Media and the Criminal Justice System[1]

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Abstract

In this paper I link market level data on television viewing habits with criminal convictions in both state and federal courts to test for evidence that televised forensic science has affected how the criminal justice system functions. Watching television has been shown to have various effects on individual decision making and the learning process. Legal scholars and criminal justice practitioners have begun to express concern that the discrepancy between how the justice system operates and how it is portrayed in popular media has hindered the system's ability to function effectively. This interference has been coined the "CSI effect"; specifically, the use of forensic technology in crime dramas such as "CSI: Crime Scene Investigation" has limited prosecutors' ability to obtain a conviction without DNA or other forensic evidence. I find that between 1990 and 2004, a 10% increase in CSI popularity was associated with a 1.2% reduction in the probability of state court conviction in large urban areas. Between 1994 and 2007, a 10% increase in CSI popularity was associated with a 2.5% decrease in the probability of conviction in federal court. Jurisdictions with large and productive forensic labs have smaller negative CSI effects. Consistent with the type of forensic science portrayed in the CSI franchise, this effect is strongest in cases where the prosecutor must establish that the defendant illegally discharged a firearm or possessed small amounts of drugs.

JEL Classification*:** K40, D83 ***keywords: media, decision making, criminal convictions

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I. Introduction:

For certain segments of the American population, interactions with the criminal justice system are a regular part of life. This is particularly true for non-white males with low levels of human capital; 60% of black male high school dropouts born in the late 1960s have prison records [Western (2006)]. For the majority of Americans, however, the actual criminal justice system is significantly less salient. In 2005, for example, 96% of the population was *not* arrested and 86% of households were *not* victimized by criminals.[2] At the same time, crime and criminal justice are central topics in popular media. According to Nielson Media Research, 10 of the 20 most watched programs on broadcast and cable television during the first week of 2009 were criminal justice themed.[3] During broadcast primetime hours in 2009, 18% of shows on ABC, 30% of shows on NBC, 37% of shows on FOX, and 48% of shows on CBS described the investigation and prosecution of, or evasion from, the criminal justice system. An important implication of this phenomenon is that most of the "knowledge" that the average American has about the criminal justice system comes from watching fictional television shows.

Recent research has found evidence that television, specifically, and popular media, more generally, can influence political preferences [Garthwaite and Moore (2008); DellaVigna and Kaplan (2007); Gentzkow and Shapiro (2004)], women's social status [Jensen and Oster (2007)], academic performance [Gentzkow and Shapiro (2006)], participation in social activities [Olken (2006)], and health [Waldman et al. (2008)].

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[2] Sourcebook of Criminal Justice Statistics Online; http://www.albany.edu/sourcebook/pdf/t442005.pdf, http://www.albany.edu/sourcebook/pdf/t3272005.pdf

[3] These programs were episodes of CSI, NCIS, CSI: Miami, The Mentalist, and Monk.

Given the sheer number of crime-related shows on television, if television does affect the perceptions and behavior of viewers, this change should be most evident in their beliefs and expectations regarding crime and criminal justice. In fact, legal scholars and criminal justice practitioners have begun to express concern that the discrepancy between how the justice system operates and how it is portrayed in popular media has hindered the system's ability to function effectively [Hughes and Magers (2007)]. This interference has been coined the "CSI effect"; specifically, the use of forensic technology on crime dramas such as "CSI: Crime Scene Investigation" has limited prosecutors' ability to obtain a conviction without DNA or other forensic evidence. [4]

To date, evidence on the CSI effect has been largely anecdotal [Toobin (2007); Stockwell (2005); Willing (2004)], or based on small surveys, either of potential jurors [Schweitzer and Saks (2007); Hans et al (2007); Podlas (2006)] or judges [Hughes and Magers (2007)]. Perhaps not surprisingly, reviews of the literature [Tyler (2006)] find no compelling evidence for or against the CSI effect. Because a CSI watcher might place too much weight on forensic evidence a priori it is not obvious whether or not conviction rates overall would rise or fall if the CSI effect was real; the direction of the effect depends on the presentation of forensic evidence at trial.

In this paper, I use county and federal level conviction rates, workload statistics from publicly funded forensic labs, and local television viewing habits to test whether fictional crime scene investigation programs have elevated the importance of forensic evidence in criminal trials. To the best of my knowledge, the existing non-experimental research on the CSI effect has not take advantage of variation in exposure to CSI or

[4] As discussed in Tyler (2006), CSI could also affect the criminal justice system by encouraging people to study forensic science. In this paper, I focus only on trial outcomes.

forensic evidence across cases [Cole and Dioso-Villa (2007)]. By exploiting variation over time and geography in television viewing habits, which I show are not predicted by pre-CSI trends in conviction rates, I find evidence that CSI has affected what people "know" about the criminal justice system; state and federal prosecutors practicing in areas where more people watch CSI appear to have a harder time obtaining convictions.

Despite the clear fictional nature of the CSI franchise, people without any other experience with the criminal justice system appear to glean information about how one should investigate and prosecute crime from these shows. Indeed the CSI effect is particularly pronounced in jurisdictions where prosecutors were less likely to have access to forensic evidence, suggesting that forensic evidence is over-weighted where CSI is popular. My results are robust to the inclusion of both case-specific and regional control variables, and I present evidence that my county results likely understate the true impact CSI has had on the criminal justice system.

A standard rational economic agent should not use incorrect information in making a decision. The influence of false "information" in critically important decisions is consistent with non-standard decision making, a phenomenon behavioral economists are beginning to explore [DellaVigna (2007)]. In addition, large literature in psychology has shown that individuals will give incorrect answers in order to maintain solidarity with a group or authority figure [Asch (1951); Milgram (1963)]. As such, my findings contribute to the growing behavioral economic literature on how people use different types of information in the decision making process.

The paper proceeds as follows. In the next section I describe the in detail how exposure to CSI could affect the outcomes of criminal trials at the state and federal level.

I describe the data I use to measure the CSI effect in section III, and outline my analytic framework in section IV. I present my results in section V, and conclude with discussion in section V.

II. Television, Expectations, and Criminal Convictions:

During the course of a criminal trial, the defendant is presumed to be not guilty of the charges at hand. The burden is therefore on the prosecutor to establish that, conditional on the evidence presented, there is a sufficiently low probability that the defendant did not violate the law in question. Typically, the threshold at which the probability that the defendant is not guilty is "sufficiently low," commonly referred to as "reasonable doubt," is decided by a jury. A critical question is, therefore, how does a jury form its opinion of what constitutes "reasonable doubt"? The jury is a group of lay citizens who are likely to be unfamiliar with the criminal justice system in a professional or personal sense. A priori, it is therefore not obvious what evidence they would expect to see if the presumption of innocence were incorrect.

In 2006, roughly 13% of households may have been victimized by some sort of crime, and roughly 41% of victims requested the involvement of the criminal justice system by reporting the crime to police.[5] It follows that approximately 5% of the population, excluding criminal justice professionals, has had any exposure to actual criminal investigations. A significantly higher fraction, however, has been exposed to fictional criminal investigations; after 2000, 20% of individuals reported watching CSI in the past month.

[5] Sourcebook of Criminal Justice Statistics Online: http://www.albany.edu/sourcebook/pdf/t3332006.pdf

In the CSI television franchise, forensic analysis is misrepresented on multiple dimensions. First, CSI overstates how frequently forensic evidence is used by prosecutors. This is not necessarily because prosecutors do not think forensic evidence is useful (which may be endogenous to CSI popularity); it simply may not be available. As little as 10% of homicide investigations produce fingerprints or DNA evidence [DiFonzo and Stern (2006)], and the cost of "processing" requests for forensic analysis is drastically underestimated in CSI. For example, finding a "DNA match" takes a matter of minutes on the television show, as opposed to days in reality. In fact, in 2005, 47% of state prosecutors offices reported that the time it took to process DNA evidence was a "problem" for their office [Perry (2006)]. Building a case around forensic evidence is therefore less likely to be an optimal strategy for prosecutors relative to prosecutors on CSI.

While understating the cost of acquiring forensic evidence, CSI also overstates the benefits. The ability of forensic science to conclusively determine whether or not an individual participated in a criminal act, or even if a crime was committed, is greatly exaggerated. As much as 40% of the forensic analysis portrayed on CSI is "not real" such as the ability of lab technicians to reconstruct knife blades from stab wounds [Cole and Dioso-Villa (2006)]. The characters on CSI also display a huge amount of confidence in their work, saying things like "Physical evidence cannot be wrong. It doesn't lie." [CSI session 6 episode 8, cited in DiFonzo and Stern (2006)] In fact, with the exception of DNA analysis, "no forensic method has been rigorously shown able to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source" [National Research Council (2009)]. Indeed, even when

DNA evidence, the most "science-like" forensic science, is available, 26% of state prosecutors reported dissatisfaction with how often the results were conclusive [Perry (2006)].

The producers of CSI do not attempt to portray their show as anything but fictional, but empirical evidence has shown that people are influenced by what they see on television. Recent research in economics has focused on how political opinions are formed by subjective news coverage. The introduction of Fox News has been estimated to increase Republican voting share by as much as 0.7 percentage points [DellaVigna and Kaplan (2006)]. Fox News watchers were also more likely to have incorrect beliefs about the location of weapons of mass destruction in Iraq [Kull et al. (2003)]. Sociologists and psychologists have expanded this line of research to include fictional shows as well; watching "Law and Order" has also been shown to weakly increase viewers' concerns about crime [Mutz and Nir (2009)]. Fictional television is perhaps unlikely to change a viewer's belief about events or situations which they have experienced. However, jurors without relevant background or experience with the criminal justice system outside of what they might have seen on television may be more easily swayed.

If jury members form expectations regarding the capabilities of forensic analysis after watching CSI, the first order effect of CSI on conviction rates is likely to be negative, as forensic evidence is simply not used as often in real life as it is on TV. However, there is potentially an ambiguous net effect of the television show on the likelihood that they will reject the null hypothesis that a defendant is not guilty.[6] A failure by the prosecutor to provide forensic evidence of "CSI quality" may constitute

[6] This paragraph is a brief overview of some of the key arguments made in Tyler (2006).

"reasonable doubt" for a juror. If a juror mistakenly believes that fiber analysis could conclusively identify whether or not the defendant broke into a home, a failure to provide such analysis may indicate a weak case by the prosecutor. Alternately, if the prosecutor does present fiber analysis, in which a "match" only means the actual perpetrator is probably the same race as the defendant, a juror familiar with CSI science may overestimate the conclusiveness of such evidence. Heterogeneity in the use of forensic evidence by prosecutors may be the underlying cause of a null relationship found in the few existing studies of CSI and conviction rates [Cole and Dioso-Villa (2006)].

In a general equilibrium sense, prosecutors may increase their use of forensic evidence in response to the demands of jurors. This aspect of the CSI effect would lead to conviction rates weakly increasing, but would impose high costs on the justice system, as local governments would have to spend more resources and more time producing forensic evidence for cases which such evidence would have previously been irrelevant. Because data on the actions of the prosecutors are unobserved at the case level, this presents an empirical challenge. In practice, I address this by using a noisy measure of the cost of using forensic evidence in a given jurisdiction.

Finally, "CSI" popularity may affect conviction rates even if a trial never takes place. In almost all jurisdictions, prior to a trial beginning, defendants have the option of pleading guilty to either the criminal act in question, or often to a related charge with a lower penalty. A rational defendant charged with crime A will plead guilty to crime B if $P(Convict_A)Punish_A > Punish_B$, where $P(Convict_A)$ is the defendant's expected probability that, given the prosecutors evidence, the jury will reject the null hypothesis that he is innocent. A prosecutor will accept the plea as long as the benefit of $Punish_B$,

either through incapacitating the defendant, deterring potential future criminals, rehabilitating the defendant, or providing a sense of justice to society, is sufficiently large. The determinants of $P(Convict_A)$ are obviously critical to both the severity of the charges to which a defendant is willing to plead guilty. As a result even if juries do not change their behavior after watching CSI, the "CSI" effect could alter conviction rates. The probability that a defendant will agree to a level of $Punish_B$ that the prosecutor deems sufficient is positively related to the defendant's expectation of how CSI has changed $P(Convict_A)$.

III. Data:

Testing the CSI effect requires data from multiple sources. I estimate exposure to CSI using individual records of television viewing from the Simmons National Consumer Survey (SNCS) between 1994 and 2007. The SNCS contains extremely detailed information about consumer demographics, attitudes, and preferences, as well as specific questions about their television viewing habits. Because it is intended for market research, the SNCS identifies the respondent's state of residence and primary marketing area. These 56 marketing areas roughly correspond to the range of a local network broadcast signal. In 13 of these marketing areas, SNCS respondents were asked whether or not they viewed any of a list of popular national television shows during the past six months. I will use CSI popularity, as measured by the fraction individuals in a given market area who indicated that they had watched CSI (CSI: Crime Scene Investigation, CSI: Miami, or CSI: New York) during the past six months.

The 25,000 adults surveyed by Simmons Market Research are wealthier than Americans on average (median income of $68 thousand compared to a national average of $44 thousand in 2000), although they are equally likely to be employed. Consistent with this difference in wealth, approximately 19% of respondents are current smokers, marginally lower than the nationwide rate of 22.8% 2001 (as estimated by the Center for Disease Control and Prevention). An individual surveyed by Simmons is also less likely to be white than the average American (74% versus 79%). Over one third of the SNCS respondents have at least a four year college degree, relative to the national average in 2000 of 24.4%. The age distribution is roughly similar to that of the general population, and females are slightly overrepresented (56%). Approximately 66% of respondents in the survey are married; while Simmons attempts to survey entire households, there are approximately 10% fewer married men than married women.

With the exception of the slight under representation of whites, the population sampled in the SNCS is notably similar to the typical demographic composition of juries. Sociological research on jury deliberations have consistently found the juries are "more likely to be white, better educated, wealthier and older" (Diamond and Rose 2005) than communities from which the jurors are selected. Instead of being a limitation, I argue that television viewing habits, as recorded in the SNCS are likely to be slightly better predictors of the television exposure of jurors than a general population survey.

According to Nielson Media Research, CSI has been one of the top 10 most watched primetime shows since it premiered in October of 2000. The popularity of the CSI franchise transcends race; in 2006, approximately 12% of all US households watched CSI, and 10% of African American households watched CSI:Miami. In Table 1 I present

that estimated fraction of CSI viewers in the SNCS data by year and marketing area. Overall, 24% of Simmons households report watching CSI, and there is a fair amount of heterogeneity in taste for CSI across marketing areas and over time. CSI was most popular in 2003, when 29.7% of respondents watching the show, and has recently regained popularity after losing a bit of ground in 2004 and 2005, when 26% of respondents watched it. Overall, CSI is most popular in Philadelphia and Boston, and least popular in California, with Los Angeles and San Francisco having the lowest rates of veiwership. My identification strategy relies of the heterogeneous growth and differential non-linearity in CSI popularity over time and place.

In my primary analysis, I link the SNCS to data on conviction rates as recorded in the State Court Processing Statistics (SCPS).[7] Collected between 1990 and 2004, the SCPS is a sample of 65,200 felony cases filed each May in large urban counties. The sample is constructed to be representative of the 75 most populous counties in the US. I link counties to marketing areas using the 2000 Census Metropolitan Statistics Area boundaries. The SCPS contains demographic information about the offender, the date and location of trial, relevant charges at arrest and trial, type of trial (a judge or jury), final disposition, date of final disposition, and whether a plea bargain was reached.

Ten of the marketing areas in the SNCS are represented in the SCPS data, and I am able to link 54% of cases in the SCPS data to average CSI popularity, based on the year and county in which the case was filed. In the cases I link to CSI popularity, 78.8% of cases end in a "guilty" verdict, either through trial or plea, which is a higher conviction

[7] U.S. Dept. of Justice, Bureau of Justice Statistics. STATE COURT PROCESSING STATISTICS, 1990-2004: FELONY DEFENDANTS IN LARGE URBAN COUNTIES [Computer file]. Conducted by Pretrial Services Resource Center [producer], 2007. ICPSR02038-v3. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-11-28.

rate than in non-matched counties (66%), primarily because of low conviction rates in the Baltimore, Miami, and Boston (which is not sampled by the SCPS after 1994) areas. Table 3 presents summary statistics describing the cases in the SCPS. Cases are broken into one of four categories, "Violent," "Property," "Drug," and "Public Order." The public order offenses are of particular interest in this study, since this category primarily consists of weapons charges. "Ballistic Analysis," in which agents analyze the grooves and lead content of bullets in order to identify the gun from which was fired, is frequently used on CSI shows; one of the main characters on CSI:Miami, "Calleigh Duquesne" is a ballistics specialist who is known on fan sites as "bullet girl."[8] However, ballistic analysis has been widely rejected as unreliable by the actual forensic science community[9] and, as a result, is an area where a juror's expectations may be particularly divorced from the reality of the trial.

The SCPS data do not contain and information regarding the type of evidence used at trial, but access to a lab which performs forensic analysis varies across jurisdictions. I can test the hypothesis that CSI popularity has affected the return to prosecutorial use of forensic evidence by linking the SCPS data with the Census of Publicly Funded Forensic Laboratories (CPFL), which was conducted in 2002 and 2005. I will construct an estimate of the probability that forensic evidence was used in any given trial using the number of new requests made to forensic labs which provide services for local, municipal, or state agencies in the jurisdiction of conviction and the percent of those requests that were completed. In order to link this data to the SCPS, I

[8] See, for example, http://fancy.zecilia.se/calleigh/ or http://csifanclub.com/miami/calleigh/
[9] For a full report on the limitations of ballistic analysis, see Cork et al. (2008). The National Academy of Science has requested that construction of a national ballistic database be halted due to the unreliability of the evidence.

matched the 2005 survey results with the 2004 trials, and also calculated a time-invariant mean processing rate and request volume in each county. On average, 186,000 requests for forensic analysis are made per year to labs located in counties in the SCPS. Interestingly, the average ratio of the number of cases completed to new cases received by all forensic labs in the county where the trial took place is just over one (1.06, sd=0.66), indicating that a fair number of requests for forensic analysis are backlogged. I will use both the total number of forensic requests per lab and the number of cases completed per new request as measures of the access a prosecutor has to forensic evidence. Under the assumption that the workload and completion rate of local forensic labs is negatively correlated with the probability that a prosecutor would be able to present forensic evidence, I can conduct a strong test for geographic heterogeneity in the impact of CSI.

A major limitation of the SCPS data is the time frame; CSI debuted in October of 2000, meaning that there are only two sampled years in which juries (or potential juries) could have formed expectations of evidence based on the television show. I therefore supplement the county level analysis with data from federal district courts between 1994 and 2007, specifically the Defendants in Criminal Cases Terminated (DCCT) collected from the Executive Office for U.S. Attorneys by the Bureau of Justice Statistics. I match cases in 15 federal districts to CSI popularity in the largest marketing area in that district, as shown in Table 3. 93% of the 222,435 cases in the DCCT data end in convictions, and after 2000 23% of district residents reported watching CSI. Defendants have an average of 1.6 counts against them, and the distribution of types of charges is roughly equivalent to the state courts, although roughly half of the types of charges faced by federal

defendants are not clearly crimes against people or property, drug charges, or weapons violations. Major categories in this "other" type of crime include racketeering charges, white collar crimes, and immigration violations. The limitations to the DCCT data relative to the SCCPS data is a lack of case-specific information, and I am limited in my ability to use spatial variation in access to forensic evidence, as US attorneys have access to federal forensic labs across the country.[10] However, the annual observations in the DCCT allow me to take full advantage of the nonlinear variation in CSI popularity over time. As I will show, the time frame of analysis becomes important for distinguishing the effect of CSI from demographic change across counties.

Finally, a more direct link between CSI and the type of evidence presented at trial can be established using the National Prosecutors Survey. Using the geographic identifiers in the SNCS, I link these data to the National Prosecutors Survey from 1994, 1996, 2001, and 2005 (NPS).[11] These surveys contain information on the use of DNA evidence by prosecutors in general jurisdiction State courts, which in theory would allow me to test for a behavioral response of prosecutors to CSI popularity. The 1994, 1996 and 2005 waves of the NPS consist of a nationally representative sample of

[10] Forensic evidence associated with cases involving the Federal Bureau of Investigation are more likely to be analyzed in labs associated with the FBI, but the Department of Justice has no formal rules regarding what specific labs attorneys can use [personal communication with Preston Burton, partner, Orrick].

[11] U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY, 1994 [Computer file]. Conducted by U.S. Dept. of Justice, Bureau of Justice Statistics. ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 1998. doi:10.3886/ICPSR06785; U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY, 1996 [Computer file]. Conducted by U.S. Dept. of Justice, Bureau of Justice Statistics. ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 1998. doi:10.3886/ICPSR02433; U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY [CENSUS], 2001 [Computer file]. Conducted by the National Opinion Research Center. ICPSR03418-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 2002. doi:10.3886/ICPSR03418; U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY, 2005 [Computer file]. Conducted by U.S. Dept. of Justice, Bureau of Justice Statistics. ICPSR04600-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research producer and distributor], 2007-02-23. doi:10.3886/ICPSR04600

approximately 300 chief prosecutors, and the 2001 wave is a census. In each wave, the prosecutors are asked whether they used DNA evidence in the past year, how many felony and misdemeanor cases were tried in their jurisdiction, and what percent of felony and misdemeanor convictions their office obtained. As Figure 1 shows, DNA use has been increasing over time, from just over 40% of state prosecutors in 1994 to over 80% in 2005. However, it is not immediately obvious that increased use of DNA testing has led to an increase in conviction rates; in fact, the conviction rate for felonies has been weakly decreasing since 1996, and the misdemeanor conviction rate has remained relatively constant. When I limit my sample to prosecutors for whom I have data on CSI popularity (Figure 2), a major limitation of the NPS data is evident; this sample consists primarily of prosecutors in large urban areas who are early users of DNA evidence, with between 80 and 90% reporting some usage in the past year.

IV. Analytic Framework:

Jurors who watch CSI may anticipate that prosecutors will present a large amount of "conclusive" forensic evidence in cases ranging from car theft to murder, as they do in the televised drama. When prosecutors fail to produce such (fictional) evidence, jurors become skeptical of the strength of the State's case and vote to accept the null hypothesis and acquit. In addition to demanding a larger quantity of forensic evidence to obtain a conviction, jurors may also overweight the importance of forensic evidence that is presented. The National Academy of Sciences has strongly critiqued the scientific validity of forensic evidence, and while DNA analysis is generally regarded to be more scientifically valid than other types of forensic evidence such as fingerprint analysis

[Cheng 2005] it is still subject to human error, and results are not always accurate [Thompson 1997]. In contrast, the forensic evidence on CSI is presented as bulletproof, and the techniques and methods incontrovertible. Both of these mechanisms would result in a positive correlation between prosecutors' use of DNA and other forensic evidence and conviction rates in areas where CSI is more popular.[12]

An ideal test of the CSI effect would be to randomly expose jurors to forensic science as portrayed in televised crime dramas, and then observe how these jurors adjudicated actual criminal trials in which the use of such evidence was randomized. Ethical issues and concerns about horizontal equity make this approach infeasible, and have lead to the frequent use of mock jury trials in legal scholarship [Hans et al. 2007]. One important drawback of mock jury trials is a lack of external validity; the researcher can never be fully certain that subjects respond to hypothetical situations in the same way as jurors charged with making actual adjudication decisions. In lieu of a randomized trial, I estimate the following model:

[eq 1] $$Convic_{ijct} = \alpha + \lambda_{jc} + \delta_{jt} + \theta\Gamma_{ijct} + \beta CSI_{ct} + \nu_{ijct}$$

While neither the SCPS nor DCCT data contains information about the use of forensic evidence, both data sets will allow me to disaggregate conviction rates by crime type, including violent crimes, crimes against property, public order offenses, drug offenses, or

[12] An additional potential mechanism through which CSI could affect the criminal justices system is by increasing public interest in forensic science leading to potential jurors pursuing forensic science as a career option. It is unclear who this mechanism would manifest itself in conviction rates.

"other".[13] This disaggregation is based on the hypothesis that forensic evidence will be most frequently used in violent offenses,[14] but may be more uncommon in other crimes.

In addition to county by crime and crime by year fixed effects, I also include a quadratic control for the age of the defendant, the race of the defendant, the type of trial (jury, bench or plea), and the type of counsel retained by the defendant. I allow for arbitrary correlation in conviction rates within a county and offense type (e.g., violent crimes in New York County).[15]

While I cannot directly observe the type of evidence presented at trial, there will be heterogeneity in the ability of prosecutors to use forensic evidence. In counties with large forensic labs that process higher fractions of their requests in a short time period, any given prosecutor will be more likely to have forensic evidence available.

[eq 2] $$Convic_{ct} = \alpha + \lambda_c + \delta_t + \theta X_{ct} + \beta_F ForenLab_{ct} + \beta_C CSI_{ct} + \beta_{FC}\left(CSI_{ct} \times ForenLab_{ct}\right) + \varepsilon_{ct}$$

Where $Convic_{ct}$ is the percent of felony convictions obtained in county c during year t, CSI_{ct} is the three year moving average of CSI popularity in the county year, and $ForenLab_{ct}$ is my proxy for the access that the prosecutor has to forensic evidence, which will be positively correlated with the probability that forensic analysis was a relevant facto in that case. In order to be consistent with anecdotal evidence, $\hat{\beta}_C < 0$, implying

[13] Very few crimes in state court fall into the "other" category, and those that do are in most cases parole violations. In Federal court, however, 51% of crimes, specifically racketeering charges and immigration violations, are for "other" offenses.

[14] For example, it is unusual for a prosecutor to prosecute a defendant for rape without forensic evidence from a rape kit [Kerstetter and Van Winkle (1990); Horney and Spohn (1996)].

[15] Conceptually, clustering standard errors at the marketing area level would be preferable, but with only 10 marketing areas, the interpretation of the estimated standard errors is not clear. As I show in table 5, the precision of my estimates is robust to clustering at the marketing area/offense type level.

that exposure to CSI has raised the burden of proof for prosecutors, and $\hat{\beta}_{FC} > 0$ meaning that forensic evidence before a jury (or potentially presenting forensic evidence to a jury) is more persuasive in counties where CSI is popular.

Equation 2 also forms the basis of my analysis using the NPS data, although in this case I will be focusing on use of DNA evidence, one subset of forensic evidence. While there is no case specific data in the NPS, this data set does contain potentially relevant characteristics of the prosecutor's office, including the number of attorneys and investigators employed by the prosecutor's office, annual budget, and the total population of the jurisdiction.

In order to interpret a correlation between CSI popularity and conviction rates as evidence that the public "learns" about the criminal justice system through television, it must be the case that CSI popularity is uncorrelated with any other variable that affects conviction rates over time. Research in criminology generally finds that case specific factors, rather than jurisdictional demographics, are the primary determinant of sentence length, but correlation between the race and age of the defendant and his punishment does vary with jurisdiction characteristics [Ulmer and Johnson (2004)]. Taste in television shows is not homogenous with respect to demographic characteristics. While CSI has broad inter-racial appeal,[16] CSI is differentially popular across age groups. In fact, over 55% of the variation in CSI popularity can be explained by the age structure of the marketing area. To the extent that demographic variation is relatively constant over time across counties, my fixed effects specification will take this into account. In addition to this, I can directly test whether or not trends in conviction rates are spuriously

[16] See http://en-us.nielsen.com/rankings/insights/rankings/television. Before the debut of CSI, the only show in both the top ten rankings for blacks and whites was Monday night football [Fryer and Levitt (2004)].

correlated with CSI popularity by attempting to predict future CSI popularity with conviction rates prior to 2000.

In figures 3 and 4, I plot the linear growth in conviction rates in state courts by marketing area between 1990 and 2000 against two measures of CSI popularity. Regardless of whether I use average CSI popularity or maximum CSI popularity, there is no clear relationship between how conviction rates are changing over time and how much people will like CSI. In addition, measuring CSI popularity between 2001 and 2007 (using all of the information I have on CSI) or just focusing on CSI popularity in 2002 and 2004 (the years in which I have state conviction data) does not affect my conclusion. Figures 5 and 6 repeat this graphical analysis for convictions in federal district courts. Again, there is no obvious positive or negative relationship between how conviction rates were changing from 1994-2000 and either measure of CSI popularity. Table 4 confirms the null relationship in these figures. Given information about variation over time in conviction rates, it would be impossible for an outside observer to predict spatial variation in how popular CSI would become. This suggests that county or federal level characteristics that vary in a linear way between 1990 and 2007 cannot explain the correlation between CSI and case outcomes.

V. Results:

a. CSI and the Probability of Conviction:

My central estimates of equation 1, using SCPS data, are presented in table 5. In column 1, I include no controls other than a constant term. Unconditionally, I find a small and imprecisely estimated negative relationship between CSI popularity and

conviction rates. Once I condition my estimates on observable differences in the specific case and include my full set of fixed effects in column 2, the potential role of CSI described anecdotally in popular media begins to emerge; my estimates suggest that a 10 percentage point increase in CSI's popularity is associated with a 5 percentage point reduction in the probability of being convicted, with a 2 percentage point standard error. Based on mean conviction rates and CSI popularity in 2002 and 2004, this corresponds with an elasticity of -14%. This is evidence of a real CSI effect increasing the difficulty of obtaining a conviction.

It is possible that the CSI effect is cumulative; areas where CSI has been popular longer have "thresholds of reasonable doubt" that rise over time. In order to test this, I include the reported popularity of CSI in the previous year (column 3). While I lose some precision in my estimate of the CSI effect when last year's popularity is included, I cannot reject the null hypothesis that they are equal, or that the latter is statistically different from zero. When I only allow for CSI to have a lagged effect on conviction rates, I estimate that a 10 percentage point increase in CSI popularity is associated with a 6 percentage point reduction in conviction rates the next year, a small increase relative to the effect of contemporaneous CSI popularity, but this effect is not precisely estimated.

I now turn to offense-specific CSI effects, allowing the relationship between CSI popularity and conviction rates to vary with offense type. These results suggest that the CSI effect is smallest, but not significantly different, for violent offenses. Combining the average CSI effect with each of the interactions, I estimate that the CSI effect is -0.687 (se=0.339) for property crimes, -0.610 (se=0.384) for drug offenses, and -0.704 (se=0.404) for public order offenses. Recall that the use of forensic technology in the

prosecution of public order offenses, which primarily rely on establishing ownership or possession of a firearm or drugs, are arguably the most misrepresented in the CSI franchise. I find that while a small fraction of all offenses, the overall CSI effect is driven by a change in the ability of prosecutors to procure convictions in public order cases; specifically an 8.4% reduction associated with a 10 percentage point increase in the fraction of people who watch CSI.

Finally, in the last two columns of table 5, I test the robustness of my estimate to the inclusion of market-specific time trends and county demographic characteristics. Regardless of my additional controls, allowing for either eliminates my ability to identify a relationship between CSI and conviction rates. This is somewhat surprising, given the lack of a correlation between a linear trend in conviction rates pre CSI and eventual CSI popularity. However, a failure to identify a CSI effect in this case does not necessarily mean the CSI effect is not real, it means that the two years per county in which I measure positive CSI veiwership does not produce enough variation to identify a relationship. In other words, it would be problematic if areas in which CSI became more popular had faster growth in conviction rates, but less so if I had simply over identified the model.

DCCT will allow me to address this concern by including more years of data, at the expense of having less case specific information. It is also not obvious that the forensic science portrayed on CSI would have a substantively important impact of federal cases; CSI investigators work for the state government and roughly half of the types of criminal cases adjudicated in the federal system, racketeering and immigration, are not shown on the TV series. It is also likely that potential or convened federal juries and judges would have substantially more preparation for the actual trial. At the very least,

one would *hope* that televised dramas would have less of an impact of decision making at the federal level than the state level.

In column 1 of table 6 I present my estimates of the relationship between CSI popularity and convictions in federal court. CSI popularity is associated with conviction rates, but the magnitude of the effect is roughly half the size in state court; a ten percentage point increase in CSI popularity reduces the probability of federal conviction by 1 percentage point, just over 1%. Unlike the SCPS data, however, this effect is robust to conditioning on the age distribution of the federal district population (column 2). The estimated difference between the CSI effect in tables 5 and 6 actually overstates the difference in jury expectations between federal and state courts; when I limit my sample to only years included in the SCPS (column 3), the CSI effect falls by an order of magnitude, from -0.1 to -0.008. Given that I find a statistically and substantively large effect using a similar specification in the SCPS, this suggests that the timing of the SCPS sample likely understates the full CSI effect. When I include the age distribution of the population in those years (column 4), the sign of the estimate flips.

I also find strong evidence that exposure to CSI over time increases the difficulty of obtaining a conviction for federal prosecutors. A 10 percentage point increase in CSI popularity last year is associated with a 1.1 percentage point reduction in the probability of conviction, which is also robust to the age distribution of the population (column 6). When both contemporaneous and last year's CSI popularity are included (columns 7 and 8), CSI popularity last year has a 30% larger impact on trial outcomes. While I cannot precisely differentiate the CSI effect across crime type (columns 9 and 10), it is still the case that the CSI effect is largest for weapons violations, destruction of property

(including arson), disorderly conduct and civil disorder. Finally, I am able to precisely estimate a CSI effect independent of marketing area specific time trends in the federal data (column 11). Given that strong and generally robust effects I find in the CSI effect in the annual federal court data are impossible to detect statistically once I eliminate odd years (as in the SCPS), the fact that I find any negative impact of CSI in the state courts data suggests that the observations of state prosecutors have some merit.

b. CSI and Actual Forensic Analysis:

If CSI viewers expect that a typical investigation involves conclusive scientific analysis of a wide array of crime scene data, one would expect that prosecutors who present forensic evidence would see an increase in their conviction rates. The first column of table 7 is identical to column of 2 of table 5; a 10 percentage point increase in CSI popularity as associated with a 5 percentage point reduction in conviction rates. In Column 2, I interact CSI popularity with the average "output rate" of forensic labs in the county in 2002 and 2005. Consistent with my hypothesis that forensic evidence is over weighted in areas where CSI is popular, this interaction term is positive and substantively large; approximately 23% the size of the first order CSI effect, albeit marginally precise (t=1.91. It is less clear that there is heterogeneity in the CSI effect relative to the average number of requests per lab (column 3). Including both output and workload does not change the estimated values (column 4).

In columns 5 and 6, I limit my sample to only the years 2002 and 2004, the two years in which CSI was on the air and I have reasonable estimates of the capabilities of local forensic labs. In this sample, there is no clear relationship between CSI popularity

and conviction rates, conditional on the prosecutor's access to forensic evidence (column 5). However, once I allow for heterogeneity in the effect of CSI on conviction, I find strong evidence that in areas where there are no forensic labs, each percentage point increase in the popularity of CSI reduces the probability of gaining a conviction by almost two percentage points (se=0.628). The null point estimate in column 5 is driven by a *positive* relationship between CSI popularity and conviction rates in areas where forensic labs are busy (as measured by requests per lab) and productive (completed requests per new requests). In the final two columns of table 7, I replace all measures of "forensic access" with zero prior to 2000, which does not qualitatively change the estimated impact of CSI or CSI and access to forensic technology.[17] Finally, in column 8 I include controls for the age distribution of the county, eliminated over 50% of the independent variation in CSI popularity. When I model the full CSI effect, which is specifically that forensic evidence will become over weighted where the television show is popular, I find strong evidence that fictionalized television has affected outcomes in the criminal justice system.

Recall that my previous estimates of the CSI effect were not robust to the inclusion of marketing-area specific linear time trends or variation in the age structure of the population. In table 8 I replicate columns 1, 2, 3, 4, 7 and 8 of table 7 with the same marketing area time trends. Clearly, the assumption that CSI has a homogenous first order effect on what juries expect is too strong to be reasonable. However, CSI popularity does appear to affect how the actors in a trial perceive forensic evidence. Even including a linear increase in conviction rates, if prosecutors do not have ready

[17] This replacement is somewhat ad hoc, and I am essentially forcing there to be no relationship between use of forensic evidence and conviction rates prior to 2002. Assuming that my lab productivity measures were equal to their average values prior to 2002 does not qualitatively change my results.

access to forensic evidence, their ability to earn a conviction falls one for one with CSI popularity. This is compelling evidence; the age distribution of the population explains over half of CSI popularity, and even conditional on that, forensic evidence appears to be a positively predict of conviction in places where CSI is popular.

c. The CSI Effect and DNA evidence

The National Prosecutors Survey provides one potential link between CSI popularity and prosecutorial actions. The limitation of this data is that it asks primarily about DNA usage, not forensic evidence more broadly, and the districts who I am able to link to CSI veiwership were all relatively early adopters of DNA analysis; over 80% of these districts reported using DNA evidence in 1994. However, it does appear to be the case that prosecutors are more likely to report using DNA evidence in areas where CSI is more popular; conditional on the budget, staffing, population and caseload, there is a weak positive correlation between CSI popularity and use of DNA in trials.[18] The raw correlation between DNA use, CSI popularity, and conviction rates are suggestive of the CSI effect at work. In district/years when DNA evidence is never presented at trial, CSI popularity is weakly and negatively correlated with both felony conviction rates (ρ= -0.31), and misdemeanor conviction rates (ρ= -0.02). There is at least an 18% chance that all of these correlations could be zero, but prosecutors who report using DNA have opposite signed correlations; the correlation between felony conviction rates and CSI popularity in these districts is 0.20 (p=0.002). The correlation between misdemeanor convictions and CSI popularity is imprecisely estimated, but positive. These correlations are robust to examining just the years 2001 and 2005 when CSI was on the air; in districts

[18] Linear probability model results, which also include year and district fixed effects, are available on request. The point estimate on CSI popularity is 1.42, which is perhaps implausibly large, but the standard error is 1.08

where DNA is not used, CSI popularity is negatively correlated with conviction rates. When the prosecutor does present DNA evidence, the state is more likely to obtain convictions where CSI is more popular.

In table 9, I present regression adjusted estimates of self-reported DNA use, self-reported conviction rates, and CSI popularity. Note that there are at most 265 district/years in my sample, and even with controls for budget, population, and staffing, I cannot explain very much of the variation in conviction rates. In a non-trivial number of districts, survey respondents only prosecuted misdemeanors *or* felonies in a given year. Note also that 8 of the respondents are prosecutors in the Washington DC area, where CSI popularity was not measured in 2005. I find little statistically significant evidence of a CSI effect once I control for other differences across districts, as well as year and district fixed effects. It is always the case that areas the positive impact of using DNA on conviction rates is larger in areas where CSI is more popular. However, the data limitations of the NPS data limit my ability to draw and firm conclusions.

VI. Conclusion:

The average American does not interact with the criminal justice system on a regular basis. This is particularly striking in the courtroom, where jurors are likely to be "the only people who haven't had this experience before" [Adler (1994)]. The novelty of criminal investigation stands in contrast to what Americans watch on television; the fictionalized crime dramas CSI: Crime Scene Investigation, CSI: Miami and CSI: New York are among the most popular shows on television. By linking consumer survey data on television viewing habits with conviction rates in state and federal courts, I find that

prosecutors in jurisdictions where CSI is more popular have a harder time obtaining convictions. Consistent with legal theory, I find that this reduction in conviction rates is driven by cases in which there is a large discrepancy between forensic analysis as presented on CSI and what prosecutors will actually do; convictions for public order and property offenses, and in jurisdictions in which forensic labs are small and backlogged are particularly affected by CSI popularity.

Standards and practices in the forensic analysis community have recently come under heavy criticism from the National Research Council [National Research Council (2009)]. As DNA analysis becomes more advanced, it is possible that someday the actual criminal investigations will approach the level of science as portrayed on television. Until then, these results support the move toward jury reform in the United States, in particular providing juries with information about the capabilities and limits of forensic analysis prior to trial.

References:

Adler, S. (1994) The Jury: Trial and Error in the American Courtroom New York: Times Books.

Asch, S. E. (1951) "Effects of Group Pressure Upon the Modification and Distortion of Judgment." In H. Guetzkow (Ed.), Groups, leadership, and men. Pittsburgh: Carnegie Press.

Cheng, E. (2005) "Reenvisioning Law through the DNA Lens" *New York University Annual Survey of American Law* 60(4): 649-654.

Cole, S. H. and Dioso-Villa, R. (2007) "CSI and Its Effects: Media, Juries, and the Burden of Proof" *New England Law Review* 41: 435-470.

DellaVigna, S. (2007). "Psychology and Economics: Evidence from the Field," forthcoming, *Journal of Economic Literature*.

DellaVigna, S. and Kaplan, E. (2007) "The Fox News Effect: Media Bias and Voting" *The Quarterly Journal of Economics* 112(3): 1187-1234.

Diamond, S. and Rose, M. (2005) "Real Juries" *Annual Review of Law and Social Science* 1: 255-284.

DiFonzo, J. H. and Stern, R. C. (2006) "Devil in a White Coat: The Temptation of Forensic Evidence in the Age of CSI" *New England Law Review* 41: 503-532.

Garthwaite, C. and Moore, T. (2008) "The Role of Celebrity Endorsements in Politics: Oprah, Obama, and the 2008 Democratic Primary" *working paper*

Gentzkow, M. and Shapiro, J. M. (2004) "Media Bias and Reputation" *The Journal of Political Economy* 114(2): 290-316.

Gentzkow, M. and Shapiro, J. M. (2006) "Does Television Rot Your Brain? New Evidence from the Coleman Study" *NBER working paper* w12021.

Hans, V. P., Kaye, D. H., Farley, E., Albertson, S. and Dann, B. M. (2007) "Science in the Jury Box: Jurors' Views and Understanding of Mitochondrial DNA Evidence" *Cornell Legal Studies Research Paper* 07-021.

Horney, J. and Spohn, C. (1996) "The influence of blame and believability factors on the processing of simple versus aggravated rape cases" *Criminology* 34(2) 135-162.

Hughes, T., and Magers, M. (2007) "The Perceived Impact of Crime Scene Investigation Shows on the Administration of Justice" *Journal of Criminal Justice and Popular Culture* 14(3): 259-276

Jensen, R. and Oster, E. (2007) "The Power of TV: Cable Television and Women's Status in India" *NBER working paper* w13305.

Kerstetter, W. A., and Van Winkle, B. (1990). "Who Decides? A Study of the Complainant's Decision to Prosecute in Rape Cases" *Criminal Justice and Behavior* 17(3): 268-283.
Kull, S. Ramsay, C. and Lewis, E. (2003) "Misperceptions, The Media, And The Iraq War." *Political Science Quarterly* 118: 569-598.

Milgram, S. (1963) "Behavioral study of obedience." *Journal of Abnormal and Social Psychology* 67: 371-378.

Mutz, D.C., & Nir, L. (2009). "Not necessarily the news: Does fictional television influence real-world policy preferences?" *Mass Communication and Society, in press.*

National Research Council (2009) Strengthening Forensic Science in the United States: A Path Forward. Washington DC: The National Academies Press.

Olken, B. A. (2006) "Do Television and Radio Destroy Social Capital? Evidence from Indonesian Villages" *NBER working paper* w12561.

Perry, S. W. (2006) "Prosecutors in State Courts, 2005." *Bureau of Justice Statistics Bulletin* NCJ 213799

Podlas, K. (2006) "The 'CSI Effect': Exposing the Media Myth." *Fordham Intellectual Property, Media & Entertainment Law Journal* 16: 429-465.

Schweitzer, N. J. and Saks, M. J. (2007) "The CSI Effect: Popular Fiction about Forensice Science Affects the Public's Expectations about Real Forensic Science" *Jurimetrics* 47: 357-364.

Stockwell, J. (2005, May 22) "Defense, prosecution play to new CSI savvy juries expecting TV style forensics." *The Washington Post*, A01.

Toobin, J. (2007, May 7) "The CSI Effect: the Truth about Forensic Science" *The New Yorker:* 30-35.

Thompson, W. (1997) "Accepting Lower Standards: The National Research Council's Second Report on Forensic DNA Evidence" *Jurimetrics* 37(4): 405-424.

Tyler, T. R. (2006) "Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction" *The Yale Law Journal* 115: 1050-1085.

Ulmer, J.T., and Johnson, B. (2004) "Sentencing in Context: A Multilevel Analysis" *Criminology* 42(1): 137-177.

U.S. Dept. of Justice, Bureau of Justice Statistics. STATE COURT PROCESSING STATISTICS, 1990-2004: FELONY DEFENDANTS IN LARGE URBAN COUNTIES [Computer file]. Conducted by Pretrial Services Resource Center [producer], 2007. ICPSR02038-v3. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-11-28.

U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY, 1994 [Computer file]. Conducted by U.S. Dept. of Justice, Bureau of Justice Statistics. ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 1998. doi:10.3886/ICPSR06785\

U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY, 1996 [Computer file]. Conducted by U.S. Dept. of Justice, Bureau of Justice Statistics. ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 1998. doi:10.3886/ICPSR02433

U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY [CENSUS], 2001 [Computer file]. Conducted by the National Opinion Research Center. ICPSR03418-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 2002. doi:10.3886/ICPSR03418

U.S. Dept. of Justice, Bureau of Justice Statistics. NATIONAL PROSECUTORS SURVEY, 2005 [Computer file]. Conducted by U.S. Dept. of Justice, Bureau of Justice Statistics. ICPSR04600-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research producer and distributor], 2007-02-23. doi:10.3886/ICPSR04600

Waldman, M. Nicholson, S., Adilov, N. and Williams, J. (2008) "Autism Prevalence and Precipitation Rates in California, Oregon, and Washington Counties," *Journal of Pediatrics and Adolescent Medicine* 162(11): 1026-1034.

Western, B. (2006) Punishment and Inequality in America Russell Sage Foundation: New York.

Willing, R. (2004, Aug 25) "'CSI effect' has juries wanting more evidence" *USA Today*

Figures:

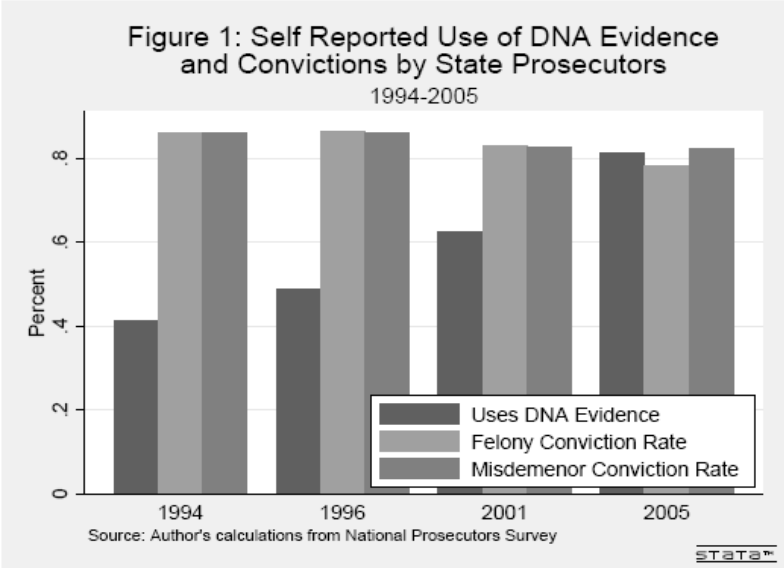


Figure 1: Self Reported Use of DNA Evidence
and Convictions by State Prosecutors
1994-2005
Percent
0
.2
.4
.6
.8
1994
1996
2001
2005
Uses DNA Evidence
Felony Conviction Rate
Misdemenor Conviction Rate
Source: Author's calculations from National Prosecutors Survey
stata™

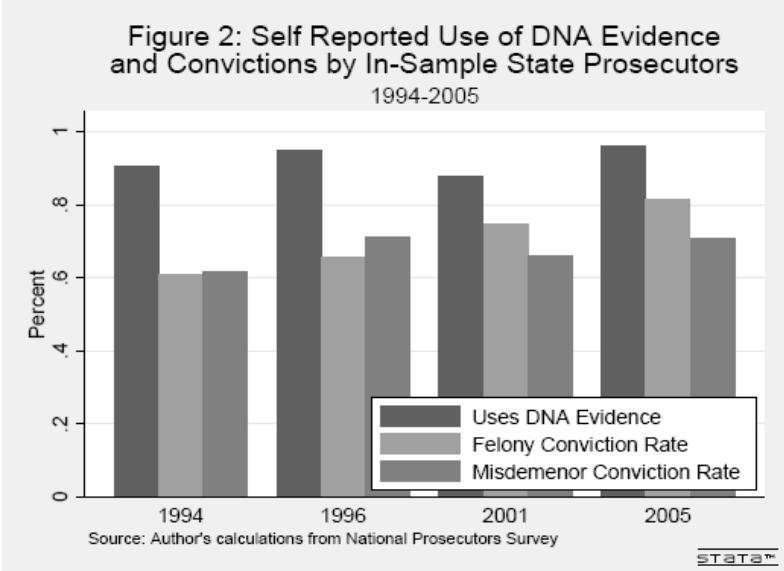


Figure 2: Self Reported Use of DNA Evidence
and Convictions by In-Sample State Prosecutors
1994-2005
Percent
0
.2
.4
.6
.8
1
1994
1996
2001
2005
Uses DNA Evidence
Felony Conviction Rate
Misdemenor Conviction Rate
Source: Author's calculations from National Prosecutors Survey
stata™

Figure 3: Trends in Conviction and Mean CSI Popularity

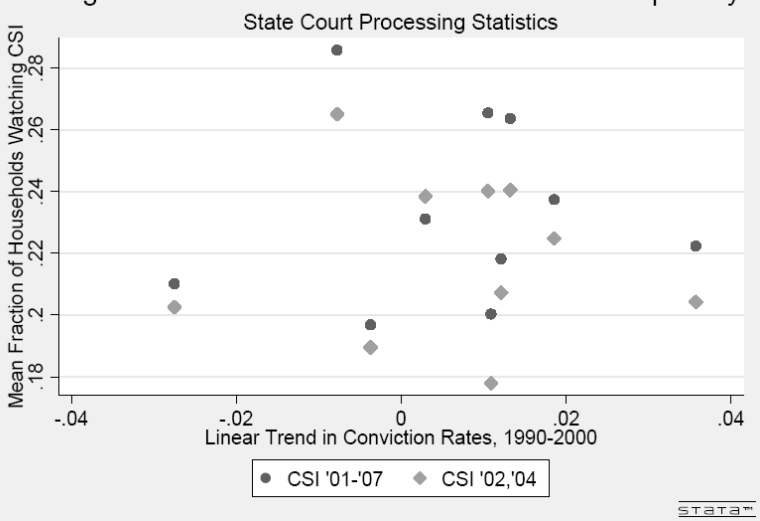


Figure 4: Trends in Conviction and Maximum CSI Popularity

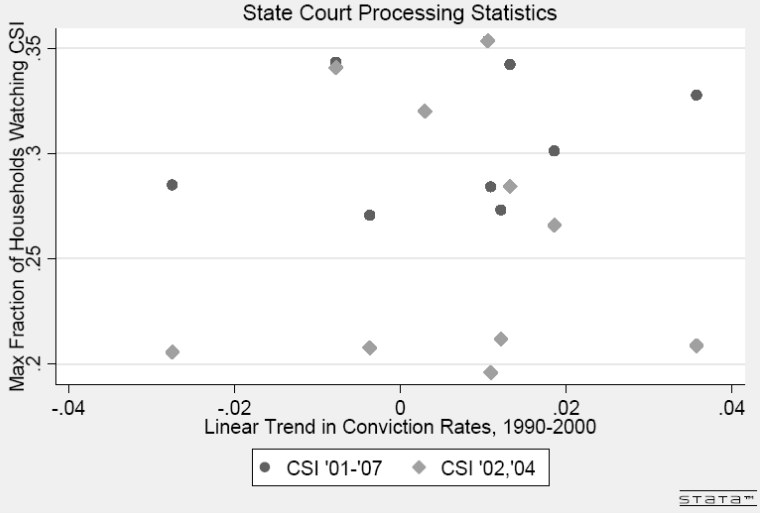
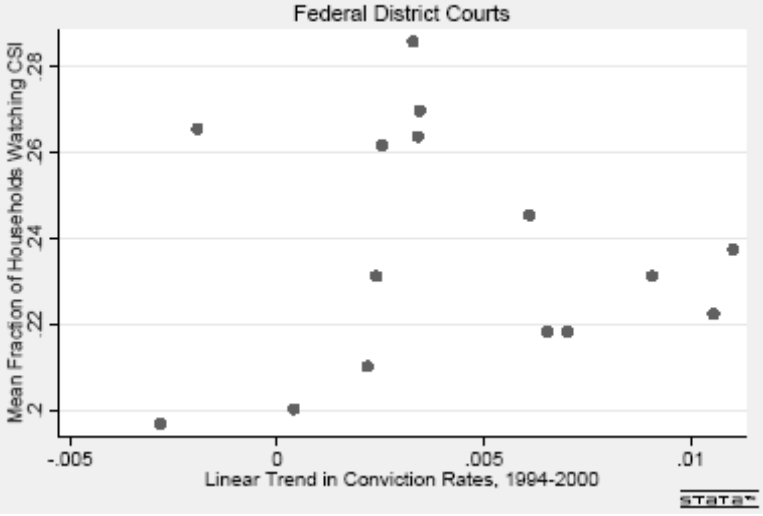


Figure 5: Trends in Conviction and Mean CSI Popularity



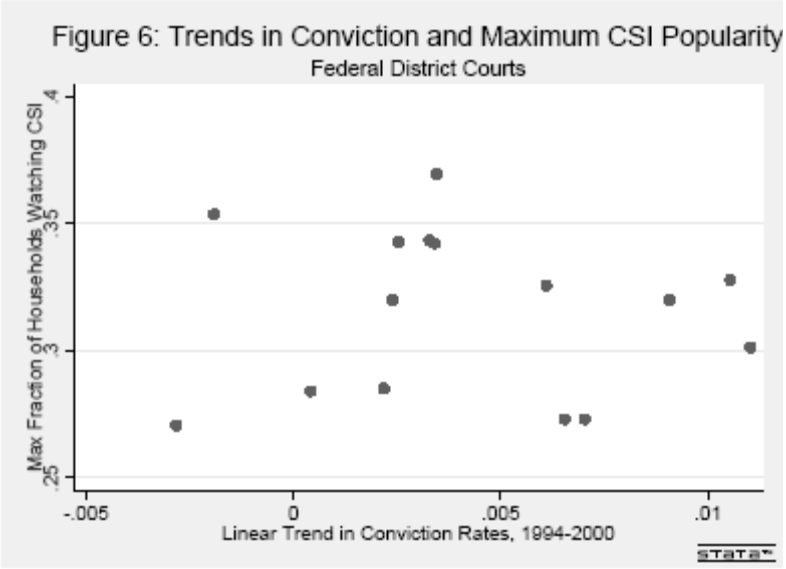


Figure 6: Trends in Conviction and Maximum CSI Popularity
Federal District Courts
Max Fraction of Households Watching CSI
.25
.3
.35
.4
-.005
0
.005
.01
Linear Trend in Conviction Rates, 1994-2000

Tables:

Table 1: CSI Popularity by Marketing Area and Year, Simmons National Consumer Survey

	2001	2002	2003	2004	2005	2006	2007
Atlanta	8.44%	16.32%	28.52%	26.59%	30.12%	26.14%	30.08%
Boston	10.37%	19.98%	27.22%	31.22%	29.79%	33.33%	36.93%
Chicago	8.89%	20.55%	28.50%	19.92%	20.95%	22.17%	26.13%
Cleveland	7.35%	16.14%	27.17%	32.09%	33.83%	32.34%	34.29%
Dallas	11.02%	19.67%	33.94%	28.43%	26.56%	34.23%	30.78%
Detroit	7.94%	19.35%	29.13%	35.35%	29.28%	32.02%	32.80%
Houston	11.55%	20.86%	32.78%	20.10%	23.08%	23.99%	23.30%
Los Angeles	10.56%	19.58%	28.41%	16.24%	20.62%	22.76%	22.05%
New York	6.92%	20.12%	27.09%	21.17%	23.14%	27.00%	27.31%
Philadelphia	12.50%	20.86%	33.82%	34.08%	34.34%	32.85%	31.65%
San Antonio	16.67%	14.29%	32.55%	23.10%	25.81%	29.86%	29.56%
San Francisco	9.58%	20.75%	27.06%	17.24%	20.22%	20.81%	22.13%
Washington, DC	12.29%	18.28%	29.90%	32.01%	.	.	.

Table 2: State Court Processing Statistics: 1990-2004

Cases	35,093
CSI Popularity*	0.205 0.044
Completed Requests / New Requests*	1.04 (0.654)
New Requests (100k) / Labs*	0.185 (0.127)
Conviction Rate	0.788 (0.408)
Age	30.2 (9.99)
% Male	83.9
% Black	43.4
% Hispanic	32.1
% Property	30.3
% Drug	37.8
% Public Order	8.88
% Public Defender	53.8
% Private Attorney	17.1
% Assigned Attorney	16.6
% Self Representation	0.14
% Jury Trial	1.83
% Bench Trial	2.57

Standard deviations in parentheses. * mean and standard deviation for 2002 and 2004 only.

Table 3: Defendants in Federal District Courts, 1994-2007

Federal District	Marketing Area	Defendants	Conviction Rate	CSI popularity
California Central	Los Angeles	17,091	0.933	0.131
California Northern	San Francisco	6,391	0.878	0.109
District of Columbia	Washington	4,098	0.861	0.118
Georgia Northern	Atlanta	9,070	0.890	0.143
Illinois Northern	Chicago	10,076	0.954	0.141
Massachusetts	Boston	5,401	0.937	0.156
Maryland	Washington	4,701	0.874	0.113
Michigan Eastern	Detroit	8,551	0.901	0.154
New York Eastern	New York	15,626	0.958	0.125
New York Southern	New York	15,810	0.961	0.136
Ohio Northern	Cleveland	8,928	0.944	0.169
Pennsylvania Eastern	Philadelphia	9,249	0.949	0.172
Texas Northern	Dallas	11,999	0.910	0.154
Texas Southern	Houston	48,740	0.924	0.166
Texas Western	San Antonio	46,704	0.952	0.180
		222,435	0.932	0.154

Conviction rates are defined as (Guilty + Nolo Contendere / Dismissed + No Bill + Not Guilty + Guilty + Nolo Contendere). CSI popularity is based on the number of SNCS survey respondents who reported watching a CSI franchise in the past week.

Table 4: OLS estimates of CSI popularity and Market-Level Trends in Conviction Rates

	Panel A: State Courts			
	Average CSI popularity		Maximum CSI Popularity	
	(1)	(2)	(3)	(4)
Pre-CSI Trend in Conviction Rates	0.097	-0.095	0.472	-0.163
	[0.515]	[0.464]	[0.367]	[1.209]
	0.855	*0.844*	*0.235*	*0.896*
Constant	0.232	0.220	0.307	0.260
	[0.012]	[0.011]	[0.011]	[0.024]
Non-Sample CSI years included	x		x	
R^2	0.003	0.003	0.066	0.002
N	10	10	10	10
Mean of DV	0.23	0.22	0.31	0.26

	Panel B: Federal District Courts	
	Average CSI popularity	Maximum CSI Popularity
	(1)	(2)
Pre-CSI Trend in Conviction Rates	-0.083	-0.313
	[1.75]	[2.10]
	0.963	*0.884*
Constant	0.238	0.317
	[0.013]	[0.015]
R^2	0.0002	0.0016
N	15	15
Mean of DV	0.24	0.32

Robust standard errors in brackets, p-values in italics. The average rate of growth in state court convictions prior to 2000 is 0.001, with a standard deviation of 0.02. The average rate of growth in federal district court convictions prior to 2000 is 0.004, with a standard deviation of 0.004.

Table 5 – OLS Estimates of Conviction and CSI Popularity in State Courts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CSI rating	-0.0529 [0.111] {0.124}	-0.546** [0.182] {0.176}	-0.579* [0.238] {0.256}		-0.263 [0.301] {0.282}	-0.0444 [0.0557] {0.0516}	-0.202 [0.193] {0.207}
lag(CSI rating)			0.152 [0.709] {0.678}	-0.600 [0.630] {0.548}			
CSI rating x Property Offense					-0.424 {0.457} [0.450]		
CSI rating x Drug Offense					-0.347 [0.483] {0.424}		
CSI rating x Public Order Offense					-0.441 [0.505] {0.494}		
County x Crime FE?		x	x	x	x		x
Year x Offense type FE?		x	x	x	x		x
Case Controls?		x	x	x	x		x
Marketing Area Time Trends?						x	x
R^2	0.0002	0.169	0.169	0.169	0.169	0.103	0.177
N	35,093	35,093	35,093	35,093	35,093	35,093	35,093

The mean value of the dependant variable is 0.79. Estimates weighted to be representative of all criminal cases in urban counties. Case controls include race and gender of the defendant, trial type, representation at trial, and a quadratic age effect. Standard errors in brackets allow for arbitrary correlation within county and offense type (107 clusters). Standard errors in braces allow for arbitrary correlation within media market and offense type (40 clusters).

** = p<0.05; **= p<=0.01*

Table 6 – OLS Estimates of Conviction and CSI Popularity in Federal District Courts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CSI rating	-0.100* [0.039]	-0.102* [0.040]	-0.008 [0.052]	0.021 [0.063]			-0.074* [0.034]	-0.075* [0.034]	-0.088 [0.047]	-0.093* [0.046]	-0.028* [0.011]
lag(CSI rating)					-0.110* [0.048]	-0.114* [0.048]	-0.109* [0.042]	-0.115* [0.042]			
CSI rating x Violent Offense									0.145 [0.116]	0.138 [0.116]	
CSI rating x Property Offense									-0.009 [0.183]	-0.012 [0.183]	
CSI rating x Drug Offense									-0.026 [0.092]	-0.020 [0.092]	
CSI rating x "Public Order" Offense									-0.076 [0.107]	-0.066 [0.103]	
Year x Offense FE	x	x	x	x	x	x	x	x	x	x	*Offense only*
Marketing Area Time Trends											x
Age Distribution		x		x		x		x		x	
R^2	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.04	0.04
N	222,435	222,435	96,148	96,148	223,588	223,588	222,435	222,435	222,435	222,435	222,435

The mean value of the dependant variable is 0.93. All estimates include the logged number of counts, as well as district x crime type fixed effects. Standard errors in brackets allow for arbitrary correlation within a district and offense type (75 clusters). Columns (3) and (4) only contain years included in the SCPS data.
** = p<0.05; **= p<=0.01*

Table 7 – OLS Estimates of Conviction, CSI Popularity, and Access to Forensic Evidence in State Courts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CSI rating	-0.546**	-0.642***	-0.484*	-0.589**	-0.252	-1.933**	-1.590**	-1.710**
	[0.182]	[0.179]	[0.203]	[0.207]	[0.229]	[0.628]	[0.584]	[0.613]
CSI rating x Forensic Output Rate		0.151		0.14		0.789**	0.756**	0.861***
		[0.0790]		[0.0748]		[0.273]	[0.245]	[0.251]
CSI rating x Forensic Workload			-0.335	-0.243		3.784*	0.646	1.79
			[0.420]	[0.409]		[1.505]	[1.305]	[1.452]
Forensic Output Rate					-0.0109	-0.171**	-0.148**	-0.169**
					[0.0185]	[0.0582]	[0.0525]	[0.0534]
Forensic Workload					0.69	-0.114	-0.183	-0.422
					[0.396]	[0.500]	[0.274]	[0.301]
Age Distribution?								x
R^2	0.169	0.17	0.169	0.17	0.271	0.273	0.17	0.172
N	35,093	35,093	35,093	35,093	11,977	11,977	35,093	35,093

The mean value of the dependant variable is 0.79. Estimates weighted to be representative of all criminal cases in urban counties. All models include county by crime type and year by offense category fixed effects, as well as controls for race and gender of the defendant, trial type, representation at trial, and a quadratic age effect. Standard errors in brackets allow for arbitrary correlation within county and offense category (107 clusters). Columns (5) and (6) contain only years 2002 and 2004.

** = p<0.05; **= p<=0.01*

Table 8 – OLS Estimates of Conviction, CSI Popularity, and Access to Forensic Evidence in State Courts, with Marketing Area Time Trends

	(1)	(2)	(3)	(4)	(5)	(6)
CSI rating	-0.202	-0.178	-0.377	-0.392	-1.701**	-1.506**
	[0.193]	[0.199]	[0.211]	[0.221]	[0.574]	[0.571]
CSI rating x Forensic Output Rate		-0.0307		0.0165	0.566*	0.378
		[0.0691]		[0.0749]	[0.265]	[0.270]
CSI rating x Forensic Workload			0.869**	0.880**	4.421**	4.776**
			[0.295]	[0.303]	[1.411]	[1.432]
Forensic Output Rate					-0.127*	-0.0955
					[0.0530]	[0.0545]
Forensic Workload					-0.761**	-0.897**
					[0.284]	[0.284]
Age Distribution?						x
R^2	0.177	0.177	0.178	0.178	0.178	0.18
N	35,093	35,093	35,093	35,093	35,093	35,093

The mean value of the dependant variable is 0.79. Estimates weighted to be representative of all criminal cases in urban counties. All models include county by crime and year by crime fixed effects, as well as controls for race and gender of the defendant, trial type, representation at trial, and a quadratic age effect. Standard errors in brackets allow for arbitrary correlation within county and offense category (107 clusters).
** = p<0.05; **= p<=0.01*

Table 9: CSI, DNA and Conviction Rates: National Prosecutors Survey

	A: Conviction Rate								
DNA	0.049 [0.136]	0.017 [0.115]	-0.116 [0.202]	0.056 [0.083]	0.036 [0.091]	-0.170 [0.229]	1.45 [1.84]	1.57 [2.05]	1.17 [1.88]
CSI rating		1.75 [1.40]	0.252 [2.48]		1.03 [0.983]	-0.609 [1.82]		2.02 [3.01]	-2.47 [10.1]
DNA x CSI			1.37 [1.39]			1.58 [1.53]			4.04 [9.19]
Years	1994 - 2005	1994 - 2005	1994 - 2005	2001, 2005	2001, 2005	2001, 2005	1994 - 2005	1994 - 2005	1994 - 2005
District FE							x	x	x
N	265	257	257	192	184	184	265	257	257
R^2	0.01	0.01	0.01	0.07	0.06	0.07	0.37	0.37	0.37
	B: Felony Conviction Rate								
DNA	-0.002 [0.087]	-0.004 [0.091]	-0.223* [0.095]	0.084 [0.085]	0.071 [0.094]	-0.105 [0.236]	0.085 [0.129]	0.083 [0.159]	-0.007 [0.232]
CSI rating		-0.054 [0.846]	-2.51+ [1.40]		-0.009 [0.687]	-1.37 [1.70]		1.10 [1.32]	0.169 [2.31]
DNA x CSI			2.24* [1.01]			1.30 [1.58]			0.835 [1.50]
Years	1994-2005	1994-2005	1994-2005	2001, 2005	2001, 2005	2001, 2005	1994-2005	1994-2005	1994-2005
District FE							x	x	x
N	261	253	253	188	180	180	261	253	253
R^2	0.12	0.09	0.10	0.07	0.02	0.03	0.78	0.80	0.80
	C: Misdemeanor Conviction Rate								
DNA	0.010 [0.081]	0.005 [0.082]	-0.177 [0.159]	0.032 [0.087]	0.002 [0.086]	-0.223 [0.243]	0.062 [0.137]	0.060 [0.177]	-0.056 [0.157]
CSI rating		0.665 [0.773]	-0.846 [1.51]		0.845 [0.745]	-0.827 [1.89]		0.740 [1.74]	-0.077 [2.58]
DNA x CSI			1.38 [1.22]			1.57 [1.63]			0.744 [1.37]
Years	1994-2005	1994-2005	1994-2005	2001, 2005	2001, 2005	2001, 2005	1994-2005	1994-2005	1994-2005
District FE							x	x	x
N	183	175	175	137	129	129	183	175	175
R^2	0.14	0.12	0.13	0.11	0.11	0.12	0.80	0.78	0.78

Standard errors in brackets allow for arbitrary correlation in conviction rates within a district. Additional controls include the logged population, logged operating budget, logged full time employees, and year fixed effects. Regressions weighted to adjust for sampling procedure. + $p<0.1$ * $p<0.05$