# QUANTIFYING THE EFFECTS OF JURY INNOVATIONS ON JUROR RESPONSE RATES IN YOLO COUNTY, CALIFORNIA

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QUANTIFYING THE EFFECTS OF JURY INNOVATIONS ON JUROR RESPONSE RATES IN YOLO COUNTY, CALIFORNIA

A Thesis

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Abstract

of

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Trial by jury is an integral part of our criminal justice system and one that is well respected by citizens. However, in some parts of the nation less than half of the people summoned to jury duty respond to the summons. In response to this problem, the Judicial Council of California created a Blue Ribbon Commission tasked with creating recommendations for jury system improvements.

Since the Blue Ribbon Commissions final report in 1996 and the creation of a Task Force on Jury System Improvements, several jury innovations have been implemented throughout California. While many of these innovations have been qualitatively analyzed, there has been little to no effort to perform a quantitative analysis to determine whether any of these innovations have had an effect on juror response rates.

This study used an OLS regression model to quantify the effects of jury innovations on juror response rates in Yolo County using 110 observations between October of 2001 and November of 2010. Several innovations had statistically significant effects on the juror response rates, including the use of plain English jury instructions for both civil and criminal jury trials, the use of a standardized jury summons form, allowing juror note taking, allowing jurors to ask questions at trial, giving jury instructions prior to trial,

changing the method of jury payment, changes to the juror orientation, changes to the way jurors were managed, and playing a pre-recorded greeting from the presiding judge to prospective jurors. Some of the innovations, specifically the plain English instructions for civil jury trials, modifications to the management of jurors, and the pre-recorded introduction by the presiding judge appear to have a inverse relation to juror response rates.

Given the limited number of data points as well as the limited geographic scope of the study, these results should be interpreted cautiously. However, this study is a proof of concept in that the effectiveness of jury innovations can be analyzed in a quantitative manner; a similar study with a wider scope and larger dataset, could yield more conclusive results.

_____, Committee Chair
William Leach Ph.D.

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Date

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# Chapter 1

## THE STATE OF JURY DUTY

In 1995, the Judicial Council of California created a Blue Ribbon Commission on Jury System Improvements (BRC). The BRC was to evaluate how the court system handles juries and give recommendations on how to address the problems they find (BRC 1996). At the time, the Judicial Council was grappling with the issue of juror yield and its effect on the criminal justice system as a whole (BRC 1996). The juror yield is the number of citizens that received a summons who appear at the court ready for jury duty. The Blue Ribbon Commission made its final report in 1996. In 1998, the Task Force on Jury System Improvements (TFJSI) was created to implement the recommendations from the BRC and in 2004 they published a final report on the implemented recommendations (TFJSI 2004). While there have been many reports on the state of jury innovations, there has been little work done on quantifying the effects of those innovations.

The purpose of this project, "Quantifying the Effects of Jury Innovations on Juror Response Rates," is to determine what effects, if any, recent jury innovations have had on the juror response rate in Yolo County. Before getting into the details of the regression analysis, it is important to first explain why exactly jury duty is important as well as why there has been such an effort to improve juror response rates.

### The Importance of Jury Duty

Jury duty is one of the more important civic duties a citizen in America can do. In a trial, twelve members of a community are randomly called to sit in judgment. Without

those citizens answering their jury summons, the state would be unable to meet the burden of due process and the entire justice system would be unable to function. Trial by jury is one of the few instances where the government requires the consent and the participation of citizens to accomplish its duty. The other time a person is asked to directly influence government is during an election.

When a person votes, they are given a bit of time off to head to the polling place and cast their ballot. For most people, voting is an activity that is not expected to take up much of the day and could even be done by absentee ballot in some places so the voter does not have to stand in line to vote. Jury duty on the other hand is at least an all day affair that could go on for weeks or even months and lacks an ability to simply mail it in at your convenience. Once a person has served on a jury and experienced the level of interaction with the government that relatively few get to experience, there is an apparent increase in civic involvement (Gastil et all 2010). Citizens who have gone through jury duty show an increase in frequency of voting as well as being more active within their community compared to their level of involvement prior to jury duty (Gastil et al 2010).

As important as jury duty is, to our system of justice as well as to the community at large, getting enough prospective jurors for trials can become difficult. Just about every court has a few stories of either cases being dismissed because they were simply unable to get enough people to seat a jury, or judges having to send out their bailiffs to get enough people to empanel a jury (Moss 1988). The actual estimates for juror response rates vary greatly.

According to the 1998 NCSC report, courts that summoned jurors directly to the court (One-Step summons) had an average juror yield of 45.8% (Mize 2007). The same study found, on average, urban courts had a lower juror yield than smaller suburban or rural courts (Mize 2007). Some estimates have juror response rates for urban courts at less than 10% (Schwartz 2003). In California as a whole, one estimate places the failure to appear rate at over 40% (Behrens et al. 2003)Despite overwhelming public support for the jury system, failure to appear for jury duty is a national trend (Behrens et. al 2003).

Those who have not served on a jury before generally have negative feelings about jury duty. According to a report on the state of jury improvement efforts by the National Center for State Courts (NCSC 1998), only 36% of respondents indicated that they would like to serve on a jury. It doesn't take much effort to understand why most people prefer to ignore jury summons, perceiving it as a day spent sitting in a stuffy room, waiting for a chance to be called to sit on a jury panel, for who knows how long, missing out on at least a day's pay, for little more than a "Thanks," all while being paid just enough for the gas it took to get there with perhaps enough for a cup of coffee to drink the drive home. In contrast with the initial, negative feelings, once placed on a jury, respondents generally felt overwhelmingly positive about serving as a juror and the vast majority would be happy to do so again (NCSC 1998). Once experienced, it is difficult to dismiss the importance of serving as a juror. Given the level of theoretical support for the jury system in contrast with the reality that many prospective jurors fail to appear, the question is then how have courts reacted?

## What is Being Done and is it Working?

Courts across the United States have developed innovations in jury management to address the problem of low juror response rates. In general, the innovations try to address the problem in one of two ways, either by diminishing the barriers to jury service or by imposing penalties for failing to appear. The move towards reforming jury service has given rise to many suggestions given by state panels, such as California's Blue Ribbon Commission, and private groups, such as the American Legislative Exchange Council (ALEC) and their model Jury Patriotism Act. While nation-wide the suggestions for reform are numerous, the focus of this literature review is on the major innovations implemented in California.

### One-day/One-trial

The concept of "one-day/one-trial" is fairly simple; when a person is summoned they will be needed for either one day or one trial. One-day/one-trial began in 1972 in Houston, Texas and was mandated in California by 2000 (Munsterman et al 2006). One-day/One-trial benefits the court and the jurors in multiple ways. Limiting the length of service to a more determinate amount of time allows jurors to take less time-off from work and reduces the uncertainty typically attached to jury service. In general, the One-Day/One-Trial system is highly favored by jurors, often leaving them with a more favorable opinion of the system (Schwartz et al 2003).

## Juror Note Taking

The issue of juror comprehension is one that will be critical in the coming years because even as the average number of jury trials has decreased the complexity of those trials has increased (Hans 2006). The proposal to allow jurors to take notes is generally aimed at improving the overall quality of jury service by giving jurors the tools to better understand the proceedings. Research suggests that, overall, juror note taking does not produce any undue prejudice toward either party and jurors who took notes demonstrated a better understanding of the proceedings (Hannaford et al 1997). In general, this innovation has been widely approved of by judges and lawyers due to its lack of drawbacks. (Dann et al 2004).

## Allowing Jurors to Ask Questions

Allowing jurors to ask questions of witnesses during trial is a controversial innovation that has been implemented in California. When adopted as CRC 2.1033 in 2007, jurors were allowed to submit questions to the court to be asked of a witness; the attorneys for either the defense or the prosecution could object to the question being asked; the question, if approved, would then be asked of the witness by the judge. Overall, jurors have expressed a very positive reaction to being allowed to ask questions as it made them feel more involved in the process as well as improved their ability to understand the evidence better (Dann et al. 2004).

## Jury Pre-Instructions

Typically, jury instructions were given at the end of the trial just prior to deliberation. The instructions to the jury define the nature of the decision that the jurors must make as well as define what "reasonable doubt" means, and give a definition of the alleged violation. The idea to instruct the jurors before the trial begins was designed to help the jurors understand their roles and understand what the law states about the crime. Research seems to indicate that comprehensive pre-instruction leads to a better understanding of complex trial issues (Forsterlee et al 1993). In addition to aiding in juror comprehension of the issues involved, the innovation has been well received by judges, attorneys, and jurors who all feel that the pre-instructions aided in being able to understand the complexities of the case (Dann et al. 2004).

## Plain English Jury Instructions

Jury instructions were designed to reflect the law and as such were fairly complex and difficult to understand as they were all written in dense legal jargon. The move to create jury instructions in "plain English" is designed to ultimately help the juror better understand what is required of them. The "traditional" jury instructions were in fact a source of confusion and frustration for jurors (Turgeon et al 2009). In order to deal with this impenetrable language, the California Judicial Council labored for many years before finally adopting plain English instructions in 2003 for civil jury matters and in 2005 for criminal matters (Judicial Council 2005). While it is not difficult to see the benefit of easier to understand jury instructions, there has not been any quantitative or qualitative research done on their impact on jurors or even if there is an impact on response rates.

## Interactive Voice Recording

Interactive Voice Recording (IVR) is a technology that allows a juror to call in to confirm their court date or even reschedule it. While this innovation is widely suggested as a way to improve the ability for jurors to deal with their service, there is no substantive research on if it is an effective measure to improve juror response rates.

## National Change of Address Database

It has been proposed courts use the National Change of Address database (NCOA) to ensure juror contact information is as up-to-date as possible. Undeliverable jury summons are a significant factor in why jurors may fail to appear; in some urban areas the rate of undeliverable summons reaches 50% (Munsterman et al. 2006). Use of the United States Postal Service's NCOA database can be used to reduce the undeliverable rate of jury summons in a fairly cost effective manner (Munsterman et al 2006). How effective this program has been remains to be seen as there has not been a significant study on its impacts on juror response rates.

## Increase in Juror Pay

One of the more popular suggestions regarding jury reform is to increase the compensation given to jurors for serving. In 2000, California raised the compensation to $15 a day after the first day. Typical recommended compensation for a day of jury service was around $50 per day of service (BRC 1996). In Washington State, the Washington State Center for Court Research (WSCCR) published a study on the increase in juror pay in Washington. The WSCCR concluded that there was not a conclusive link

to be found between increasing juror compensation and an increase in juror response rate. However the WSCCR did find that increased juror compensation was noticed and appreciated (WSCCR 2008).

### Update Jury Facilities

Modernizing jury facilities is one suggestion that is difficult to quantify. The desired effect is to make juror assembly rooms more comfortable to the jurors, by allowing WI-FI access, providing more comfortable chairs, magazines, free coffee, etc. While this suggestion comes up often, there is little research to be found which details the effects that modifying jury assembly rooms has had on jurors.

### Failure to Appear Procedure

The purpose of a failure to appear procedure is to increase the cost of failing to appear usually through imposing a penalty of some kind, either financial or by a hold placed on a person's license until they do appear. A failure to appear procedure can take many forms but are all aimed at alerting a juror who failed to appear to the consequences of failing to appear. Ordinarily this is accomplished through mailed warnings and ultimately being summoned in front of a judge to explain why they failed to appear. This proposal is a tricky one in that support from other jurors for this kind of proposal drops off swiftly the more severe the proposed punishment (Boatright 1998). Giving jurors warnings before proceeding with hearings to levy fines though has shown to be effective in some counties. Tulare County showed an immediate 10% increase in appearance from implementing their failure to appear program (Parker 2006). Los Angeles County

implemented a failure to appear program that saw a 9% increase in response rate and collected over $500,000 in sanctions in a five-year period from 2004 through 2008 (Judicial Council 2009). In Jackson County, Missouri, a second notice for jury duty caused 33% of those that failed to appear to respond and schedule a date to serve (Steelman 2001).

# Chapter 2

# WHAT IS KNOWN ABOUT JUROR RESPONSE RATES

Because of the severity of the problem that courts are facing, several significant studies have explored the question of why jurors fail to appear. However, very few have included a quantitative analysis of juror response rates. In this chapter I will explore what the literature suggests are the reasons why jurors fail to appear and the limits of the research that has been conducted on the issue of juror response rates.

## Why Don't People Show up?

In 1998, Robert Boatright published a study in which he outlines the main reasons why jurors fail to appear. In general, Boatright found people typically did not fail to appear because of a lack of appreciation for the importance of jury service, but rather because they could not afford to take the time off, they did not feel that they would be selected to serve because of their experience or education, they were generally unaware of the process to contact the court to get a new summons date, or simply because a summons was not received (Boatright 1998). It is one thing to not show up for jury duty because the summons was never received; it is another to decide not to show up because the costs of doing so would be too high. These various costs associated with jury service function as barriers that prevent people from answering a jury summons.

One of the major barriers that may prevent people from responding to a summons is the need to take time off of work in order to appear (Boatright 1998). While it is hard to determine which barrier is the primary one, it is understandably why taking time off of

work would be an issue. According to Boatright's report, 75% of large corporations compensated employees for time-off for jury duty, and six states required employees to be paid for time-off to serve on a jury (Boatright 1998). In a more recent study, focused on California, regarding employee compensation, around 75% of non-profit and large private corporations compensated employees for jury service, 90% of public employees, 34% of small private company employees, and 7% of self-employed employees were compensated for jury duty (Hannaford-Agor 2004). The number of businesses compensating their employees can become a significant factor in a community. In more urban settings it is possible that most people may be working for a company that compensates for jury duty, where in a rural county, a majority of workers may not be compensated for jury duty and a day without pay may be too much to ask for. Compensation, though, is only one of the barriers to serving on a jury.

Juror stress also has been identified as an issue that may reduce juror yield (NCSC 1998). In 1998, the NCSC published a manual on some of the potential causes of juror stress. While the causes of stress could be greatly varied, there were some common stresses identified: lack of control over the situation, the process was too slow, the staff was discourteous or unhelpful, and the facilities themselves were uncomfortable (NCSC 1998). Another source of stress is lack of compensation, which correlates with the barrier of missing work; those that don't receive compensation from their employer are put under pressure as juror pay rarely matches to the pay that they would have made working (NCSC 1998). Even jurors who are compensated by their employer garner additional expenses such as parking, child care, meals, etc. due to jury duty and these additional

expenses are often viewed as additional sources of stress (NCSC 1998). It is fairly easy to understand why these sources of stress may be enough on their own to dissuade a person from answering their summons. When a person receives the jury summons, there is no information available regarding what type of case they may have to hear, how comfortable the situation may be, and ultimately how long will they be required to serve if they get placed on a jury. All of these inconveniences get stacked against a person's inherent sense of civic duty and their fear of punishment from the court for failing to appear.

One survey shows that summoned jurors who did not appear typically believed there to be either no penalty for failing to appear, or a mild penalty, while those that did respond to jury summons believed there to be a punishment for failing to appear (Boatright 1998). This gives some foundation to why second notices appear to be an effective tool as they demonstrate that there may indeed be some penalties involved with failing to appear.

## Problems With Current Research

Much of the research on jury innovations have been understandably concerned with the qualitative impacts such innovations may have on the quality of justice. These studies focus typically on surveys given to actual jurors or jurors on a mock trial which are narrowly focused on how some innovations were perceived. While qualitative research can be fairly easy to accomplish in this arena, quantitative research is significantly more difficult. Variance in programs and lack of baseline data make parsing

out the effects of individual programs difficult (Judicial Council 2009). Another factor affecting research is also the fact that courts sometimes lump innovations together, having several programs start at the same time rather than be spread out (WSCCR 2008). Further complicating research on jury response rates is that courts do not have a uniform method for tracking juror response rates, due in part to the fact that there are multiple kinds of programs to manage juries, and they all do it in different ways (Klerman 2002).

# Chapter 3

## CREATING A MODEL FOR ANALYSIS

To analyze how jury innovations have affected juror response rates in Yolo County, it will be necessary to first explore both the juror summoning process in the Yolo County Superior Court (YCSC), as well as the demographics of Yolo County. Once the process of jury summoning is described I will define the innovations that Yolo County Superior Court has implemented as well as describe the effects I believe they will have on juror response rates. In the last part of this section I will describe the methods I used to analyze the data and finalize the model for analysis.

### Yolo County Superior Court Jury Summons Process

Source: Yolo County Superior Court (2010)

In the last week of December, records from the Department of Motor Vehicles (DMV) are combined with voter registration records to create a master jury list for the next year. The list is then checked for duplicate entries and any that are found are purged from the record, then the list is compared to the National Change of Address database (NCOA) and addresses are updated. Once the master jury list is completed, it will be uploaded into the jury management system at the beginning of the year.

Thirty days before the trial date, a jury panel is created and the list of prospective jurors is sent to a third party vendor to mail out notices. The vendor runs the addresses through NCOA and if a person's address has changed within the county, the summons is sent to the new address. If a person has moved out of the county however, the summons

will not be generated and the name will be flagged for removal. Once the summons are generated and mailed, a report is emailed to the court; the report contains information on how many summons were sent as well as a file which updates the master jury list by removing the names of those who have moved out of the county.

The summons is based on the model summons created by the Task Force on Jury System Improvements that was designed to provide clear and easy to understand instructions for the potential juror. The Jury summons is a two sided document, one side giving the time and date that the person is supposed to appear as well as parking information, the other side of the document is a form that can be mailed to the court requesting an excusal or notifying the court of their ineligibility to serve as a juror. The summons also details that a person is expected to serve for jury either for one day, or for one trial, meaning that they will not be held longer than a day unless they are placed on a jury. An additional flyer is included with the summons created by the Administrative Office of the Courts that provides information on what to expect during jury duty, and where to get additional information. Potential jurors are directed to either call the phone number or visit the web address listed on the summons notice the day prior to their service date to know for sure if they are required to appear or not. Should a person fall ill or be unavailable for jury duty on the day that they are summoned, they may call the jury services number in order to reschedule their appearance date. In the rare instance where a person has a medical condition that will forever prohibit them from ever serving on a jury they can get a medical exemption and their name is then pulled from the master jury list, and flagged for future exemption. A prospective juror may also call in for a one time, no-

questions-asked extension of their service date for up to 6 months, scheduled at their convenience. Prospective jurors are directed to call a special number the day before their summons where they are informed by a recorded message whether or not they are still required to come to the court. In the instances where jurors are released prior to the date of their service, they are put back into the master jury pool having not completed their service and may be summoned again at any time.

The Yolo County Superior Court is located near downtown Woodland, Ca. There are places to find free all day parking within a couple of blocks from the court. The court is also within two blocks of the downtown area which has several places to eat. Buses also stop in front of the court house every hour. Once potential jurors arrive at the court, they have to go up a flight of stairs to get to the main entrance which is on the second floor of the building. There they pass through a security screening area and are then directed to go to the third floor jury assembly room. Potential jurors who are unable to navigate the main steps enter on the first floor, through an entrance under the outside steps leading to the main entrance. There they go through an identical security screening and are directed to the same jury assembly room; there is an elevator to the third floor.

Jurors arrive in the morning. The jury assembly room was recently renovated. There is complementary coffee available for the jurors as well as two vending machines, one with soda, the other, with various snacks. There are some magazines available for people to read while they wait. At the front of the room is a large plasma television which is typically shows close captioned news broadcasts with the sound off. Throughout the

courthouse, the public can access the Wi-Fi network without a password. On the walls of the jury assembly room there are maps of the downtown area, as well as bins with menus of the local restaurants and flyers for local businesses, and court information pamphlets.

By the door is a sign-in sheet where a potential juror is to sign their name by their panel number that they were given on their summons. Once signed-in there are seats available for people to sit in, however there are not nearly enough seats for all of the potential jurors and some jurors are left standing.

Once all of the potential jurors are signed in, a court employee from jury services plays a video message from the presiding judge who explains the importance of jury duty. Once the video has completed, a member of the jury services department gives an orientation about what to expect if a person's panel is called, the general amenities of the court, the parking situation, and areas downtown to get food.

Judges and staff are updated by the jury supervisor as to when the jurors arrive and how many are available. The judges and staff then contact the jury services department when jurors are needed or if the trial gets vacated. If a trial is vacated on the date of the trial, the panel is not released immediately, but is held until all trials have either been vacated or have a jury selected. Jurors not selected for a trial are directed to go back to jury services where they will go back into the day's jury pool in case they are needed to be placed on a different jury panel for another trial. If all trials are vacated, the panels that have appeared are considered to have completed their jury service and will not be called again for at least one year.

If placed on a jury, the court reads from a selected set of instructions that have been approved by the California Judicial Council before the trial begins. These instructions are in “plain English”, meaning that they are written to be clear and easy to understand and not in “legalese”. Specific instructions were selected before the jury was impaneled, by the attorneys present for the case. The jury instructions help inform the jury as to what is to be expected of them and the burden of proof for the case as well as the definition of the charges that the defendant faces. Once trial begins, jurors are able to take notes on a legal pad provided to them by the court. Should a juror have a question regarding testimony or evidence during the trial, the juror may write it down and once testimony has concluded for a witness the jurors are asked if there are any questions. When jurors submit a question, that question is reviewed by the judge and the attorneys and if it is approved, the question is asked of the witness by the judge.

At the conclusion of the case, jurors are given the jury instructions once again and are given a printed copy of the instructions. If there are problems reaching a unanimous decision, jurors are brought before the judge where they are given clarification on the jury instructions and are advised to deliberate once again to come to a decision. If a jury declares that they are unable to come to a unanimous decision on a charge even after clarification from the judge, a mistrial can be declared as to that charge.

After deliberations and the trial ends, jurors are sent home. If the juror has been involved with the jury process for more than one day, they are entitled to a payment of $15 per day starting on the second day of their service. The jury services department processes payments due to the jurors a week after their service had been concluded,

unless they waived their juror pay, or were ineligible to receive payment for jury service. Once their jury service has been complete, a person cannot be called for jury service for one year.

The only deviation from this process is during Jury Appreciation Week, which takes place the second week in May. During this week the court advertises jury service on buses and in the local papers. The jury assembly room is decorated with a banner thanking jurors for their service during juror appreciation week. Jurors who serve during this week are treated to fresh fruits and bagels as well as given a complimentary Yolo County Superior Court jury appreciation travel mug.

## Jury Innovations in Yolo County Superior Court

In order to better understand the effects of the innovations that have taken place in Yolo County, I will define the innovations as either being direct or indirect. A direct innovation has an immediate effect on a juror that may influence their choice on whether or not to appear for jury duty. An indirect effect will be defined as an innovation that will have an effect on a potential juror as some point of time after it has been instituted. Some of these innovations were adopted by Yolo County Superior Court on their own initiative, while others were either mandated by legislative action or by the California Judicial Council adopting changes to the California Rules of Court (CRC).

### Direct Effects

Between October of 2001 and November of 2011 Yolo County Superior Court instituted several innovations that had a direct impact on juror response rates. These

innovations were, a change in how hardship requests were handled, the ongoing jury appreciation week in May, the use of the national change of address database, and a change in the type of jury summons sent to prospective jurors. I expect that each of these innovations will serve to increase the juror response rate.

## Deferrals

Prospective jurors are allowed to reschedule their service date at their convenience for up to six months if they contact the court up to the date of their summons, no questions asked (YCSC 2010). Prior to January 2009, prospective jurors requesting a deferral would either be dropped from their panel, but immediately placed back into the jury pool which made it possible for them to be summoned again immediately, or allowed a short deferral of a couple of weeks. These changes in policy may have an immediate effect as it allows people with hardships to have a definite delay in service where before it was uncertain. As such the prospective juror may feel more obligated to appear when it is their time to be summoned. This practice may also discourage failing to appear as there is now a benefit to calling in to reschedule as opposed to having the same effect as it they had just not showed up at all.

## Juror Appreciation

In 1998 the California Legislature passed a bill that made the second week of May juror appreciation week. This is marked by advertisements and giving small gifts to jurors. I anticipate this to have a positive and immediate effect on jurors for the whole month of May as advertisements are taken out weeks in advance and may have a mild

lingering effect, reminding people to appear for jury duty even if they are not appearing during the official juror appreciation week.

Use of NCOA

The court uses the National Change of Address in two ways. Yolo County Superior Court uses a third party vendor to issue summons. Prior to March 2009, a jury panel list would be sent to the vendor and the vendor was responsible for printing and mailing the summons. In March of 2009 the court modified the contract to pay an extra fee in order to run the jury panel summons list through the NCOA database before the summons are printed and mailed. Any summons going to an invalid address was not sent, nor were summons sent to people who moved out of the county. Addresses were updated so that if someone had moved within the county, the summons would go to their new address. Invalid addresses or addresses belonging to those no longer residing in the county were removed automatically from the master jury list so that they would not accidently be summoned again.

The second use of the NCOA took place in January of 2010 when the Yolo County Superior Court ran its entire master jury list through the NCOA. Running the NCOA when the master jury list is being constructed also means that there will be fewer duplicate entries for people and a much more accurate master list. This however would be the only time the entire list is run through NCOA. As such I anticipate that this particular use of NCOA will have a strong initial effect in January 2010, however drop off in February as more and more people move and addresses will be kept up to date more by the weekly NCOA updates. I believe that both uses of NCOA will have an immediate and

positive effect on the appearance rate of jurors as both methods will have a strong effect on the accuracy of the summons sent.

## Change of Jury Summons

In January of 2008, the format of the jury summons was changed to match that of the recommended Judicial Council model jury summons. The goal was to have a summons that was easier to understand and that may improve response rates immediately.

Table 1

Direct Effects on Juror Response Rates

| NAME | DATE | ORIGIN | SOURCE |
|---|---|---|---|
| Deferral Policy Changed | January 2009 | Yolo County | YCSC 2010 |
| Jury Appreciation | 1998 | Legislation | Assem. Conc. Res. 118, res. ch. 47 |
| NCOA Weekly | March 2009 | Yolo County | YCSC 2010 |
| NCOA in January | January 2010 | Yolo County | YCSC 2010 |
| Change of Jury Summons | January 2008 | Yolo County | YCSC 2010 |

## Indirect Effects

The majority of indirect-effect innovations follow a similar theme; to enhance the experience of the juror so that jury service becomes a more positive experience that they would be willing to engage in again. The effects may also be felt indirectly through word of mouth in that as more people experience them, more people will relay that information to others who are summoned to serve. During the time period of this study Yolo County implemented several innovations with an indirect effect such as; plain English jury instructions, allowing jurors to take notes during trial, allowing jurors to ask questions

during a trial, giving jurors instructions before trial, remodeling the jury assembly room, modifying the jury payment policy, changing jury management, playing a recorded greeting from the presiding judge, and giving a more in depth jury orientation. I expect that each of these innovations will have a positive effect on jury appearance rates over time.

### Plain English Instructions

Plain English instructions have two different effectiveness dates. In 2003, the Judicial Council of California adopted plain English jury instructions for civil jury trials. In August of 2005 the Judicial Council approved plain English jury instructions for criminal jury trials (CRC 2.1050). The plain English instructions differ from the traditional jury instructions in that they were modified to avoid complex and confusing legal terms.

### Note Taking

In January of 2007 courts were mandated to allow jurors to take notes during trial in order to help in their ability to recollect information during trial. The court is to provide note paper and pencils or pens to facilitate this (CRC 2.1031). Prior to this, jurors were not allowed to take notes during a jury trial and had to rely primarily on their memory of testimony during deliberations.

### Jurors Allowed to ask Questions

As of January 2007, jurors in California are allowed to ask questions of witnesses during trial (CRC 2.1033). The questions are written down on paper and submitted to the court. The attorneys and the judge can then decide to allow or not allow the question.

Prior to this change, jurors were not allowed to ask questions and were unable to get clarification on confusing testimony.

### Juror Pre-Instruction

Another change in January 2007 mandated that plain English jury instructions were to be read to the jury before the start of trial (CRC 2.1035). Prior to this change, jury instructions were given at the end of the trial and before deliberations. As a result jurors were not aware of what they were supposed to be paying close attention to during the trial, nor were they aware of the law or how to apply it to the case that they were hearing until after all of the testimony was given.

### Jury Assembly Room Remodeling

In Yolo County Superior Court, the jury assembly room was renovated. All of this was done in order to make jurors more comfortable while they waited to be called (YCSC 2010).

### Jury Payment

The jury payment method changed from authorizing payment at the end of the month, regardless of if their service had been completed, to paying jurors a week after the completion of their service (YCSC 2010). This innovation greatly improved the speed that jurors were compensated for their time as well as eliminated some complications with the old system of payment.

### Jury Management

The numbering of the jury panels changed so that the system could easily handle re-assigning jurors in order to create a new jury panel for another trial. Prior to this

change, an entire panel may be dismissed either after a jury was seated, or the defendant pleads guilty and the trial went away at the last moment. Currently if a jury is selected, the remaining jurors are not excused, but can be used later that day to form a new panel for a different trial. At the same time, the jury services department changed their policies regarding communication with judges, security, and administration in order to improve how jurors were utilized. This change in jury management allows for a better use of jurors so that future jury panels would not require as many jurors. I believe that this effect would reach its full potential after a period of time rather than immediately.

### Recorded Greeting by the Presiding Judge

A recorded message from the presiding judge is shown to the jury panels before orientation (YCSC 2010). The message details the importance of jury duty and thanks the panel for showing up.

### In Depth Orientation

An orientation is given to jurors after the recorded greeting by the presiding judge. The new orientation covers issues such as parking, what is to be expected at trial, how the process of jury selection works, and where to go if there are questions or problems (YCSC 2010). Although prior to this change, there was an orientation, however it was fairly brief and did not go into much detail regarding the process of jury selection and what to expect during a trial.

Table 2

Indirect Effects on Juror Response Rates

| NAME | DATE | ORIGIN | SOURCE |
|---|---|---|---|
| Plain English Instructions: Civil | September 2003 | Judicial Council | California Rules of Court (CRC) 2.1050 |
| Plain English Instructions: Criminal | August 26th 2005 | Judicial Council | CRC 2.1050 |
| Juror Note Taking | January 2007 | Judicial Council | CRC 2.1031 |
| Jurors Allowed to ask Questions | January 2007 | Judicial Council | CRC 2.1033 |
| Jury Pre-Instruction | January 2007 | Judicial Council | CRC 2.1035 |
| Jury Assembly Room Remodel | January 2008 | Yolo County | YCSC 2010 |
| Jury Payment | Dec 2008 | Yolo County | YCSC 2010 |
| Jury Management | May 2009 | Yolo County | YCSC 2010 |
| Presiding Judge Greeting | May 2009 | Yolo County | YCSC 2010 |
| Orientation Change | January 2009 | Yolo County | YCSC 2010 |

## Analytical Methods

I have chosen to use ordinary least squares regression (OLS) to build a model explaining how jury innovations have influenced juror yield in Yolo County. I use juror response rates (JRR) as a dependent variable, and a combination of jury innovations and demographics for the independent variables. The hypothesis is that juror response rates are a function of the direct-effect innovations, the indirect-effect innovations, and the demographics of the county.

JRR= (Direct Effect Innovations)+(Indirect Effect Innovations)+(County Demographics)

Quantifying the Variables

The dependent variable is the monthly juror response rate for Yolo County Superior Court. The unit of analysis is a single month in Yolo County. The data that I was able to collect from Yolo County Superior Court begins in October of 2001 and goes until November of 2010 for a total of 110 observations.

In order to quantify the independent variables, it will be necessary to define the expected effect delay on the indirect effects. Because of the times when the innovations were adopted as well as the estimated date of effectiveness, there will be some innovations that will be combined as a single variable as they became effective at the same time. Finally in order to complete the model for analysis, the demographics will have to be selected and quantified as well.

Dependent Variable

The juror response rate will be the dependent variable in this model. The information for this is provided by the Yolo County Superior Court. This data is tracked from the jury management system and was provided in a monthly summary report. The monthly summary report tracks nine statistics:

Table 3 Source: Yolo County Superior Court (2010)

| YOLO COUNTY JURY SERVICE REPORT 1/1/2010 thru 1/31/2010 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I |
| Jurors Sched to appear | W/ Sched Change Before Sched Date | w/ Service end on or before sched date | Total possible Jurors A-(B+C) | Jurors that failed to appear | Jurors that appeared as sched | w/ sched change after sched date | w/ service end after sched date | Total expected jurors D-(G+H) |
| 4419 | 575 | 2141 | 1703 | 536 | 917 | 27 | 223 | 1453 |

Jurors Scheduled to Appear: This number represents the total jury summons sent out for the month.

With scheduled change before scheduled date: This number represents the summoned jurors who contacted the court to reset their scheduled service date before the date they were to serve.

With Service end on or before scheduled date: This number represents the summoned jurors who are either no longer eligible to serve on a jury due to moving, health issues, death, whose summons were returned with no forwarding address, or those whose jury trial was cancelled before they were supposed to be summoned.

Total possible jurors: This is the pool of jurors scheduled to appear, leaving out both those jurors who rescheduled, and those whose service ended before the date of service.

Jurors that failed to appear: This number represents the jurors who did not contact the court to reschedule, nor did they show up to serve as a juror.

Jurors that appeared as scheduled: This number represents those jurors who showed up at the court house and signed in to serve as a juror.

With schedule change after scheduled date: This number represents those jurors who called in after their service date to reschedule.

With service end after scheduled date: This number represents those jurors whose summons are typically returned to the court undeliverable with no forwarding address after the date of service, or later contacted the court to claim an exemption for medical or professional reasons after the service date.

The dependent variable in this case will be the percentage of jurors that appeared as scheduled out of the total possible jurors on a monthly basis between October 2001 and November 2010 for a total of 110 observations.

## Independent Variables

The independent variables for this model consist of jury innovations that have been defined as having a direct and indirect effect as well as county demographics.

### Jury Innovations

For this model, each of the jury innovations will be coded as a dummy variable; meaning that when the variable is considered to have an effect it will be coded as a 1 while when the variable is not considered to be having an effect it will be coded with a 0. Direct-effect innovations will be coded as having an effect immediately upon their being used in the court. Indirect-effect innovations however will be given a delay of one year from the date of their adoption to be considered as having an effect.

I chose the delay of one year as it reflects the minimum time possible between summons and the fact that the innovations are not perceived by the public until such time as they serve as a juror. The time delay also allows for word of mouth to spread about the innovation so that even if a person had not served before, it is increasingly possible that someone they know had served and would know of the innovation.

Given the combination of immediate and delayed effects on the innovations, some of the innovations will have effectively the same start date. In that instance, the innovations are considered to be the same dummy variable.

Table 4

TIMELINE OF INDEPENDENT VARIABLES

| VARIABLE | EFFECTIVE DATE |
|---|---|
| Plain English Civil Trial Instructions | August 2004 |
| Plain English Criminal Trial Instructions | September 2006 |
| Juror Appreciation Week | Every May |
| Summons Changed, Juror note taking, jurors allowed to ask questions, jurors given jury instructions prior to trial | January 2008 |
| Deferral policy changed, Jury assembly room remodeled | January 2009 |
| NCOA run on weekly summons | March 2009 |
| Juror payment system modified, in depth orientation given | January 2010 |
| NCOA run against master jury list | Only January 2010 |
| Jury management modified, recorded greeting from the presiding judge shown to jurors | May 2010 |

## Demographics

I anticipate demographics to have an immediate effect on juror response rates in Yolo County. For the purposes of this study, annual January estimates are needed in order to roughly estimate the demographic makeup of the master jury list. In this study I shall assume that the master jury list is roughly representative of the county as a whole in regards to demographic makeup. January is the target month because it is in the final week of December when the master jury list is created from DMV and voter registration records. From the time that the master jury list is completed, no new names are added to the list, only taken out of (YCSC 2010). No socio-economic data is collected on jurors so there is no way of knowing exactly how diverse or representative the master jury list is to the community as a whole (YCSC 2010). For the purposes of this study I will assume that

the community demographics are reflected in the composition of the master jury list. One inaccuracy that may be brought about in this study due to my assumption though is mitigated by the fact that I am only studying Yolo County and as such, all results are in relation to the background culture and demographics of Yolo County.

One limitation that I encountered in gathering data for demographic information is the lack of detailed information prior to 2005 when American Community Surveys began collecting three year data estimates for Yolo County. For this study, I will use two different types of demographic information, Race, and unemployment.

Race: Racial demographics were gathered from information from the California Department of Finance E-3 report which estimates percentages of races in counties. The data available however estimated population percentages as of July 1 of a given year and the estimations ended in 2008. In order to apply these estimates for my study I used the July estimates as the basis for the racial percentage of the next year. For example the July 1 2001 estimate was used as the estimate for percentage in January of 2002. While the data extended only to 2008, in order to obtain an estimate for July 2009, I assumed no changes and applied the same changes that took place between 2007 and 2008 to have happened again from 2008 to 2009. For the purposes of analysis racial demographics will be broken down into: White, Hispanic, Asian, Black, and Other which includes multi-race identifications. I used estimations available for January and assumed that the relative percentages maintained steady throughout the year.

Unemployment: Using information from the Bureau of Labor Statistics I was able to get the unemployment rate in Yolo County on a month to month basis for the entire

span of the study. I felt that unemployment would have a constant and immediate effect on the decision whether or not to attend jury duty. I anticipate a positive relationship in that as unemployment rises, so will the juror appearance rate.

Table 5

Demographic Variables

| NAME | TIME FRAME | SOURCE |
|---|---|---|
| Racial Demographics | Annual estimates from January | California Dept of Finance Reports E-3 |
| Unemployment | Monthly | Bureau of Labor Statistics |

### Completed Model

Given that the effective dates of the jury innovations have merged innovations into a single variable the completed model can be expanded now as:

JRR= (Plain English Instructions for Civil Trials)+(Plain English Instructions for Criminal Trials)+(Jury Appreciation Week)+(Summons Changed/Juror Note Taking Allowed/Jurors Allowed to Ask Questions/ Jurors Given Instructions Before Trial)+(Hardship Policy Change/Jury Assembly Room Remodeled)+(NCOA run Weekly)+(Jury Payment Policy Changed/ In-Depth Orientation Given)+(NCOA run at Beginning of Year)+(Jury Management Modified/ Recorded Greeting from Presiding Judge)+(Racial demographics)+(Unemployment Rate)

## Analytical Methodology

In order to analyze this model, I opted for a Ordinary Least Squares Regression model in order to better isolate the effects of the innovations on juror response rates.

### OLS Regression

An Ordinary Least Squares regression model is primarily designed to be used as an econometric tool. One of its uses for example is in determining the valuation of certain

qualities of a home. In this example, the regression model examines what effects the qualities of the home (number of bedrooms, square footage, etc.) have on the price of the home. With this kind of analysis it may be possible to estimate a theoretical houses selling price in that market given certain attributes. The basic function of an OLS regression is to provide a quantitative estimate of a theoretical relationship (Studenmund 2006). While its primary use has been in estimating economic relationships in a theoretical model, this method will be able to show the magnitude of effect that a jury innovation has on the juror response rate.

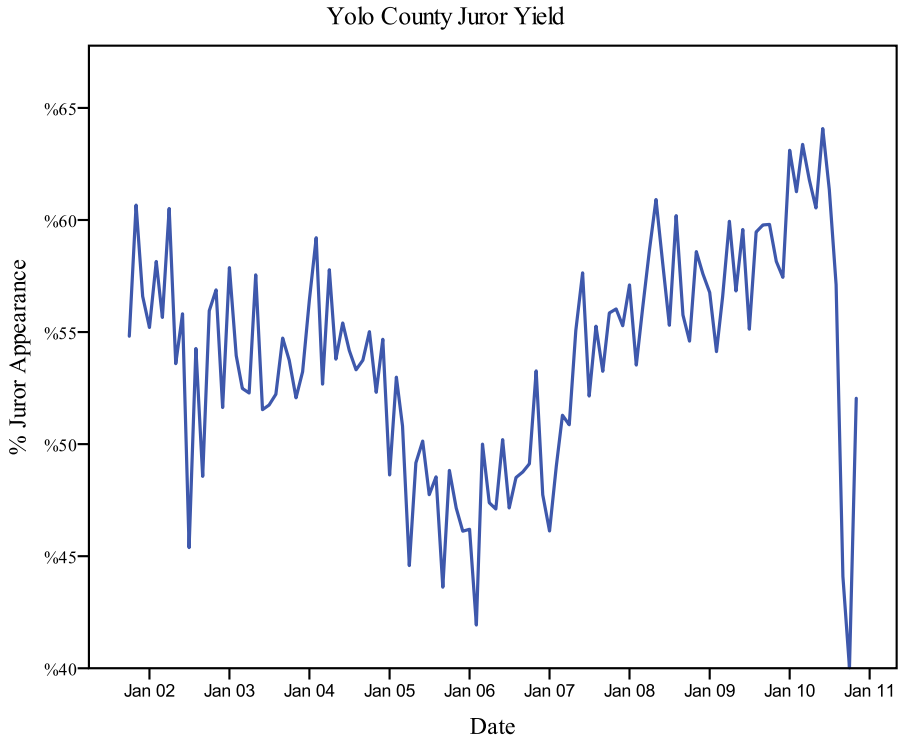
# Chapter 4

# ANALYSIS

In order to analyze the jury response data, I have chosen to use a OLS regression model. The results of the analysis will reveal if any of the variables chosen for the model have a relation to the juror response rates, as well as the magnitude of that relation. Before going into the details of how regression analysis works and the results of the regression analysis, it may be useful to take a initial look at the raw data.

## Preliminary Analysis

Figure 1



The left side of the graph begins in October of 2001 and ends on November of 2010 on the right hand side. Through the graph each bump and dip is a separate observation of the juror yield in Yolo County. The response rate appears to trend down until about January 2006 when it begins to trend upwards steadily until September and October when the juror response rate plummets and then begins to recover again. From the graph it seems that juror response rates are a fickle thing, however it appears that there is an upward trend at least since January of 2006.

## Regression Analysis

An OLS regression model provides several important pieces of information that will allow for an understanding of what possible effects jury innovations have had on juror response rates. The important components of an OLS regression are the adjusted $R^2$, the constant, the coefficient (B), the significance, and the variance inflation factors (VIF).

Adjusted $R^2$ "measures the percentage of the variation of Y around its mean that is explained by the regression equation, adjusted for degrees of freedom" (Studenmund 2006). Essentially it is a measurement that gives estimation as to the fit of the model; it shows roughly what percentage of the dependent variable is explained by the independent variables selected for the model. When variables are added or taken away, the adjusted $R^2$ can go up, down, or stay the same which may give some indication of how good of an explanation the model is. In this case the adjusted $R^2$ will give an indication as to how much the independent variables influence the percentage of jurors who appear for jury duty.

The constant is a baseline measurement. In the case of this analysis, the constant would be the expected juror response rate in Yolo County, absent any innovations. In a OLS regression, the constant measurement functions as a “garbage collector”, in that it offsets error terms and may represent a collection of effects that were not measured in the model (Studenmund 2006).

The coefficient is the measurement of the effect of the variables (Studenmund 2006). The coefficient shows the effect of the variable on the model. In the case of this model, the coefficient will measure the effect an innovation will have on the juror response rate in Yolo County, as well as the effect of a one unit increase in a demographic measure on the jury response rate.

The significance measurement is important as it measures how likely the null hypothesis is to occur by chance (Studenmund 2006). For a regression analysis, the general null hypothesis is that there is no relation between the independent variable, and the dependent variable (Pollock 2009). In plain English, the significance shows if an independent variable (a jury innovation) has an effect on the dependent variable (juror response rates) and that the effect is not happening by chance. A significance level of .05 would roughly indicate that the result could occur through random sampling error 5% of the time. If the chance of producing the result by random sampling error is above 5%, then the result is not seen as being statistically significant (Pollock 2009).

The variance inflation factors measures the severity of multicollinearity in a model. Multicollinearity is where two or more variables are highly correlated which

would make detecting the effect of an individual variable extremely difficult (Studenmund 2006). Multicollinearity could be a significant problem in this particular model given that many innovations occur near the same time. In fact, in order to be able to test jury innovations at all, several concurrent innovations were collapsed into a single variable in order to minimize the possibility of multicollinearity. Generally speaking, a VIF of 5 or higher indicates a problem with multicollinearity which could skew the results of the regression analysis.

## Regression Results

The regression model that I chose to go with for this analysis is as follows.

JRR= [(plain English civil trial instructions) + (plain English criminal trial instructions) + (jury appreciation week) + (use of NCOA on jury panels prior to summons) + ( change of jury summons, juror note taking, jurors allowed to ask questions, jurors given instructions prior to trial) + ( juror pay method modified, jury orientation changed) + (juror management modified, recorded message from Presiding Judge played for jurors during orientation)]

Table 6

REGRESSION ANALYSIS RESULTS

| Variable | B | VIF |
|---|---|---|
| (Constant) | 54.46 | |
| Plain English Instructions for Civil Trials | -5.57*** | 1.53 |
| Plain English Instructions for Criminal Trials | 4.16*** | 3.20 |
| Juror Appreciation Week | 1.26 | 1.00 |
| NCOA run on each jury panel | 1.29 | 2.91 |
| Summons changed/Juror Note Taking/ Juror Pre Instructions/ Jurors able to ask questions | 3.81*** | 3.69 |
| Juror Pay Method Modified/ Orientation Changed | 4.24** | 3.48 |
| Jury Management Modified/ Recorded Introduction by Presiding Judge | -8.38*** | 2.59 |

Note: Adjusted $R^2$ .467 *=Significant at .1 **= Significant at .05 ***= Significant at .01

The results of the analysis show that most of the variables are highly significant with the only two exceptions being the use of NCOA prior to summons, as well as the Jury Appreciation week. Surprisingly two effects show negative results, those being the use of plain English instructions in civil trials and modification to jury management and the recorded message from the presiding judge. Two innovations, the jury appreciation week in May and the use of NCOA before sending out the summons appear to not be statistically significant. Four of the innovations are significant at the .01 or below level meaning that there is a 1% chance that the results occur as a random error.

Each of these results show the magnitude of effect that each innovation has on juror response rates. The base level is indicated by the constant, which shows that, in absence of all innovations, the base appearance rate given the community demographics present in Yolo and the previous jury summons practices, is at 54.46%. A quick scan of

the raw data for juror appearance rates in times where there were no jury innovations was 54.74%. On the surface, it appears that the constant term is in line with the initial data. Given the coefficients of each jury innovation which swing from -8.38 to 4.16 , then theoretically if all of the innovations were present there would be a net gain of 0.81% jurors responding.

Overall the model appears to be sound in that there does not appear to be an issue with multicollinearity as all of the VIF scores are below 5 and the adjusted $R^2$ indicates that the model currently explains roughly 46% of the dependent variable. In order to insure however that the model is sound I tested for both autocorrelation and heteroskedasticity, both of which are issues that can appear in regression models and cause a bias in the results.

## Issues of Autocorrelation

In regression analyses based around a time series, one possible problem that can skew results is the problem of autocorrelation, or serial correlation. In this study there may be a possibility of serial correlation since the data could be considered a time series analysis with effects of innovations adding on over time. While this study is not a pure time series analysis as would be found in a typical economic analysis, the possibility may still exist. In order to test for the presence of serial correlation a Durbin-Watson test was performed.

The Durbin-Watson test essentially tests for positive serial correlation. If the D statistic that results from the test is below the lower critical D value, then positive serial

correlation exists in the model, if the D statistic is above the critical D value, there may be an issue then with negative serial correlation, if the D statistic falls between the upper and lower critical level then the test is inconclusive (Studenmund 2006). Serial correlation can cause a bias in the significance which would then cause a faulty hypothesis test for the variables (Studenmund 2006).

For this analysis the lower level D value is 1.57 and the upper critical D value is 1.80 based on 7 variables and 110 cases. The result of the Durbin-Watson test was 1.406 which indicates the presence of positive serial correlation. Given that the size of the study is relatively small (110 observations), that it is limited to one county, and that the result was so close to the lower critical D value, I decided to not run any corrections for serial correlation on this model. Ultimately I do not feel that there was a significant enough positive serial correlation to warrant a correction.

## Heteroskedasticity

OLS regressions rely on some basic assumptions for them to work properly and have reliable results. One assumption is that the error terms have a constant variance, when this assumption is violated; it is called heteroskedasticity (Studenmund 2006). The causes of heteroskedasticity can be either from the error term of a model that is correct, or from having a model that is incorrect in some way, such as having an omitted variable (Studenmund 2006). The general effect of heteroskedasticity is found in the significance of the variable in that it will cause a bias in the result which may lead to conclude that a variable is significant when it is in fact not. In order to test for heteroskedasticity I opted

for a simple visual check of the residuals in a matrix of scatter plots to reveal possible correlation between the residuals and each explanatory variable. Based on the visual estimation on the scatter plot graph, there does not appear to be issues with heteroskedasticity in this model as the variances appear to be evenly distributed. This could be a function of the fact that the model exclusively uses dummy variables and wouldn't have much variance to begin with.

## Excluded Demographic Variables

Initially the model for analysis included variables for how the court altered its policies regarding deferrals, the remodeling of the jury assembly room, running the master jury list against the NCOA in January of 2010, as well as a selection of demographic data. In finalizing the model for analysis, I did run multiple regression analyses using various combinations of variables and in the end decided to omit certain ones. The full model produced results that were unreliable for various reasons. I have chosen to include the results of those regressions in order to explicitly show why the variables were excluded as well as illustrate possible pitfalls for future analysis.

Table 7

REGRESSION ANALYSIS WITH OMITTED VARIABLES

| Variable | B | VIF |
|---|---|---|
| (constant) | 973 | |
| Plain English Instructions for Civil Trials | -3.29* | 6.70 |
| Plain English Instructions for Criminal Trials | 7.56*** | 10.19 |
| Juror Appreciation Week | 1.67 | 1.11 |
| NCOA used on each jury panel summoned | 2.64 | 10.22 |
| NCOA used on master jury list in January | .735 | 1.33 |
| Summons Changed, Jurors allowed to take notes, jurors allowed to ask questions, jurors given instructions prior to trial | 5.54*** | 7.251 |
| Juror Pay policy altered, New orientation given to jurors | 4.59 | 6.17 |
| Jury Management policies changed, Recorded Greeting from Presiding Judge shown to Jurors | -7.61*** | 3.48 |
| Method of handling deferrals changed, Jury Assembly Room Remodeled | -7.02 | 73.64 |
| % of population Hispanic | -.362 | 566.57 |
| % of population Asian | -27.14 | 507.08 |
| % of population other | 19.245 | 395.05 |
| % of population African American | -369.36* | 6.013 |
| % unemployment | .296 | 11.582 |

Note: Adjusted $R^2$ .481 *=Significant at .1 **= Significant at .05 ***= Significant at .01

In running the full model for analysis, the issues of multicollinearity became highly evident through the VIF numbers. Three demographic factors had VIF's above 300 when 5 is considered the point at which you have an issue with multicollinearity, and even absent those factors, the VIF's for other variables were well over 5. The other major red flag that appeared when running this analysis was the size of the constant and the coefficient of the racial demographics. The base term was 973 and the smaller the

demographic was; the greater the impact appeared to be. Theoretically if the county saw a half a percent increase in the African American population, the jury appearance rate would fall almost 200%. This high volatility in the model, along with the high VIF ratings indicated that this full model may not be a reasonable one for a study of this size. It appears that the demographic variance in combination with the innovations being dummy variables caused the constant term to essentially take up the slack and balance out the effects. This observed effect also combined with near perfect positive and negative collinearity among the demographic variables which makes some sense when the data is all coming from one county. It is necessary that when one demographic area sees an increase or decrease, another will see the opposite result. Due to all of these factors I chose to eliminate the demographic variables from the model.

## Excluded Jury Innovations

Once the demographic variables were omitted, the regression analysis was run again with only the jury innovations. Once again however, the model encountered some problems in regards to multicolinearity.

Table 8

REGRESSION ANALYSIS RESULTS WITH ALL JURY INNOVATIONS

| Variable | B | VIF |
|---|---|---|
| (constant) | 54.46 | |
| Plain English Instructions for Civil Trials | -5.57*** | 1.53 |
| Plain English Instructions for Criminal Trials | 4.16*** | 3.20 |
| Juror Appreciation Week | 1.233 | 1.01 |
| NCOA used on each jury panel summoned | 2.70 | 10.251 |
| NCOA used on master jury list in January | .97 | 1.32 |
| Summons Changed, Jurors allowed to take notes, jurors allowed to ask questions, jurors given instructions prior to trial | 4.04*** | 3.98 |
| Juror Pay policy altered, New orientation given to jurors | 3.99** | 4.30 |
| Jury Management policies changed, Recorded Greeting from Presiding Judge shown to Jurors | -8.138*** | 3.14 |
| Method of handling deferrals changed, Jury Assembly Room Remodeled | -1.64 | 10.627 |

Note: Adjusted $R^2$ .458 *=Significant at .1 **= Significant at .05 ***= Significant at .01

With all of the jury innovations as independent variables, many of the problems with multicollinearity were solved by omitting the demographic data, however there was still an issue lingering with the variable that covered hardship exemptions and the jury assembly room remodeling that seemed to match with the use of NCOA before summoning a jury panel. Looking at the effective dates of those innovations, the deferrals/jury assembly room variable and the use of NCOA variable were only two months apart which could cause some serious issues with multicollinearity. I chose to drop two of the variables, the deferrals/ jury assembly room remodel as it was the least significant, and the use of NCOA in January of 2010 since it only happened once and had

no statistical significance to speak of. By dropping those two variables I raised the adjusted $R^2$ of the final model and dropped the VIF numbers to well below the level that indicates a problem with multicollinearity.

# Chapter 5

# CONCLUSIONS

Trial by a jury of your own peers is one of the fundamental tenants of the American justice system. Without trial by jury, the entire justice system will collapse, which is why it is so important to have enough jurors willing and able to carry out this duty. In my initial research into jury issues I found many reports and studies regarding what changes should be made to the whole jury system, and read many reports on what changes had been implemented, however there was little to no research on how effective these changes were. There were anecdotes as to the effectiveness of one program or another, but no empirical studies to show a quantitative value behind an innovation. For the most part there was a claim that such a study would be too difficult. While far from a perfect analysis, I hope to have at least proven such an analysis could be possible.

Given that the analysis revealed several statistically significant variables I can conclude that in Yolo County, each of those variables at least correlate with an increase or decrease in the juror response rate. Plain English instructions for civil trials was highly statistically significant and correlated with a 5.57% decrease in juror response, while the criminal instructions correlated with a rise juror response rates of 4.16%. The change in jury summons combined with allowing jurors to take notes, ask questions during trial, and receive jury instructions before the start of the trial, was also highly statistically significant and correlated with a 3.81% increase in juror response rate. The change in how juror pay was handled as well as the change in orientation was statistically significant and correlated with a 4.24% increase in the juror response rate. Also

statistically significant were the changes to jury management and the use of a recorded message from the Presiding Judge which decreased the juror response rate by 8.38%. Not statistically significant was the use of NCOA and the juror appreciation week.

These results are a bit surprising as they conflict with what the initial hypothesis was for some of the variables. The negative effects were unexpected in light of the context of the innovations. The effect of the modifications to jury management and the message from the Presiding Judge was surprising not just in its negative effect, but also its magnitude. I suspect that the reason for the massive negative result stems from the massive drop in juror response rates near the end of 2010. There are only seven total observations of the variable that included the message from the Presiding Judge and the changes to jury management, so when two of those observations are abnormally low, the result may be thrown off significantly. The ability of those two months to throw off a whole variable explains why this contradicts the findings of Yolo County in that, if this model is accurate, there is a net increase of 0.81% when all of the innovations are in use. According to information that I received from Yolo County, the combination of jury management improvements and the use of NCOA, the average jury panel size decreased from 250 to 175 due to the increase in response rates and the better use of jurors (YCSC 2010). When looking at the graph of juror appearance rates (Figure 1), there can be seen an upward trend in juror appearance rates that for an inexplicable reason plummeted near the end of 2010 but then began to recover in the last month (November 2010). In light of that information it is difficult to conclude that all of the innovations combined had such a minimal effect overall. It may be that the innovations that appear to have a negative effect

are the result of external forces not included in the model. The results however do seem to indicate that there is an overall positive reaction from jurors to innovations that reduce the various barriers to serve. While this study is a good first step in creating a quantitative analysis of the effects of jury innovations, there are some limitations that should be addressed in further studies.

## Limitations and how they can be Overcome in future studies

This study is not without its faults, however the underlying goal of this project was to try and develop a framework for analysis that could be expanded upon. In order for a continuing effort to be successful though there are some issues that appeared in this study that would need to be addressed should this style of analysis be expanded upon.

One issue that this study has is related to the fact that several of the innovations occur at or around the same time. While I combined innovations to avoid issues of multicollinearity, it still makes it difficult to point to the combined innovations and say definitively that one of those innovations above all others was responsible for the effect. For example, the change in jury summons occurred a year after jurors were allowed to take notes, ask questions, and were given the jury instructions prior to trial. Given that all of those happened at the same time, it is impossible to point to any one of those innovations as being the primary cause of the 3.81% increase in juror response. However one of the more difficult questions to answer is in regards to the negative effects that some innovations seem to have.

One of the more surprising effects was from the plain English civil instructions. These results were surprising not just for their negative impact, but also for the severity of it. Given that the majority of jury trials in Yolo County are criminal rather than civil (YCSC 2010), the expectation would be that the civil instructions may have little to no effect at all given how little exposure those plain English instructions get. One remedy for this may be to weight the two sets of instructions in proportion to the amount of jury trials that occur so that the level of exposure is accurately reflected.

The other negative effects seen in the regression results, from the modification of jury management and the message from the Presiding Judge, could also be a result of the size of the study. Given the apparent nature of the juror response rate in Yolo County, which can flux significantly from one month to the next, and given that some variables had so few observations, the results could be affected by the small sample size. In order to combat this issue in future studies, information could either be drawn on a weekly rather than monthly basis, or the study could be expanded to include multiple counties.

By expanding the study to calculate response rates on a weekly rather than monthly basis, it may be possible to have enough observations to get a more accurate view of what variables impact the juror response rates. Should the study be expanded to that level, additional variables such as the month of the summons might be worth investigating in order to see if there is a seasonal effect on response rates. I would caution however that pinning a effective date of an innovation may be difficult as the information on when specific innovations were adopted may not be available at that level of detail.

It could be possible to expand this type of study to a statewide level in order to increase the sample size, however the complexity of such a model would increase dramatically. By expanding to a state wide level, it becomes possible to analyze the effects of demographics on response rates as well since the issues of multicollinearity would be nullified by the inclusion of multiple counties. Demographic and economic data would be much easier to collect from larger counties than smaller ones, however that kind of information would greatly increase the quality if the study. Issues of heteroskedasticity though would increase dramatically once anything other than dummy variables are introduced into the model. Serial correlation would also have to be considered and watched for. However, by expanding to a state wide level it would become possible to split apart several of the variables that I combined. It would become necessary to carefully categorize the innovations and group similar implementations together as a single variable. One variable to be considered as well would be a county-wide variable in order to capture any kind of X-factor that is unique to that county that would otherwise be difficult or unable to be measured. Despite the enormous complexity of modeling jury innovations on a state wide level, the results could be incredibly useful to courts seeking to improve their juror response rates.

## Concluding Remarks

The results of this analysis show two important things. First it shows that most of the jury innovations from the last ten years have had an effect on the juror response rates in Yolo County. Secondly, and possibly more important, is that it serves as a proof of

concept that this style of analysis can be done on juror response rates and yield some significant results. Further efforts should be made to refine and apply this style of model in order to try and identify best practices in jury management that will result in more jurors appearing. When identifying best practices in jury management though, this type of analysis would be important but hardly sufficient in and of itself. Many innovations, while not appearing to improve juror response rates, have other benefits which can improve the overall quality of jury duty. Whether or not an innovation has improved jury response rates is one of many possible metrics that could be used to judge the value of that innovation. While not statistically significant, the use of NCOA and the improvements in jury management have increased efficiencies to such a degree in Yolo County that an estimated $40,000 dollars had been saved in costs in the first six months of its use (YCSC 2010). Plain English instructions for civil trials, while it negatively correlates with juror response rates, can still be seen as having great value in improving the comprehension of trial instructions thus possibly resulting in better decisions by the jury. Ultimately the information gained from this type of study could significantly impact how Courts choose to implement changes to jury management.

If this study could be expanded as it is to multiple counties as 58 stand alone analyses, it could be used in order to give court executives and Judges a way to compare indirectly, how effective some innovations could be. For county level studies, it would be important to take note of the demographics of the area in order to make accurate comparisons. Courts in demographically similar counties could compare how well their program is succeeding in relation to another courts similar program.

Should this method of study be expanded to a state wide level, the amount of information it could provide to court decision makers would be significant. By analyzing on a state level, with the complexity that such a study would require, the results of that state wide analysis could provide a valuable performance measurement tool for the implementation of an innovation. Should statewide juror response data and demographics be collected in a single easy to query database for courts to use, courts may be able to identify what innovations may serve their community well given their demographics and resources.

This kind of study is incredibly important to have as it would give decision makers the information they would need to decide whether or not to adopt an innovation or not. Having enough jurors is a major concern for the courts as without jurors, there can be no jury trials, and without jury trials, the entire system of justice could fail. By using this kind of statistical analysis, courts could identify and use innovations that could improve the juror response rate which would reduce the cost spent each year on jury summons, and more importantly, insure that there are enough jurors to keep jury trials going.

# APPENDICES

APPENDIX A

| **Yolo County Demographics 2005-2009** | |
|---|---|
| **Demographic** | **Estimate** |
| population | 192,974 |
| Percentage age 18 years or older | 76.5% |
| Percentage age 62 and over | 11.6% |
| Percentage White | 53.5% |
| Percentage Hispanic or Latino | 28.5% |
| Percentage Asian | 11.4% |
| Percentage Black or African American | 2.3% |
| **Languages Spoken at Home** | |
| Percentage English as only language used | 65.9% |
| Language other than English | 34.1% |
| Speak English less than “Very well” | 14.3% |
| **Education among population 25 and older** | |
| Percent high school graduate or higher | 84% |
| Percent Bachelors Degree or Higher | 36.8% |
| Graduate or Professional Degree | 17.2% |
| **Employment, civilian population 16 and older** | |
| Private wage and salary workers | 63.2% |
| Government workers | 29.3% |
| Self Employed | 7.4% |
| **Income and Benefits** | |
| Median Household Income | $56,232 |
| Median Family Income | $72,173 |
| Per capita income | $26,761 |
| Source: American Community Survey. 5 year survey 2005-2009 | |

# APPENDIX B
## Timeline of Jury Innovations

| STATE LEVEL | DATE | YOLO COUNTY |
|---|---|---|
| BRC formed | Dec 1995 | |
| Final report of the BRC published | May 6 1996 | |
| Voter initiative approved to unify trial courts upon approval of a majority of judges in that court (Prop 220) | June 2nd 1998 | |
| | June 3rd 1998 | Yolo County Judges vote to unify |
| One-day/One-Trial enacted. CA Rules of Court (CRC) 2.1002 | July 1999 | |
| | January 1 2000 | Yolo County implements One-Day/One-Trial |
| Juror Pay increased to $15 a day after the first day CCP 215(A) | July 1 2000 | |
| Judicial Council adopts Plain english civil jury instructions CRC 2.1050 | September 1st 2003 | |
| Judicial Council adopts plain English criminal instructions CRC 2.1050 | August 26th 2005 | |
| Juror Note taking approved CRC 2.1031 | January 1 2007 | |
| Jurors allowed to ask questions during a trial CRC 2.1033 | January 1 2007 | |
| Judges may give instructions to juries before the case commences, CRC 2.1035 | January 1 2007 | |
| Judges may assist the jury in the case of an impasse with clarifications of instructions, additional instructions, or allow attorneys to make additional closing arguments. CRC 2.1036 | January 1 2007 | |
| | Dec 2008 | Juror Payroll changed from being processed monthly, to weekly |
| | January 2009 | In depth orientation implemented |
| | March 6 2009 | Summoned Jury panel is run through the National Change of Address database. |
| | April 2009 | Jurors allowed to reschedule for hardship at their convenience up to 6 months out. |
| | May 2009 | Changes in jury panel numbering allow for better management of jurors not empanelled. Judges are also alerted to when jury panels will be available. |
| | May 2009 | Video taped greeting from presiding judge played for jurors during orientation |
| | January 2010 | Master Jury List run through NCOA. |

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