.0032 (0.0040)	-0.041 (0.041)	-0.0020 (0.0031)	0.12 (0.10)	0.047 (0.043)
Constant	0.39***	45.9***	0.37***	0.058***	0.35***	0.033***	0.65***	0.57***
Observations	558,261	592,844	592,844	592,844	565,573	565,573	27,271	27,271

Table 4: Main results, U.S. District Courts

In column 1, the dependent variable is a dummy equal to one if the judge decides for a downward departure from sentencing guidelines. In column 2, the outcome variable is the month part of the sentences. In column 3, 5 and 7, the outcome variable is the day part of the sentences. In column 4, 6 and 8, the dependent variable is a dummy equal to one if the day part of the sentence is greater than zero. In columns 5 and 6, the sample is restricted to defendants who get a sentence with a month part different from 12. In columns 7 and 8, the sample is restricted to defendants who get a sentence with a month part equal to 12. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

Sample:	(1)	(2)	(3)	(4)
	Case load		Accelerated procedure	
	Above	Below	Yes	No
Panel A: France				
(outcome: ln(1+sentence))				
Bday	-0.059*	-0.071**	-0.0530	-0.0675***
	(0.036)	(0.034)	(0.0556)	(0.0261)
1 day	0.0012	-0.0092	0.0334	-0.00581
before/after	(0.029)	(0.028)	(0.0457)	(0.0212)
2 days	0.011	-0.0031	0.0253	-0.0174
before/after	(0.029)	(0.028)	(0.0443)	(0.0212)
Bday's week	0.0064	0.023	0.0282	0.0169
	(0.020)	(0.020)	(0.0323)	(0.0150)
Constant	3.15***	3.60***	4.742***	3.251***
Observations	2,233,711	2,374,498	397,988	4,210,221
Panel B: USDC				
(outcome: day component of the prison sentence)				
Bday	-0.017	-0.12*		
	(0.13)	(0.064)		
1 day	0.021	0.11		
before/after	(0.12)	(0.093)		
2 days	0.099	0.081		
before/after	(0.12)	(0.088)		
Bday's week	-0.095	-0.074		
	(0.078)	(0.056)		
Constant	0.40***	0.26***		
Observations	119,23	154,6		

Table 5: Mechanisms – cases’ characteristics

Panel A presents the results for France. The outcome variable is the logarithm of one plus the total prison sentence length (days). Panel B presents the results for U.S. federal district courts. The outcome variable is the day part of the sentences. In column 1 and 2, caseloads are defined as the number of decisions taken in a court in a day (France) or by a judge in a day (USDC). In column 1 (resp. 2), samples are restricted to caseloads below (resp. above) the median. In columns 3 and 4, “accelerated procedure” is a specific procedure defined in the French criminal code. In columns 5 and 6, the outcome variable is the absolute value of the residual from a regression of sentences (total prison sentence length in France, day part of the sentences in USDC) on socio-demographic variables, crime types and time fixed effects. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

	(1)	(2)	(3)	(4)	(5)
	USA		France, appeal courts	New Orleans	USDC
	Day component		ln(1+sentence)	ln(1+prison)	Day component
Bday	-0.018 (0.057)	-0.12** (0.052)	0.051 (0.092)	-0.43* (0.22)	-0.17*** (0.053)
Bday*Same race	-0.061 (0.038)				
Same race	-0.017 (0.011)				
Black defendant	-0.050*** (0.011)				
Black Judge	0.021* (0.011)				
Bday*Same sex		0.047 (0.046)			
Same sex		0.0010 (0.015)			
Female judge		-0.0085 (0.015)			
Female defendant		0.024 (0.015)			
Bday*econ training					0.15** (0.065)
Econ training					-0.061*** (0.0082)
1 day before/after	0.014 (0.063)	0.049 (0.074)	0.014 (0.076)	-0.17 (0.19)	0.038 (0.075)
2 days before/after	0.021 (0.069)	0.12 (0.083)	-0.12 (0.078)	0.11 (0.19)	0.11 (0.084)
Bday's week	0.0011 (0.044)	-0.032 (0.051)	0.038 (0.054)	0.047 (0.13)	-0.022 (0.052)
Constant	0.11***	0.17***	4.41***	4.68***	0.20***
Observations	103,177	172,789	306,322	87,319	167,404

Table 6: Mechanisms – judges’ characteristics

The first two columns present results for U.S. federal district courts. The outcome variable is the day part of the sentences. In column 1, the sample is restricted to black and white defendants. In columns 2, the sample is restricted to decisions for which the gender is known. Columns 3 and 4 present the results for decisions in French appeal courts and New Orleans Parish (Louisiana) respectively. The outcome is the logarithm of sentences plus one. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

Appendix material for online publication

Appendix A: France

	(1)	(2)	(3)	(4)	(5)
	Sentences (prison+probation+suspended prison)				
	non 0	All Quantum	ln(1+sentence)	Present ln(1+sentence)	Absent ln(1+sentence)
Panel A: Control for case and defendant characteristics					
Bday	-0.0063 (0.0046)	-0.68 (1.80)	-0.036* (0.022)	-0.043* (0.025)	0.0016 (0.045)
Obs		4,608,011		3,597,751	1,009,967
Panel B: Dropping crimes committed on Birthday					
Bday	-0.0093* (0.0050)	-2.83 (2.49)	-0.053** (0.025)	-0.062** (0.029)	-0.011 (0.049)
Obs		4,580,710		3,575,740	1,004,970
Panel C: Control for placebo only					
Bday	-0.0087** (0.0041)	-1.55 (2.03)	-0.047** (0.020)	-0.062*** (0.023)	0.016 (0.040)
Obs		4,608,209		3,597,969	1,010,240
Panel D: Control for birthday week only					
Bday	-0.010** (0.0044)	-3.62* (2.19)	-0.064*** (0.022)	-0.081*** (0.025)	0.0038 (0.043)
Obs		4,608,209		3,597,969	1,010,240
Panel E: No control					
Bday	-0.0087** (0.0041)	-1.57 (2.03)	-0.048** (0.020)	-0.062*** (0.023)	0.016 (0.040)
Obs		4,608,209		3,597,969	1,010,240
Panel F: Including day fixed effects					
Bday	-0.011** (0.0049)	-4.14* (2.48)	-0.066*** (0.025)	-0.077*** (0.028)	-0.016 (0.049)
Obs		4,608,209		3,597,969	1,010,240

Table A1: Robustness Checks

The dependent variable in columns 1 is a dummy equal to one if sentences - i.e., the sum of prison quantum, probation quantum and suspended prison quantum - is greater than 0. Column 2 presents the effect on the overall quantum while columns 3 to 5 present the results on the logarithm of the quantum plus 1. The sample is restricted to defendants who attended (respectively missed) their trial in column 4 (respectively 5) Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. Results presented in the different panels are for separate regressions. Regressions in panel A include controls for case (1865 crime types, plea bargaining dummy, time between crime and trial, and criminal career) and defendant characteristics (age, sex, and French citizenship). Regressions in panel B exclude crimes committed on the defendant's birthday. Regressions in panel C include dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday but no dummy for decisions taken in the week of the defendant's birthday. Regressions in panel

D include the week dummy but not the dummies for the days one or two days before or after the defendant's birthday. Regressions in panel E do not include any control variables. Regressions in panel F include day fixed effects (4,294 dummies).

	(1)	(2)	(3)	(4)	(5)	(6)
		ln(1+quantum)			Dummies	
	Prison	Probation	Suspended prison	Prison	Probation	Suspended prison
Birthday	-0.045*	-0.034	0.0018	-0.0085*	-0.0055	0.00076
	(0.024)	(0.022)	(0.023)	(0.0049)	(0.0044)	(0.0051)
1 day before/after	-0.0037	-0.0034	0.013	-0.0010	-0.00072	0.0017
	(0.020)	(0.018)	(0.018)	(0.0040)	(0.0036)	(0.0042)
2 days before/after	0.022	-0.0051	-0.0039	0.0059	-0.0012	-0.00051
	(0.020)	(0.018)	(0.018)	(0.0040)	(0.0036)	(0.0042)
Birthday week	0.019	0.017	-0.018	0.0030	0.0033	-0.0043
	(0.014)	(0.013)	(0.013)	(0.0029)	(0.0026)	(0.0029)
Constant	1.34***	0.98***	1.36***	0.28***	0.20***	0.32***
Observations	4,608,209	4,608,209	4,608,209	4,608,209	4,608,209	4,608,209

Table A2: Effect of birthday on prison, probation and suspended prison.

Columns 1-3 present the effect on the logarithm of quantum plus 1. Columns 4-6 present the effect on dummies equal to one if defendants were convicted to at least one day of prison, probation or suspended prison respectively. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

	(1) Property	(2) Road related crime	(3) Violence	(4) Drug	(5) Verbal assault of a policeman	(6) All except drug
Birthday	-0.0343 (0.0515)	-0.0371 (0.0416)	-0.0713 (0.0630)	-0.207** (0.0922)	-0.102 (0.0998)	-0.0528** (0.0256)
1 day before/after	-0.0151 (0.0423)	-0.0143 (0.0338)	0.0156 (0.0500)	0.0460 (0.0737)	-0.101 (0.0828)	-0.0107 (0.0209)
2 days before/after	-0.0279 (0.0419)	0.0476 (0.0336)	-0.000117 (0.0506)	0.0179 (0.0754)	-0.0734 (0.0818)	0.00213 (0.0207)
Birthday week	0.0459 (0.0298)	-0.0137 (0.0239)	0.0341 (0.0356)	0.0412 (0.0528)	0.116** (0.0585)	0.0161 (0.0147)
Constant	3.827***	2.797***	4.101***	3.975***	2.838***	3.325***
Observations	925,573	1,451,745	543,508	388,751	262,002	4,219,458

Table A3: Heterogeneity, crime types.

All columns present the effect on the logarithm of the overall quantum plus 1. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday. Samples are restricted to the categories mentioned in the header.

	(1) Men	(2) Women	(3) French	(4) Non citizen	(5) Plea	(6) Trial
Birthday	-0.0775*** (0.0260)	0.0318 (0.0810)	-0.0569** (0.0272)	-0.106* (0.0598)	-0.0440 (0.0692)	-0.0684*** (0.0262)
1 day before/after	-0.0237 (0.0212)	0.171*** (0.0652)	-0.00416 (0.0221)	0.00426 (0.0490)	0.0722 (0.0562)	-0.0152 (0.0214)
2 days before/after	0.00452 (0.0211)	-0.0319 (0.0655)	0.0105 (0.0221)	-0.0426 (0.0483)	-0.00772 (0.0563)	0.000202 (0.0212)
Birthday week	0.0253* (0.0149)	-0.0431 (0.0465)	0.0134 (0.0157)	0.0409 (0.0341)	-0.0196 (0.0397)	0.0252* (0.0151)
Constant	3.420***	3.001***	3.338***	3.591***	2.538***	3.483***
Observations	4,166,724	441,485	3,845,409	762,800	503,327	4,104,882

Table A4: Heterogeneity, socio-demographic characteristics and procedure.

All columns present the effect on the logarithm of the overall quantum plus 1. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday. Samples are restricted to the categories mentioned in the header.

Appendix B: U.S.

	(1)	(2)	(3)	(4)	(5)	(6)
				Prison		
	Day component	Day component	Day component	Day >0	Day >0	Day >0
	All	Wo 12 m	12m only	All	Wo 12 m	12m only
Panel A: Control for case and defendant characteristics						
Bday	-0.13*** (0.036)	-0.13*** (0.037)	-0.018 (0.056)	-0.00537 (0.00540)	-0.0080** (0.0037)	0.050 (0.054)
Obs	558,228	532,158	26,069	558,228	532,158	26,069
Panel B: Control for judge fixed effects						
Bday	-0.11*** (0.033)	-0.11*** (0.034)	0.041 (0.10)	-0.0055 (0.0086)	-0.0038 (0.0052)	0.048 (0.10)
Obs	178,830	170,772	8,058	178,830	170,772	8,058
Panel C: Control for placebos only						
Bday	-0.17*** (0.036)	-0.18*** (0.037)	-0.0053 (0.056)	-0.0081 (0.0053)	-0.011*** (0.0036)	0.077 (0.056)
Obs	592,844	565,573	27,271	592,844	565,573	27,271
Panel D: Control for birthday week only						
Bday	-0.15*** (0.042)	-0.16*** (0.044)	-0.046 (0.088)	-0.0073 (0.0058)	-0.011*** (0.0041)	0.078 (0.060)
Obs	592,844	565,573	27,271	592,844	565,573	27,271
Panel E: No control						
Bday	-0.17*** (0.036)	-0.18*** (0.037)	-0.0054 (0.056)	-0.0081 (0.0053)	-0.011*** (0.0036)	0.078 (0.056)
Obs	592,844	565,573	27,271	592,844	565,573	27,271
Panel F: Including day fixed effects						
Bday	-0.15*** (0.053)	-0.15*** (0.055)	-0.14 (0.14)	-0.00515 (0.00660)	-0.010** (0.0048)	0.060 (0.072)
Obs	595,660	568,393	27,154	595,660	568,393	27,154

Table B1: Robustness Checks

In columns 1, 2 and 3, the outcome variable is the day part of the sentences. In columns 2, 3 and 4, the dependent variable is a dummy equal to one if the day part of the sentence is greater than zero. In columns 2 and 5, the sample is restricted to defendants who get a sentence with a month part different from 12. In columns 3 and 6, the sample is restricted to defendants who get a sentence with a month part equal to 12. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. Results presented in the different panels are for separate regressions. Regressions in panel A include controls for case (crime type and year and month of the decision) and defendant characteristics (age, sex, race, and education). Regressions in panel B include judge fixed effects (972 fixed effects). Regressions in panel C include dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday but not dummy for decision taken in the week of defendant's birthday. Regressions in panel D include the week dummy but not the dummies for the days one or two days before or after the defendant's birthday. Regressions in panel E do not include any control variables. Regressions in panel F include day fixed effects (3,875 dummies).

	(1)	(2)	(3)	(4)	(5)
	Day component without 12-month sentences				
	Property	Violence	Drug	Plea bargaining	Trial
Birthday	-0.18 (0.12)	-0.17 (0.14)	-0.042 (0.090)	-0.14* (0.080)	-0.0098 (0.16)
1 day before/after	-0.012 (0.096)	0.11 (0.12)	0.017 (0.074)	0.026 (0.066)	0.0099 (0.13)
2 days before/after	0.040 (0.096)	-0.11 (0.12)	0.026 (0.074)	0.045 (0.066)	0.025 (0.13)
Birthday week	0.0071 (0.069)	0.094 (0.086)	-0.052 (0.052)	-0.040 (0.046)	-0.095 (0.094)
Constant	0.26***	0.14***	0.20***	0.37***	0.10***
Observations	162,523	57,717	235,755	527,340	41,472

Table B2: Heterogeneity, crime types and procedure.

All columns present the effect on the day part of the sentences. 12 month sentences are excluded. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday. Samples are restricted to the categories mentioned in the header.

	(1)	(2)	(3)	(4)	(5)	(6)
	Day component without 12-month sentences					
	Men	Women	US citizen	Non citizen	No education	Some education
Birthday	-0.16* (0.081)	0.019 (0.20)	-0.067 (0.060)	-0.25 (0.21)	-0.097 (0.13)	-0.12 (0.081)
1 day before/after	0.028 (0.067)	0.010 (0.16)	0.00085 (0.049)	0.046 (0.17)	-0.0025 (0.11)	0.037 (0.067)
2 days before/after	-0.0045 (0.067)	0.29* (0.16)	0.015 (0.049)	0.15 (0.17)	0.15 (0.11)	-0.011 (0.066)
Birthday week	-0.020 (0.047)	-0.16 (0.12)	0.00026 (0.035)	-0.13 (0.12)	-0.075 (0.076)	0.0065 (0.047)
Constant	0.35***	0.38***	0.16***	0.78***	0.42***	0.22***
Observations	483,807	84,180	390,318	162,001	230,243	303,710

Table B3: Heterogeneity: socio-demographic characteristics.

All columns present the effect on the day part of the sentences. 12 month sentences are excluded. Birthday is a dummy equal to one if the decision is taken on defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken

one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday. Samples are restricted to the categories mentioned in the header.

Appendix C: Economics language in judicial opinions

To score judges, Ash et al. (2017) calculate the relative frequency of deterrence in each opinion of a judge. As normalization steps, they remove punctuation, capitalization, functional stopwords, numbers, and word endings. Then, for each opinion i , they have a frequency F_i . One potential concern is that the measure may simply pick up public discourse within that year, so they normalize this by the relative word frequency of deterrence in Google Books. Then, they take the average deterrence score for judges in a year to get a deterrence style, which is then demeaned by the district-year average of that year to calculate the relative intensity of deterrence language relative to other judges. Finally, they take the average score across years of a judge's career.

Appendix D: New Orleans

	New Orleans parish	
	mean	sd
Male	.85	.36
Age	26.73	10.39
Black	.34	.47
Crime		
Property	.52	.5
Drug	.24	.43
Sentence		
Prison (day)	590.89	693.61
Bday	.0029	.054
N	87,319	

Table D1: Descriptive statistics.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Male	Black	Juvenile	Age	Drug crimes	Property crimes	Sexual assault
Bday	0.0090 (0.028)	0.031 (0.037)	0.016 (0.030)	0.46 (0.83)	-0.017 (0.039)	-0.023 (0.033)	0.0034 (0.017)
1 day before/after	-0.0066 (0.024)	0.023 (0.031)	0.0022 (0.024)	0.56 (0.67)	-0.016 (0.033)	-0.013 (0.028)	0.015 (0.015)
2 days before/after	0.00090 (0.024)	0.051 (0.031)	0.0011 (0.024)	-0.059 (0.66)	-0.014 (0.033)	0.017 (0.028)	-0.016 (0.013)
Bday's week	-0.0036 (0.017)	-0.0063 (0.022)	-0.016 (0.017)	-0.10 (0.48)	0.011 (0.023)	0.0043 (0.020)	-0.0071 (0.0099)
Constant	0.85***	0.34***	0.18***	26.7***	0.52***	0.24***	0.055***
Observations	87,319	87,319	87,319	87,319	87,319	87,319	87,319

Table D2: Balancing Checks

All columns present the effect on the variable mentioned in the header. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. The second and third explanatory variables are dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. The fourth dependent variable is a dummy equal to one if the decision is taken between three days before and three days after the defendant's birthday.

	(1)	(2)	(3)	(4)
	ln(1+prison)			
Bday	-0.33*	-0.38**	-0.41**	-0.38**
	(0.19)	(0.18)	(0.20)	(0.18)
1 day before/after	-0.099	-0.12		
	(0.16)	(0.13)		
2 days before/after	0.027	0.16		
	(0.16)	(0.13)		
Bday's week	0.031		0.026	
	(0.11)		(0.077)	
Control	Yes	No	No	No
Constant	4.63***	4.68***	4.68***	4.68***
Observations	87,319	87,319	87,319	87,319

Table D3: Robustness checks

In columns 1 through 4, the outcome variable is the logarithm of the total sentence plus 1. In column 5, the dependent variable is total sentence length. In column 1 controls for crime categories and socio-demographic characteristics are included. Birthday is a dummy equal to one if the decision is taken on the defendant's birthday. Regressions in columns 1, 2, and 5 include dummies equal to one if the decision is taken one day (respectively, two days) before or after the defendant's birthday. Regressions in columns 1, 3, and 5 include a dummy for the decision taken in the week of defendant's birthday.