Time to Deliberate: Factors Influencing the Duration of Jury Deliberation*

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Abstract

The sixth amendment to the U.S. Constitution stipulates that individuals accused of violating the law by the state must be allowed a speedy and impartial trial by a set of jurors drawn from the community in which the alleged violation of the law took place. Most empirical research on the determinants of the time it takes a jury to render a verdict relies on data from the activities of mock juries. In this paper we analyze a unique and informative dataset on actual juries that mitigates the causal inference issues arising from the study of time to decision of mock juries. The empirical results indicate that 6 person juries are no quicker than 12 person juries; as cases become more complex and/or more severe, juries deliberate longer; non-unanimous decisions take longer to reach than unanimous ones; panels that saw many potential jurors excused during *voir dire* end up deliberating longer than panels with fewer challenges.

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1 Introduction

The American jury system has captured the attention of scholars, the legal community and the American public. The right to a jury trial is firmly rooted in the Bill of Rights in the U.S. Constitution. The sixth amendment states that those accused of a crime by the state are to have a public and speedy trial heard by a local jury.[1] After the prosecution and defense have both made their arguments in court, the jury is asked to evaluate the case and determine innocence or guilt. Clearly the objective behind such a jury based judicial system is to resolve a dispute as best as possible by a group of impartial peers engaging in collective decision making. There are thus two dependent variables are of interest. The first is the actual verdict agreed upon by a jury, that is, the outcome of the collective decision making process. Ideally, conditional upon variables that proxy for the strength of the evidence (for or against), socio-demographic variables should have no explanatory power in predicting whether a jury voted guilty or not. The second variable is the process by which a jury reaches a verdict, that is, the process of collective decision making itself. Again, presumably, aside from variables that proxy for case characteristics, socio-demographic factors should have no explanatory power in explaining the process of jury deliberation. One specific aspect of the deliberation process is the time that it takes for a jury to reach a decision – this is the focus of our analysis in this paper. Specifically, we are interested in the length of time taken by real-world juries to render a verdict; and the determinants of the 'time to verdict' as a function of the characteristics of the case at hand and the socio-demographic

[1] Specifically, the sixth amendment stipulates that "In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed."

composition of the jury.

There are few existing studies that have examined variables influencing the time to verdict are therefore determinants of this process variable have been the subject of speculation. The lack of empirical research in this area is attributable in large part to a lack of data on real-world juries (Saks and Marti 1997). With very few exceptions, jury researchers have been forced to study the jury by using indirect methods of access (Diamond 2006). Indeed, the length of time of spent during jury deliberation is rarely noted in a systematic method and typically is only reported in unusual or high profile cases. Using a rich dataset put together in the 1970's, but never systematically analyzed, we attempt to identify the factors that influence jury deliberation time and thus add to the literature on the determinants of time to verdict of real-world juries, and to the process of judicial decision making in general.

Existing empirical research into the outcome of jury deliberation typically examines and attempts to explain the binary outcome of the verdict (guilty or not) or civil case judgment (liable or not). Much has been written on the subject of individual juror perception of evidence as presented during trial, juror comprehension of the evidence, and the individual processing of information (Ellsworth 1989; Strodtbeck, James and Hawkins 1957). The process of deliberation has also undergone scrutiny with several models of decision making presented (Winship 2000). Unfortunately, much of this research has been conducted using mock juries. Since mock juries typically have built-in time constraints, they cannot be used as a measurement of actual jury time to a decision point (Vidmar 1994). In the present analysis, data from actual juries are examined, mitigating the causal inference issues present in analyzing mock juries. The main results suggest that 6 person juries are no quicker than 12 person juries; as cases become more complex and/or more severe, juries deliberate longer;

non-unanimous decisions take longer to reach than unanimous ones and panels that saw many potential jurors excused during *voir dire* end up deliberating longer than panels with fewer challenges. The remainder of this paper is structured as follows. Section 2 provides a literature review that motivates in detail the various process questions that can be asked of the data. In Section 3 the data are discussed followed by a discussion of the empirical hypotheses. In Section 4 the empirical results are presented and discussed, followed in Section 5 with a conclusion.

2 Literature Review

The single biggest obstacle in analyzing the process of jury deliberations is data collection. Often scholars rely on mock juries to better understand why juries do what they do and the process by which they reach (or fail to reach) a collective decision. Clearly, "using actual juries provides the most appropriate source of research information because jury simulations cannot fully enact important variables or environmental features found in actual trials decided by real juries" (Diamond and Rose 2005). More specifically with respect to the variable of interest in this paper, measuring deliberation time in experimental settings has proven to be problematic, typically due to time limitations. Ellsworth (1989) conducted 18 mock juries using the same information stimulus. None of the 18 was able to come to agreement within the one hour limit. The Supreme Court ruled in the 1970 case of Williams v. Florida that juries composed of less than twelve members were constitutional where the majority held there were "no discernible difference' in the results reaches by six- and 12-member juries (Lempert 1975). One of the aspects of the decision referred to judicial

economy of the time saved by the court in having a smaller jury. Researchers have rebuked this claim of time savings by focusing on the time spent on *voir dire* (Zeisel 1971). Recent research conducted by the National Center for State Courts reveals that the median time spent in *voir dire* varies from state to state in both criminal felony trial and civil trials (Mize, Hannaford-Agor and Waters 2007). The NCSC reports South Carolina requiring a median *voir dire* of only five minutes for both civil and criminal felony trials while Connecticut needs 16 hours for civil *voir dire* and 10 hours for felony trials. The analysis in the present paper looks to the time spent in deliberations to determine if there are any time savings to be had. Saks and Marti (1997) reviewed eleven studies which report length of deliberations, however only two reported significance test statistics. They report a mean difference in deliberation time to be 20 minutes for 12-person juries compared to 6-person juries. For the three studies of examining actual juries, a mean difference of 44 minutes is noted. They conclude "the small time saving that come from reducing the size of juries would provide slight justification for any losses in representation and quality of deliberation." (Saks and Marti 1997).

The jury has many attributes and responsibilities but the primary job of juries is dispute resolution. The accuracy of the outcome should be the primary consideration with community representativeness as a secondary issue. That 82 percent of the people called for jury service never make it past *voir dire* in New York State indicates a lack of representativeness in jury composition (Saulny 2003). In the analysis presented below, jury composition is not analyzed for representativeness, but only for patterns in jury deliberations.

Jury research has concentrated on determining if six and twelve member juries produce different outcomes. Simulated jury research found that individuals participating on a large jury produce significantly more arguments than individuals participating on a small jury

(Tarter-Hilgendorf 1986). Any research that indicates that jury size may result in 'incorrect' verdicts indicates that jury size deserves scrutiny. The probability of convicting an innocent defendant may actually increase with the size of the jury (Feddersen and Pesendorfer 1998). Coughlin (2000) extends the Feddersen and Pesendorfer's (FP) model with two enhancements: mistrials and allowing limited communication among jurors and confirms the FP model. Additional research confirms both original and enhanced models (Guarnaschelli, McKelvey and Palfrey 2000). The results presented below on deliberation time may provide additional tools for verdict correctness investigation.

Unanimous jury verdicts were accepted a basic function of the jury system for over 600 years (Abramason 1994 pg 179). In 1972, the Supreme Court decided in Apodaca v Oregon and Johnson v. Louisiana that unanimous verdicts were no longer required in non-capital state cases. As a result, states have been freed to permit non-unanimous verdicts. In criminal felony trials, the jury verdict must be unanimous at the federal level and in all states except for Louisiana and Oregon while in civil trials the federal requirement is the same but only 18 states require unanimous outcomes. (Diamond, Rose and Murphy 2006).

This research attempts to implement the research strategy recommended by Zeisel and Diamond (1974) by analyzing a jurisdiction in which six member juries are an option. The best research design would have both a six- and 12-member juries decide the same case simultaneously. We will have to settle for their second recommendation of comparing juries of different sizes deciding similar issues. The various problems resulting from jury simulations are also avoided by using actual trial data (Diamond 1997).

Other research issues regarding jury verdicts include the extrapolation of sample findings to the whole. Comparing verdicts over time may be subject to internal validity problems

that confounds time series studies (Vidmar 1994). The verdicts used in this research are viewed as independent events and no temporal correlations are drawn between each event.

3 The Data

A recurring challenge in jury deliberation analysis is the difficulty in obtaining data. Most of the data regarding juries comes from experimental situations which by their very nature constrain the length of time deliberations may take place. Other studies of actual juries tend to be limited in scope and scale. However, there is a source of data that has not yet been systematically examined, The Multnomah Count [Oregon] Jury Project (conducted by Bernard Grofman under an NSF grant). The records were obtained from the Fourth Circuit Court, Multnomah County (Portland) Oregon during the period 1973-1976. The Multnomah County Jury Database contains 32 jury panels with 199 variables covering 6,657 jurors and 1,159 trials.

The data include both individual-level juror and aggregate jury case information. The information collected in the trial summaries include members of the jury, their votes, the final verdict, the type of case, and the amount of time taken by the jury to arrive at a decision. Each monthly juror panel recorded the juror's age, occupation and years in residence in Oregon. Each juror also completed a self-administered demographic data sheet which collected the juror's educational background, spouse and children summary and any past jury or trial experience.

While jury duty today in Oregon is restricted to a single day (excepting of course if one gets picked to serve on a panel and the trial or deliberations last longer), in the 1970's

jurors were called for an entire month. As Grofman and Feld (1976) note: "During that month of service, members of the jury pool may sit on as many as ten different cases. Some 190-220 jurors serve each month, with a case load of 40-60 trials in Circuit Court (primarily twelve-member juries). No special effort is made in Multnomah County to prevent jurors from serving together more than once during their month of service and repeated dyads, triads, and even tetrads and occasional higher order groupings do occur. In drawing up jury panels in Multnomah County, court officials do, however, attempt to equalize actual jury duty by giving priority on panel placement to those members of the jury who were removed on challenges or who were participants in cases dismissed or resolved out of court after the jury has been selected but before it has had a chance to meet."

The selection of Multnomah County was fortuitous beyond the fact that jurors did serve on multiple panels over the course of the month because there were other interesting features of jury service and state law in Portland Oregon, at the time, that allow us to test other hypotheses. For instance, the county utilized both 6 and 12 person juries. Oregon law allows for non-unanimous jury decisions (with the exception of capital murder cases). For this paper the most important feature of the dataset is that for virtually every trial the time that the jury began deliberating was noted, as well as the time that the jury finished deliberating. Rarely has any extensive data been collected in actual court proceedings which examine the difference in how long juries of different compositions take to deliberate.

The primary data of interest for this analysis is the time taken by the i^{th} jury for deliberation, denoted as λ_i in this paper. The time element was coded with a start hour/minute and stop hour/minute. Allowances were made for lunch and those deliberations lasting more than one day. As the panel method of jury procurement was used in Oregon at the time of the

research, individual jurors could sit on multiple juries. Therefore analysis of an individual's juror time of deliberation over a series of trials may be studied.

Empirical Hypotheses

The jury decision making process is important in dispute resolution and a proxy for the process of collective decision making. The time to verdict is often considered an indicator of how serious the jury takes its work. Short is not serious but long is. Therefore, how long is long enough? When should the length of deliberations raise questions as to the earnestness and thoroughness of an individual juror? How short is too short? Can a jury deliberate for too long? Should a non-unanimous verdict be accepted after a "suitable" length of deliberations? What is a suitable length of deliberations? What factors should be considered when deciding a "suitable" length of time? Do factors influence the length of time? All of these questions can be viewed as objective questions that can be asked about the process of collective decision making; we analyze these questions with specific empirical hypotheses.

Since getting more people to agree on a conclusion ought to be more difficult that getting fewer people to agree, our first hypothesis is:

H1: A six person jury will reach a decision more quickly than a twelve person jury.

Next, some trials are relatively straightforward and others will be more complex, we theorize that:

H2: The more complex the case, the longer the jury will deliberate.

In criminal cases we expect there to be a relationship between the severity of the crime and

how long juries take to reach a decision. Since more severe crimes involve longer sentences in jail and the trials are usually more complex and lengthy we argue that:

H3: The more severe the charge against the defendant, the longer the jury will deliberate. For the purposes of this paper we employ a simple dichotomy where crimes against persons (i.e. murder, rape, and assault) are more severe crimes against property are less severe.

Oregon allows for juries to come to a conclusion with a less than unanimous jury – 10-2 or 11-1 decisions suffice under Oregon state law. At first blush one might hypothesize that unanimous decisions ought to take longer since a 10-2 split is easier to reach than a 12-0. But the logic behind our expectation below a unanimous decision is one that in which the jury starts out unanimous, so these panels will finish relatively quickly. A split jury on the other hand will probably never be unanimous and they will have to work to get to 10-2 to reach a decision. Thus,

H4: Non-unanimous decisions will take longer than unanimous ones.

Citizens with prior experience on a jury may bring certain deliberation skills to the table that novice panelists would not know about. Therefore,

H5: Panels with members who have prior jury experience will tend to reach decisions more quickly than those comprised of less experience jurors.

Since the burden of proof is on the prosecution in a criminal trial and on the plaintiff in a civil dispute,

H6: Juries that find in favor of the state (in criminal trials) or the plaintiff (in civil trials) will take longer on average.

At the start of a jury trial potential jurors are brought in and questioned by attorneys from both sides and the presiding judge. Often times some of the panelists are excused from

that particularly trial for a variety of reasons. Sometimes the person is excused "for cause" and other times one side or the other uses a preemptory challenge to remove a person from the jury. The strategic removal of potential jurors from the jury is, in fact, big business for certain trials. Since both sides typically remove panelists who have strong opinions or show leadership abilities, if enough citizens are excused the panel is likely to be made up of people that are less inclined to be strongly in favor of one side or the other. Moreover, the jury may lack leadership, so

H7: As the number of potential jurors who have been excused from a panel during *voir dire* increases, the longer the jury will take to reach a verdict.

Next, we turn to the analyses to see which, if any, of our theoretical expectations are supported by the data.

4 Empirical Methods and Results

As in the previous section, letting λ_i denote the time it takes in minutes for the i^{th} jury to reach a decision, the statistical analyses focus on (i) the shape and characteristics of the resulting 'hazard function', (ii) estimation of the effect of covariates outlined in the previous section on the 'hazard function' and (iii) the inclusion of unobserved heterogeneity in the model. The hazard function is the main object of analysis in duration data such as that employed in this paper (see Greene (2003)). The idea is to characterize the probability, given that a jury has not rendered a verdict at certain point in time, that it will render a verdict in the next short interval of time. The hazard function captures this likelihood of this event as it represents the rate at which a jury may render a verdict, which can of course

be conditioned on a number of covariates.

However prior to implementing the statistical methods, it must be determined whether the dependent variable (λ_i) posses outliers. An objective method via which outlier determination can be made is via that of Hadi (1994), use of this method indicated that time to verdicts larger than 500 minutes could be considered to be outliers; the same was indicated by simply evaluating the histograms of the times to verdicts across juries.

Having eliminated outliers, the next step in modeling λ_i was computation of the Kaplan-Meir hazard functions by the groups identified by the dichotomous dummy variables. These hazard functions are determined non-parametrically in that no underlying distribution for the hazard is specified. This allows the researcher to examine raw properties of the duration data by groups that are of interest (e.g. criminal versus civil trials). Indeed these non-parametrically fitted hazard functions indicated that the dependent variable was best treated as one exhibiting positive duration dependence. That is, the longer the jury deliberated the higher the probability that it would reach a verdict. Given that this assumption was validated across a number of groups the next step was to determine the effect of the covariates on the hazard function. For this purpose, a parametric assumption on the hazard function was made. First, given validation of the positive duration assumption via the Kaplan-Meir hazard functions, the underlying distribution of the times to verdict was assumed to be Weilbull; this distribution assumes positive duration dependence. Second, for the Weibull parametric model, it was assumed that unobserved heterogeneity (or frailty) was distributed as a Gamma distribution. Finally, given that a number of judges presided over the various trials, the estimation procedure was conditioned on clustering by judges.

Given the estimation results, in order to ensure that an appropriate parametric model for

the time to verdicts was assumed, Cox Snell residuals were computed and plotted. Plots close to the 45-degree line are considered to be indicative of good model fit. With this description of the statistical methodology in hand, we now turn to a description of the precise estimation results.

Empirical Results

As a first cut at the data we can simply examine the smoothed Kaplan-Meir hazard estimates for our variables of interest. These graphs depict how likely a jury is to come to a decision over a period of time. The x-axis is always the length of time it took a jury to come to a decision (in minutes). The y-axis is the hazard rate, the likelihood that the jury will reach a decision at that particularly point in time. So the higher the line is on the y-axis the more likely the jury is to come to a conclusion. Thus, when comparing two lines on these graphs the series with the higher value is the one that, on average, ends more quickly.

First we want to investigate whether civil and criminal cases differ significantly in the length of time it takes for a jury to reach a decision. We do not have any theoretical expectations regarding the differences, but since some of our independent variables differ among these two kinds of cases, there are already reasons to model them separately. Looking at Figure 1 it is clear that early on, the first 100 minutes; there is no significant difference between the two types of trials, although civil cases ended slightly less quickly than criminal ones. After 100 minutes the two lines cross and then at around 300 minutes a large gap between the two develops. This indicates that after a jury has deliberated for around 5 hours the conditional probability of a civil trial jury finishing at that point is much greater

than the conditional probability of a criminal trial jury to reach a verdict. Due to these differences and the fact that we do have different variables for criminal and civil trials, we model these two kinds of trials separately.

Next, we take up the issue of jury size and how this impacts deliberation time. We hypothesized that the smaller the jury the more rapidly they would come to a decision. Getting 5 of 6 people to agree on something is, *ceteris paribus*, easier to do than getting 10 of 12 to agree. The data support this hypothesis. The average length of time in a 6 person jury case is only 81.5 minutes (standard error is 4.46), while a 12 person jury takes, on average, just over two hours to reach a conclusion (121.5 minutes, with a standard error of 3.01). A t-test confirms that this difference is statistically significant at all conventional levels. Moreover, looking at Figure 2 it is plain to see that 6 person juries are a) much more likely to end quickly and b) do not even have any observations past 400 minutes of deliberation time.

Next we take up the issue of case complexity. We theorize that as the complexity of a case increases, the jury will tend to take longer to make a decision since there is more to consider in the jury room. For our purposes we measure the complexity of a case in a criminal trial as the number of counts brought against the defendant. For civil trials we use whether or no the jury decided to award damages. Figure 3 demonstrates that indeed when a jury has to consider multiple charges rather than just a single charge the jury tends to take longer to deliberate. The single count juries are far more at risk of ending relative to multiple count juries.

In criminal trials juries that are considering charges having to do with crimes against a person (murder, rape, assault) will end up deliberating longer on average than a jury

considering other, less severe, criminal charges (robbery, fraud, illicit card games, etc.). Figure 4 shows that crimes against persons do result in long jury deliberation time. A comparison of means test confirms this result. The average time for a jury considering more severe charges ins 136.3 minutes (7.7 standard error) and the average length of time for less severe charges is 109.9 minutes (2.74 standard error). This difference is significant at the .001 level.

Next we turn to the issue of unanimous versus non-unanimous jury verdicts. As discussed above, Oregon has a "10 of 12" rule where, with the exception of a capital crime, a defendant may be convicted or exonerated with just 10 of the twelve jurors in agreement. Since there is no reason for juries to achieve unanimity, this ought to result in relatively quick deliberations for unanimous juries and longer one for non-unanimous juries. The logic here is that if there is a vote among the jurors and it is split with less than 10 on one side or the other, the jury will continue to deliberate and, most juries will eventually end up with a decision and with the most likely split being 10-2. Whereas a jury in Oregon that is split 10-2 or 11-1 does not need to continue to work to achieve unanimity. The average unanimous decision takes 90.6 minutes (standard error is 3.6) and the average non-unanimous jury takes 132.5 minutes (standard error is 3.6). The difference between these two means is significant at all levels of significance. Figure 5 shows that there is a more interesting story to tell inasmuch as early on in the deliberative process unanimous juries are more likely to reach a verdict quickly, but just past 200 minutes the two lines cross. So after a jury has been deliberating for some time, the hazard ratio for a jury that is non-unanimous is higher than that for a unanimous one. This difference could be an artifact of the unanimity requirement of capital crimes cases in Oregon. The multivariate models, presented later in the paper will help us

understand this dynamic better. Finally, Figure 6 demonstrates that whether the eventual verdict was guilt or innocence, the hazard dynamics are sufficiently complex that an explicit model will be required, discussed next. Figure 7 indicates that the gender composition of the jury is not significant, and we expect this to be validated in a parametric multivariate model.

Having covered our variables of interest in a bivariate and non-parametric way, we now turn to multivariate models to better understand how each of the variables affects length of jury deliberation while controlling for other important factors. Table 1 presents the results of our parametric hazard models for criminal trials while Figure 8 plots the related Cox Snell residuals. Interpretation of hazard ratios, like those in the table, are straightforward, when a coefficient is less than 1 this factor is correlated with longer deliberations, while coefficients greater than 1 are related to shorter deliberations. The coefficient for jury size (6 versus 12 members) is less than 1, but not different from zero statistically. The next variable indicates that for criminal trials at least unanimous juries come back more quickly than non-unanimous juries. Guilty verdicts take less time than verdicts that declare the defendant not guilty. This is interesting since we expected that given that the burden of proof is on the state, that guilty verdicts would take longer. Cases that involve crimes against persons systematically take longer to reach verdicts on relative to other less severe crimes. As in the graph described earlier, as a jury considers multiple counts against a defendant, the group takes longer to reach a decision. The use of preemptory challenges signals, we theorize, a more contentious trial. So we expect the coefficient to be less than 1 and it is in our model. So as the number of excused jurors increases, so does the length of time the final jury deliberates. The causal mechanism for this relationship is not direct. We believe that

the high number of challenges is merely an indication of a tough and divisive trial ahead, with well prepared attorneys on both sides. These kinds of trials are likely to lead to more time in the jury room.

Next we examine the effect of prior jury service on the ability of a jury to come to a relatively quick conclusion. The hazard ratio for the prior jury service variable is 2.84, indicating that as the number of jurors with prior jury service experience increases, the jury reaches a decision more quickly. The p-value is .089 in a two-tailed test, just outside the bounds of tradition levels of significance. Finally, we test the effects of gender dominance on jury deliberation time. We measured the variable in terms of men and the variable is not significant and the coefficient is just slightly less than 1. We can conclude that gender composition of the jury does not have a significant impact on the length of jury deliberations.

As mentioned above, civil and criminal trials are modeled separately, so now we turn to the inferential model of deliberation time for civil trials in Table 2 with the associated Cox Snell residuals in Figure 9. In this model the hazard rate for the size of the jury is less than 1, but not statistically significant. Unanimous decisions take significantly less time to reach than non-unanimous decisions, as we hypothesized. The previous two results more or less matched the results in the criminal model. The guilty variable however is different in civil trials insofar as the verdict either finds the defendant liable or not liable and a person's freedom is not a stake, but this is more a resolution of a dispute between two parties. The guilty variable hazard was greater than 1 in criminal trials, which was unexpected. In civil trials however, juries that find against the defendant do take longer than those that find for the defendant. Prior jury service had the effect of speeding up deliberation for criminal trials, but that is not the case in civil trials. There is no discernible difference in time to a decision

with experienced jurors on the panel. Juries with more male jurors are indistinguishable from juries with fewer male jurors. Finally, the case complexity variable, damages award for civil trials, works as expected. The higher the damages awarded, the longer the jury took, on average to come to a conclusion. In terms of model fit for both models, we note the following. First our assumption of the underlying Weibull distribution describing the duration data is appropriate given that for both models the estimated measure of curvature of the distribution (p) is positive and significant. Second, for both models, the estimate of θ is significant and different from zero indicating the presence of unobserved heterogeneity.[2] Finally, the chi-squared statistics for both models indicate that the variables included are jointly significant at 5%.

5 Conclusion

After being presented with the evidence in court, the jury retirees to the jury room to begin deliberations. What happens inside this room is both important and interesting, not only to the participants, but to many scholars as well. What factors affect how a jury goes about its business? Does the size of a jury matter? How about the composition? In this paper, we have taken a first look at one aspect of this collective decision making process – the factors that affect the length of time a jury takes to come to a decision. While there appears to be a big difference in time between 6 and 12 person juries when simply comparing how long it takes each to come to a verdict, in the multivariate models the difference between the two was not significant. This might be because none of the 6 person juries deliberated longer

[2] This parameter characterizes unobserved heterogeneity in the parametric forms of the hazard functions.

than 379 minutes, while 12 member juries maxed out in our dataset at nearly 500 minutes. So after controlling for the other factors, e.g. severity of the crime or case complexity, these differences more or less disappear. Unanimous decisions are much quicker than non-unanimous decisions. This is due to the structural rules that govern jury decision-making in Oregon. Since Oregon allows less than unanimous decisions (10-2 and 11-1 are both acceptable for any case except capital murder) this means that unanimous juries are almost certainly panels that start out as unanimous from the beginning. A strong indication that a jury may take longer than average is the number of potential jurors who are excused during the jury selection process. The one stark difference between criminal and civil juries is that when a jury comes back with a conviction in a criminal trial, it is typically much quicker than for juries that acquit. On the civil side, finding the defendant liable takes longer than exonerating him or her.

One of the biggest obstacles facing jury research is the availability of data. For this project we are fortunate in that the Multnomah County Jury Project (Grofman 1979) is a rich data set that allows us to use both aggregate indicators as well as some aggregated individual level indicators to better understand why some juries deliberate longer than others.

Appendices

A Tables

Table 1. Factors Affecting Jury Deliberation Time in Criminal Trials

Variable	Hazard Ratio	$\lvert p\rvert$-value
Size of Jury	0.9438	0.691
(0 = 6, 1 = 12)		
Unanimous Decision	2.2590	0.000
(0 = No, 1 = Yes)		
Guilty Verdict	1.2240	0.025
(0 = Innocent, 1 = Guilty)		
Crime Against Person	0.6648	0.046
(0 = No, 1 = Yes)		
Number of Counts	0.6445	0.000
(Number of counts considered by jury)		
Prior Jury Service	2.8440	0.089
(Proportion of jurors with jury experience)		
Number Excused	0.9050	0.000
(Number of jurors dismissed during *voir dire*)		
Proportion Male	0.95790	0.750
(Proportion of male jurors)		
p	1.65	0.199
θ	0.2958	0.182
Obs.	473	
Clusters (Judges)	19	
$\log L$	567.45	

Table 2. Factors Affecting Jury Deliberation Time in Civil Trials

Variable	Hazard Ratio	$\lvert p \rvert$-value
Size of Jury	0.7222	0.117
(0 = 6, 1 = 12)		
Unanimous Decision	1.6760	0.001
(0 = No, 1 = Yes)		
Guilty Verdict	0.5667	0.000
(0 = Not liable, 1 = Liable)		
Damages	0.9957	0.000
(Continuous variable in thousands of dollars)		
Prior Jury Service	0.6340	0.358
(Proportion of jurors with jury experience)		
Number Excused	0.9178	0.002
(Number of jurors dismissed during *voir dire*)		
Proportion Male	0.9382	0.596
(Proportion of male jurors)		
p	1.93	0.107
θ	0.3657	0.077
Obs.	657	
Clusters (Judges)	22	
$\log L$	706.88	

B Figures

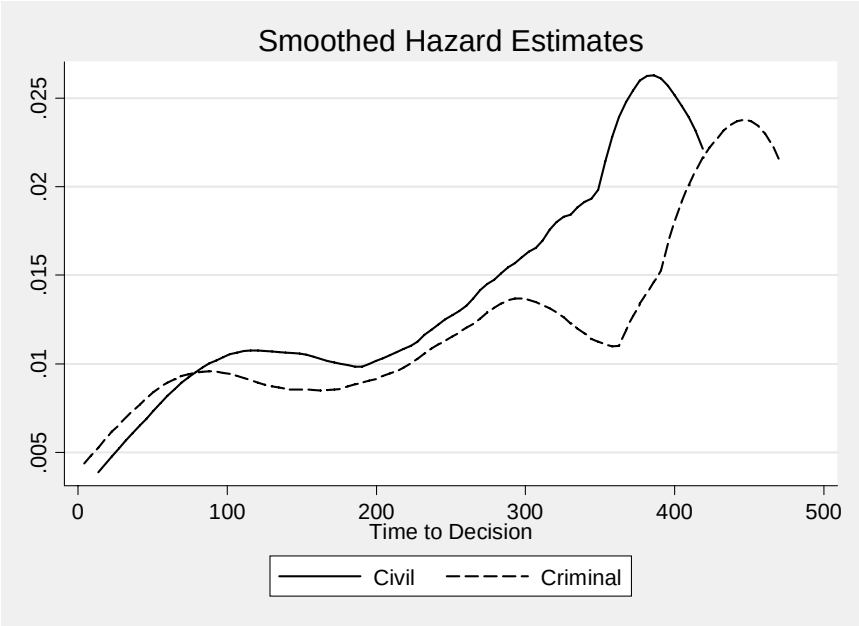

Figure 1: Hazard Rates for the Length of Jury Deliberation in Criminal and Civil Trials

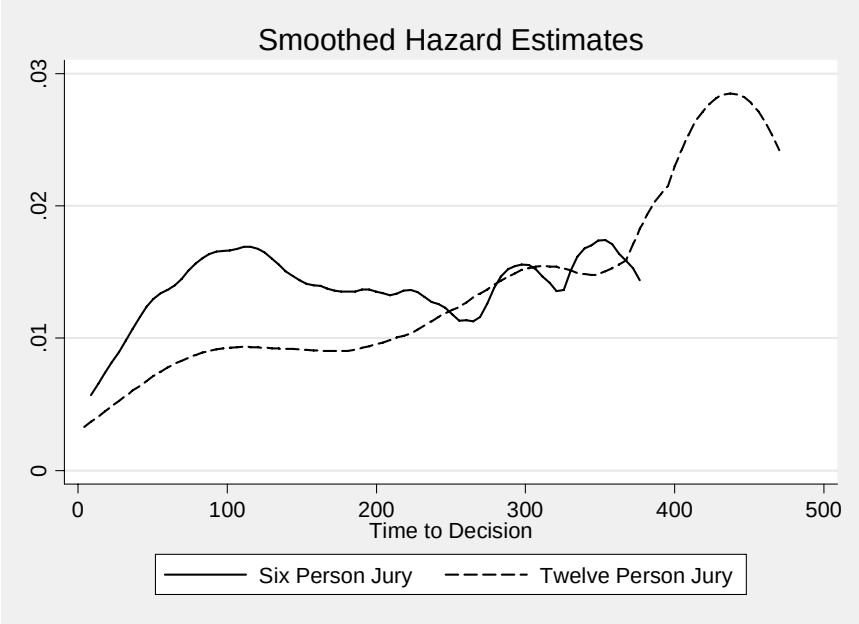

Figure 2: Hazard Rates for the Length of Jury Deliberation for 6 and 12 Person Juries

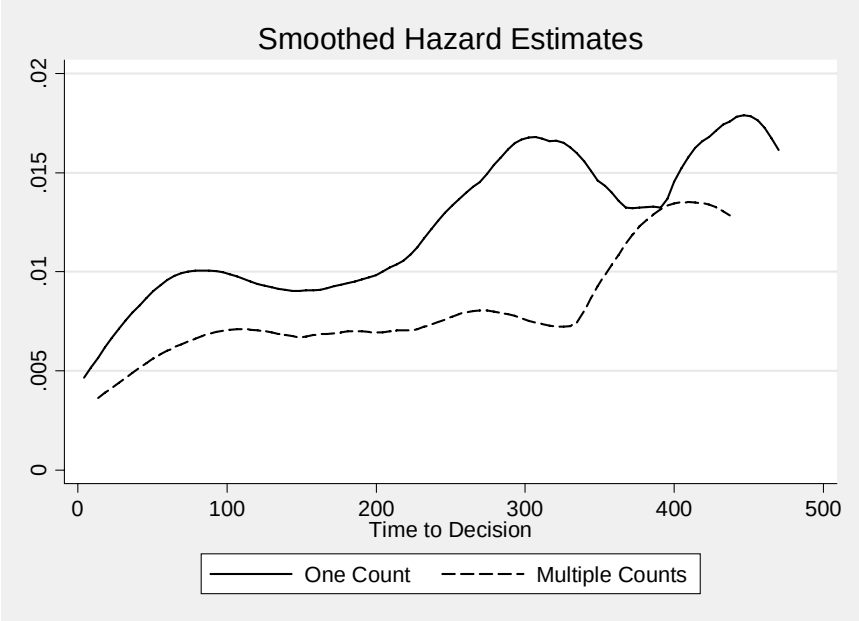

Figure 3: Hazard Rates for the Length of Jury Deliberation by Counts

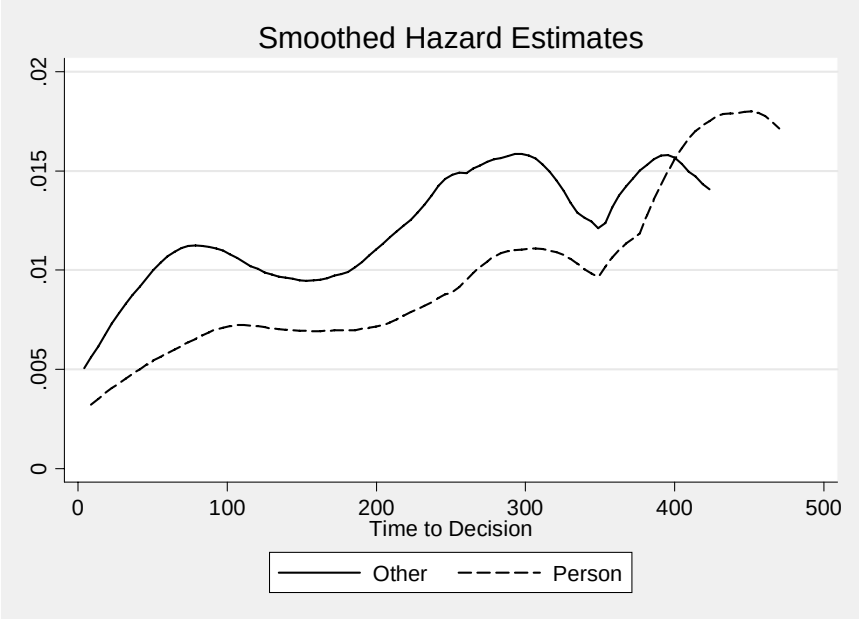

Figure 4: Hazard Rates for the Length of Jury Deliberation in Crimes against Persons and Property

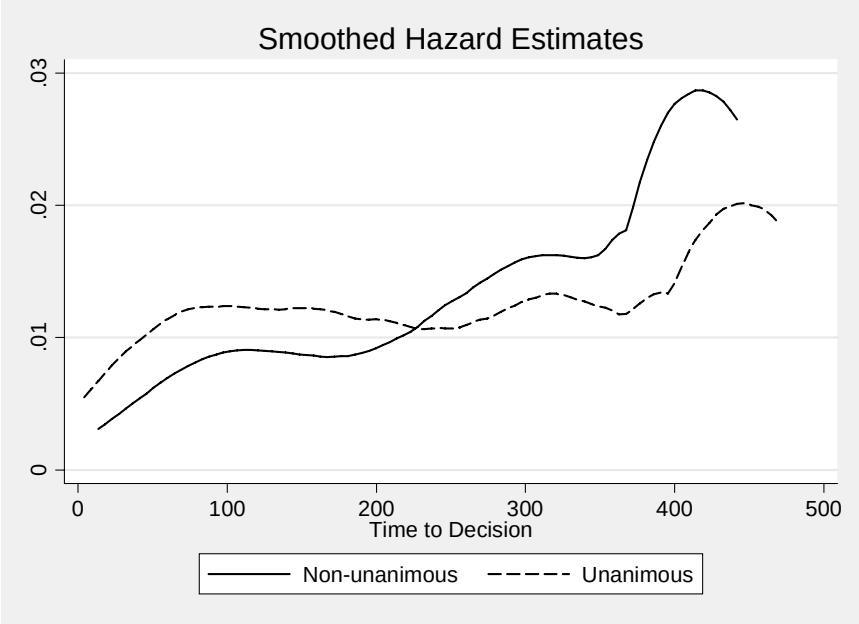

Figure 5: Hazard Rates for the Length of Jury Deliberation for Unanimous and Non-Unanimous Decisions

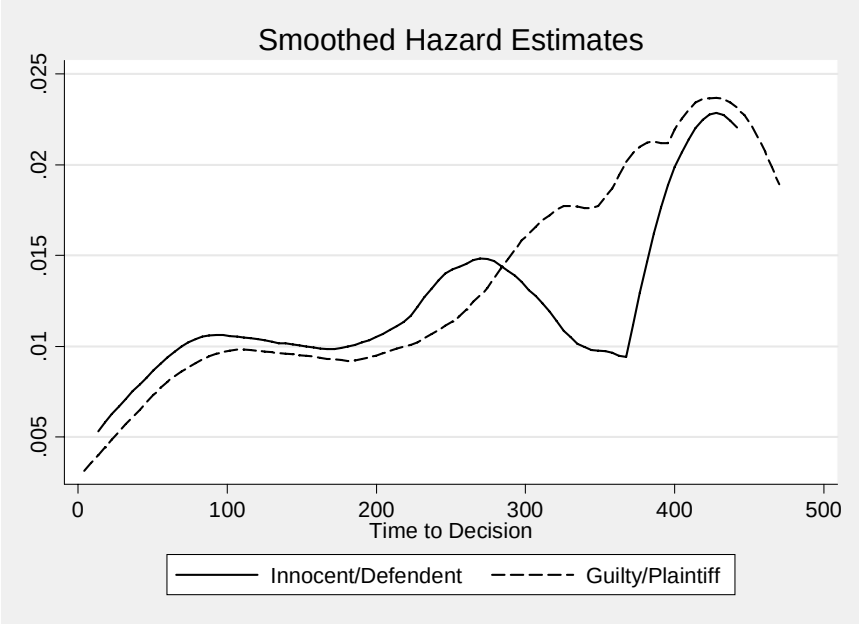

Figure 6: Hazard Rates for the Length of Jury Deliberation by Verdict

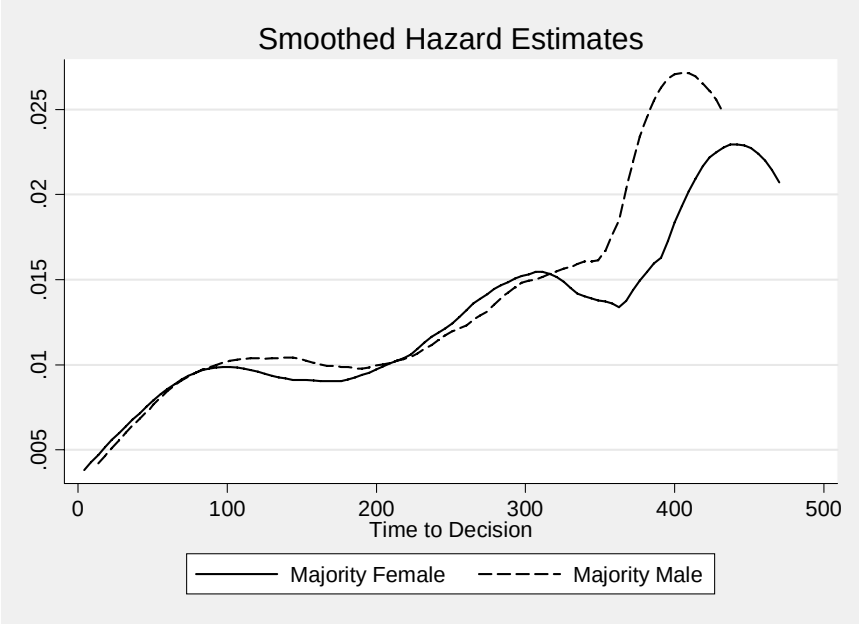

Figure 7: Hazard Rates for the Length of Jury Deliberation by Gender Composition

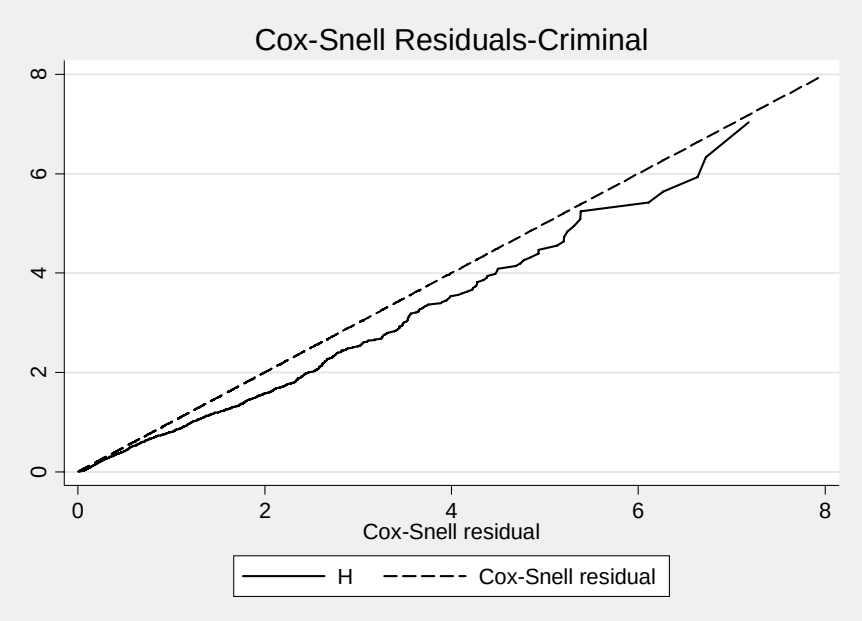

Figure 8: Residuals and Model Fit I

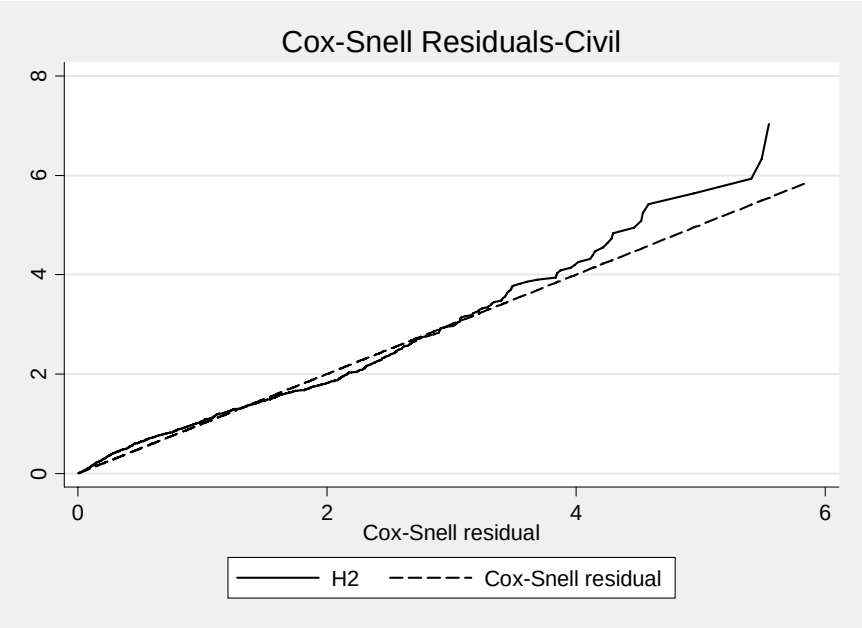

Figure 9: Residuals and Model Fit II

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