# Examining the Causes of Delay in State Level Civil Trials

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## 1. Abstract

The project seeks to examine the causes of delay in civil justice cases prosecuted in state courts. Prior research in this area has attributed delay to local conditions specific to the places where the trials are held. In this study, data about county characteristics are included to test that hypothesis. Further, specific aspects of court cases and county characteristics are examined to build a model that estimates the disposition time of civil cases.

## 2. Introduction

A conducive and equitable environment for society's organization and discourse is contingent upon a sound legal system. Civil justice institutions feature prominently in this respect because they represent important forums for adjudication, conflict resolution and public policy formation. From the economist's point of view, the efficiency of civil justice institutions is foundational to the smooth functioning of an economy. In particular, the proper administration of laws pertaining to tort, contract and property imbues in individuals and firms trust and reliability in the transactions that they enter into and which ultimately constitute the basis of economic activity.

Tort laws address negligence and liability issues arising from injuries to an individual's body, property or other interests. Examples of tort law include laws that govern the adjudication of cases relating to defamation, assault, battery, trespass, nuisance, fraud and product liability. Along with tort laws, contract laws fall under a general law of obligations. More specifically, contract laws enforce the consensual exchange of promises created and defined between parties. Contract laws also administer remedies in the event that the contract is breached. On the other hand, laws pertaining to property address ownership of personal property and real estate. In this regard, a distinction is drawn: while ownership over property may arise from contractual obligations, property rights are rights over objects enforceable against all other parties and contractual rights are rights that allow owners to sue particular

persons for damages or breaches to property rights. Very clearly, the proper administration of laws governing tort, contracts and property are key to the success of the free market, capitalist system.

Not surprisingly, the amount of time it takes for courts of law to resolve the complaints brought before it is among the centerpieces of numerous innovations by judicial administrators, at both the federal and state level. Most notable among efforts at institutional reform is the Civil Justice Reform Act of 1990, also known at the "Biden Bill". The objective behind the legislation's sweeping measures was to "facilitate deliberate adjudication of civil cases on the merits, monitor discovery, improve litigation management, and ensure just, speedy and inexpensive resolutions of civil disputes."[1] The impetus behind reducing trial delays is evident. Beyond undermining confidence in the reliability of the judicial process, the costs of litigation increase over time. This might lend an advantage to those with the financial ability to withstand protracted trials and those who find benefit in prolonging their trials, while disadvantaging those without the means of doing so. The quality of evidence also deteriorate over time: witnesses might find their memories fading, evidence might decay and prolonged pre-trial incarceration might pressure parties into conceding to inaccurate charges. All in all, protracted trials frustrate those seeking redress and erodes public confidence in the institutions entrusted with adjudicating disputes and administering justice.[2]

An important notion in thinking about innovation to expedite cases and make the disposition of cases more efficient is the normative consideration about the rightful amount of time trials should take. While it is difficult to dispute the reasoning behind the oft-repeatesd mantra "justice delayed is justice denied", it is equally true that "justice hurried is justice buried". It seem reasonable that complex trials involving complicated circumstances and influencing the way similar trials are adjudicated in future should deserve the prolonged attentions of judges and juries. Rushed trials might lead to evidence that are hastily considered, juries that only have a scanty understanding of the circumstances and judicial precedents that are hastily set.

A more contemporary facet of the over-emphasis on speed revolves around well-publicized moves on the part of judicial administrators to encourage Alternative Dispute Resolution (ADR) avenues. Indeed, a

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[1] J. Peck. "Users United: The Civil Justice Reform Act of 1990." *Law and Contemporary Problems*, Vol. 54, No. 3, Modern Civil Procedure: Issues in Controversy (Summer, 1991), pp. 105-118

[2] M. Heise. "Justice Delayed?: An Empirical Analysis of Civil Case Disposition Time." 50 *Case Western Reserve University Law Review* 813 (2000): 813-815

key recommendation of the Civil Justice Reform Act is to lessen the case load of state courts by diverting cases towards arbitration and mediation. Judge H. Lee Sarokin (1986) expressed the view that such measures, rather than being used to ready a case so that its trial might be expeditious, are more frequently used to prevent a case from even going to trial.[3] Further, settling cases through these avenues denies the system of useful precedents that might guide future verdicts. Also, many aspects of arbitration and mediation proceedings are only privy to the parties involved. Unlike in an open court of law, such secrecy might conceal tortuous behavior and anti-competitive practices. [4]

Bearing in mind the above in considering the efficiency of judicial institutions, there is a continued imperative to examine case disposition time. This is not least because of the insights it provides to judicial administrators about the efficiency of past and ongoing efforts at reform. Furthermore, a study of case disposition time can highlight areas presently overlooked that can be addressed in future improvements. With this understanding, it is useful at the outset of an empirical study of trial delay to highlight several interesting ideas raise and sometimes undertaken since the Civil Justice Reform Act to address the issue of delay.

Carrie E. Johnson (1997) points to one such idea that is commonly thought of as the "rocket docket" approach.[5] Here, early trial dates are set before the case goes to trial and modifications to these dates are not permissible except under extenuating circumstances. The Eastern District of Virginia, a strong proponent of the "rocket docket" concept requires trial dates no later than 18 months after the complaint is filed. Some districts maintain more ambitious deadlines. In this way, disposition is expedited through the efficient managing of pretrial litigation by placing limits on the amount of time during which a trial can remain pending. A slightly different idea is the very general notion of tort reform. Arising from instances where disproportionally large payouts were made as a result of seemingly frivolous complaints, there have been calls to limit punitive damages so as to prevent petty suits made on impulse from taking up the time of judges and juries. In the same vein, arguments have been circulated about raising the burden of proof for plaintiffs and imposing stricter requirements on class-action suits. An even more contentious approach to alleviating the court's case load raises the plaintiff's stakes by demanding the losing party to foot the legal costs of both sides. Finally, an initiative

[3] Hon. H.L. Sarokin. "Justice Rushed is Justice Ruined." 38 *Rutgers Law Review*, 431 (1986): 431-432
[4] Hon. H.L. Sarokin. "Justice Rushed is Justice Ruined." 38 *Rutgers Law Review*, 431 (1986): 433-434
[5] Carrie E. Johnson. "Rocket Dockets: Reducing Delay in Federal Civil Litigation." 85 *California Law Review* 225 (1997).

universally embraced is to encourage the more widespread use of information technology to hear cases. With proper implementation and management, electronic systems can put cases histories, evidence and relevant filings at the fingertips of relevant stakeholders.

### 2.1 Literature Review

The formal application of empirical techniques to understanding the workings of the legal system has a long if spotted history. Garth (1997) laments that "the history of the relationship between empirical research and the reform of civil procedure has been one of alternating enthusiasm and disappointment"[6]. Indeed, it was not until 2004 that a major academic journal was established for the dissemination of empirical studies of the legal system.[7] Up until the 1990s, much of the relevant literature bemoaned the lack of an empirical context for suggesting or assessing case-load and case-flow management measures. As with many other disciplines in the social sciences, the application of quantitative analysis was vitalized by the proliferation of data. For studies of the legal system, this momentum was coupled with the impetus from persistent efforts at reforming the system.

Easily the most cited publication in the existing literature on caseload management and expediting case disposition is the Rand Corporation's Institute of Civil Justice's evaluation of the Civil Justice Reform Act. This evaluation was mandated by the Act, and the Rand Corporation was selected to undertake the evaluation. Chief among the findings from the evaluation is that "the CJRA pilot program, as the package was implemented, had little effect on time to disposition, litigation costs, and attorney's satisfaction and views of the fairness of case management."[8] In their study, the Rand Corporation examined ten pilot district courts that implemented case management measures that incorporated various initiatives set out under the Reform Act. In this regard, limiting their sample to just ten pilot districts necessarily poses issues of selection bias. Another problem in the Rand evaluation is the absence of a common definition for important components of the reform package. What counts for pre-trial proceedings differed from jurisdiction to jurisdiction; Alternative Dispute Resolution also meant different things to different district courts.[9]

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[6] Bryant G. Garth. "Observations on An Uncomfortable Relationship: Civil Procedure and Empirical Research." 49 *Alabama Law Review* 103 (1997).
[7] This is with reference to the Journal of Empirical Legal Studies.
[8] Kakalik, James S. "Just, Speedy, and Inexpensive?: an Evaluation of Judicial Case Management under the Civil Justice Reform Act." RAND, The Institute for Civil Justice (1996): 1-2
[9] M. Heise. "Justice Delayed?: An Empirical Analysis of Civil Case Disposition Time." (2000): 819-822

This study builds most upon Heise (1999) which highlights the imperative to have a keener appreciation of the civil justice system by investigating the determinants of case disposition time. Examining case procedures and outcomes, Heise identifies locale as an influential factor along with the type, award amount and characteristics of the case. Heise's findings cast doubts on efforts ongoing then to deliver justice faster and at less cost. He argues that those efforts concentrates on variables that have not been empirically proven to reduce delay and turns a blind eye on variables that significantly affects case disposition time.[10]

### 2.2 Contributions to Present Literature

This study updates and expands on the work of Heise (1999). Firstly, this study utilizes an updated dataset. Instead of studying only the civil jury trial outcomes from 45 of the nation's 75 most populous counties, this study uses the 2005 Civil Justice Survey of State Courts that incorporates data from trials disposed in a nationally representative sample of bench and jury trials concluded in 156 urban, suburban and rural counties.

Secondly, the analysis of this study delve deeper into Heise's conclusion by studying specific aspects of the locale's characteristics that are most significant in contributing to case disposition time by incorporating data on local characteristics from County Characteristics, 2000-2007. Including county characteristics is also interesting within the context of a federal system of government because of the insights it provides into how states develop their laws and legal culture differently, and the determinants behind those differences.

Thirdly, this study builds a model with variables from the merged dataset of case disposition data and local characteristics to estimate the disposition time of civil cases. The size of the dataset allows the potential to examine it using data-mining principles. Herein, it is also the hope of this study to be an example of the application of machine learning techniques to meaningfully address issues in the social sciences.

## 3. The Data

Analysis in our study relies on two sets of data. Information on case characteristics is drawn from the most comprehensive collection of state civil justice data supplied by the very courts that report the case

[10] M. Heise. "Justice Delayed?: An Empirical Analysis of Civil Case Disposition Time." 2000)

outcomes. The Civil Justice Survey of State Courts, 2005 is put together by the National Center for State Courts and provides a systematic examination of general civil (tort, contract and real property) cases disposed of by bench or jury trials in a national sample of state courts of general jurisdiction in 2005.[11] This study expands on the prior iterations by collecting a nationally representative sample of bench and jury trials concluded in 156 urban, suburban and rural counties. Variables used in this study describes detailed case-level information, including the types of civil cases litigated at trial, the backgrounds of litigants involved in the trials, the winning party, compensatory award amounts, punitive damages, case disposition time and whether there was resort to options for alternative dispute resolution.

Information on county characteristics is drawn from County Characteristics, 2000-2007 that is put together by the Interuniversity Consortium for Political and Social Research.[12] The study describes 470 variables covering an array of county characteristics and contextual influences at the county-level. All in, records were kept for each of the 3,141 counties and county-equivalents demarcated by the National Institute of Standards and Technology (MIST), as of 2005. Data available in County Characteristics 2000-2007 includes population by various demographics and components of population change, size of labor force and unemployment, personal income, earnings and employment by industry, climate, government revenue and expenditures, crimes reported, housing and Medicare enrollment. The variables are compiled from data files prepared by numerous federal agencies such as the Bureau of the Census, the Bureau of Economic Analysis and the Bureau of Labor Statistics.

## 4. Exploratory Data Analysis

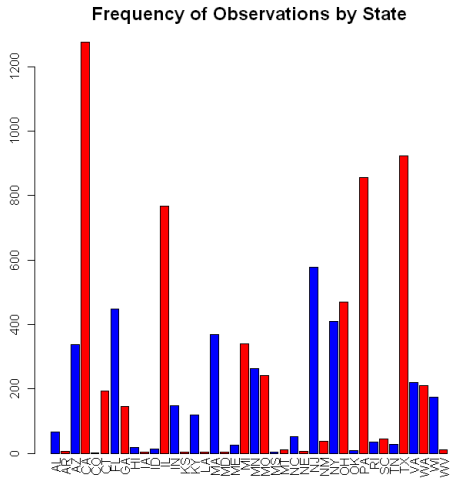
Variables on Administrative Information

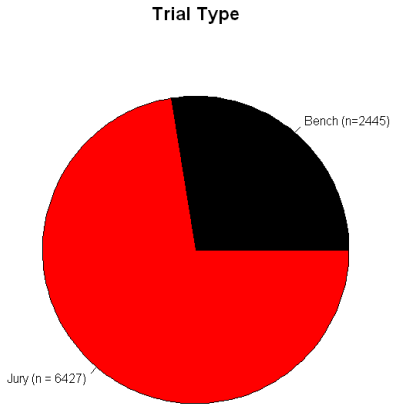
Classified under administrative variables, the CJSSC 2005 provides variables on the states and counties in which cases are prosecuted, the types of claims filed either by the plaintiff, defendant or third parties, and whether the decision was delivered by a judge or a jury. In the graphics below, the biggest and most populous states account for the biggest number of observations. By trial type, jury trials outnumber bench trials by an almost 3 to 1 ratio. That many initiatives by judicial administrators to manage

[11] United States Department of Justice, Bureau of Justice Statistic. "Civil Justice Survey of State Courts, 2005 [United States]" [Computer file].ICPSR23862-v1. Ann Arbor, MI: Inter-university Consortium for Politicaland Social Research [distributor], 2009-01-15. doi:10.3886/ICPSR23862

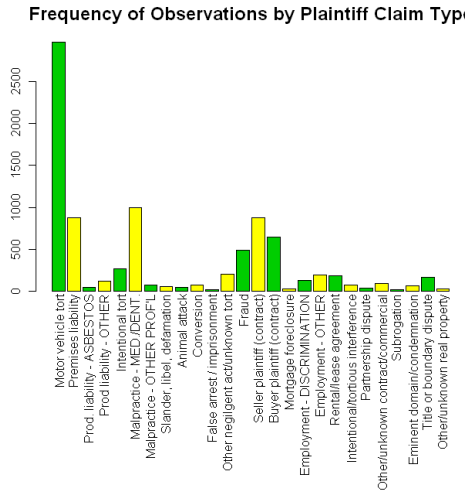
[12] Inter-university Consortium for Political and Social Research. "County Characteristics, 2000-2007 [United States]" [Computer file]. ICPSR20660-v2. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2008-01-24. doi:10.3886/ICPSR20660

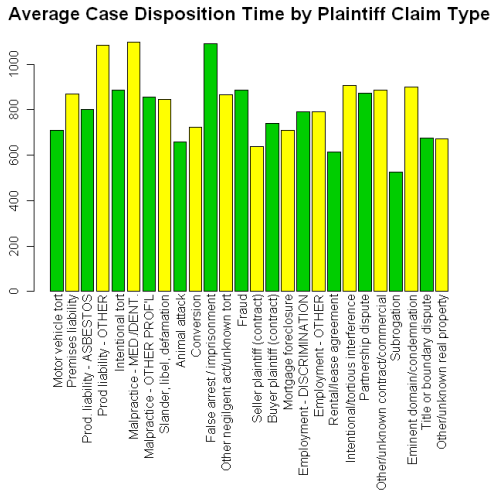
caseloads involves encouraging bench trials instead of jury trials underscores the potential influence of this factor on case disposition time.




On the outset, it is natural to think that the type of claims is a very influential determinant of how long it will take to litigate. More complex trials are expected to involve more witnesses, more litigants as well as more evidence and circumstances to consider. In the histogram presenting frequencies of observations by plaintiff claim type, we find (perhaps not surprisingly) that motor vehicle tort is most represented. Even though they frequently command the attention of the media, product liability and malpractice cases accounts for only 2.0% and 12.07% of observations in the dataset respectively. In the histogram presenting case disposition time by plaintiff claim type, we note that the types of trials that require the longest disposition period are product liability, medical/dental malpractice and false arrest/imprisonment respectively. Subrogation cases took on average the shortest time to litigate. It is useful to also notice that that the differential between the longest and shortest average disposition times is not extreme.



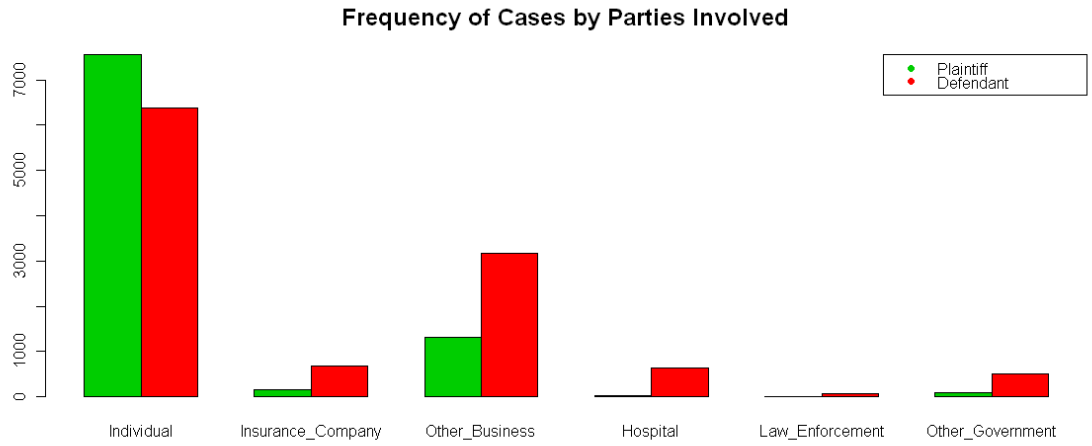

Variables regarding Plaintiffs and Defendants

There is sound reasoning behind the notion that the backgrounds of the parties involved should have a significant influence on the amount of time it takes for the dispute to resolve. Businesses might have greater resources than individuals to undertake a more robust litigation. Similarly, their financial strength can also afford businesses with the advantage of being able to endure more protracted trials. Besides access to financial resources, information about the plaintiff and defendant's backgrounds can also suggest the motives for pursuing litigation particular to certain parties.

Besides access to financial resources, the backgrounds of plaintiffs and defendants might also have a bearing on case disposition time as they suggest the incentives behind pursuing litigation particular to parties of certain backgrounds. Government interests might litigate especially aggressively because of the potential for class action suits that might be filed by those similarly affected by certain policies. Businesses on the other hand are motivated to be aggressive in their litigation because they stand to face further lawsuits and consumers abandoning their products in the event that a unfavorable precedent is established in a product liability trial.

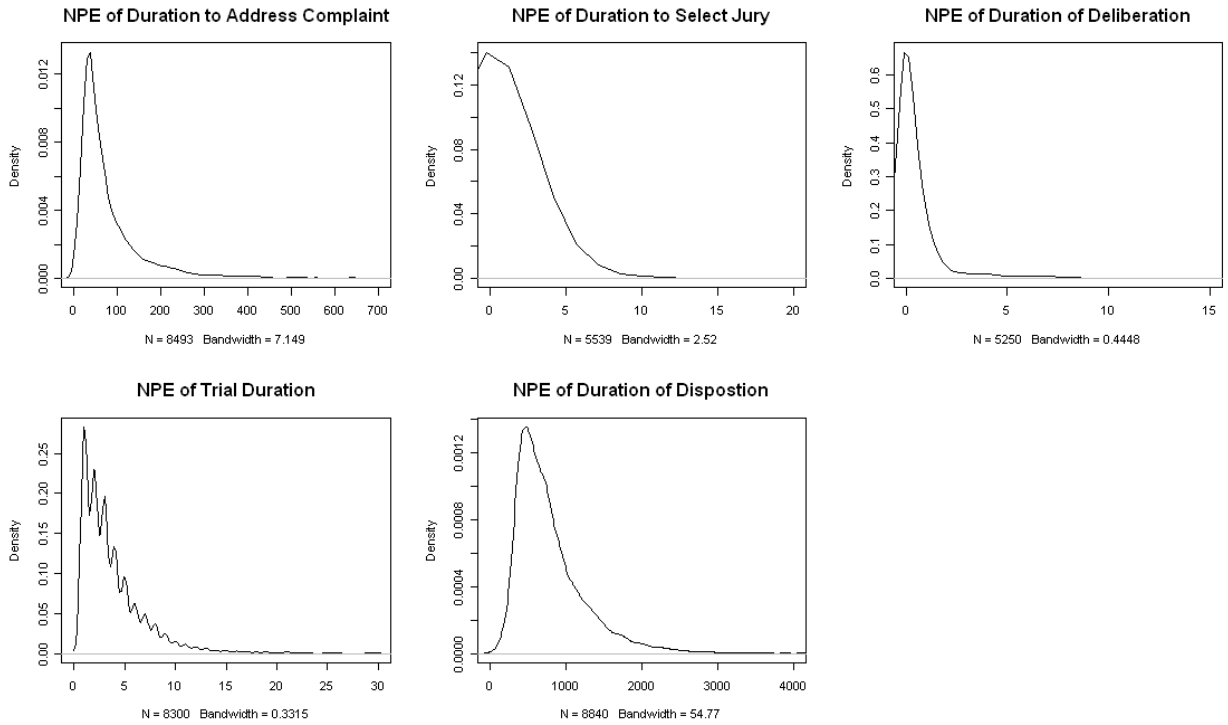
The data includes trial information pertaining to the number of plaintiffs and defendants who are individuals, insurance companies, hospitals, other businesses, law enforcement agencies or other governmental interests. Among both plaintiffs and defendants, we find that individuals are represented overwhelmingly, followed by "other government" and then insurance companies. Not including automobile torts, 75.35% of plaintiffs are individuals, 22.68% are businesses, 1.53% are government,

and 0.44% are hospitals. Similarly, individuals make up 46.62% of defendants, businesses 39.67%, government 5.58% and hospitals 8.12% if automobile torts are not included.




Variables regarding Case Milestones

Especially helpful in studying case disposition time is to examine the components that contribute to its duration. Variables in the dataset records the dates where a complaint is filed and replied with an answer, dates on which juries are selected and sworn, date on which deliberations began and verdicts or decisions were delivered, as well as the trial's start and end dates. These dates allow us to compute the time it took for instance to assemble the jury by measuring the time elapsed between the date jury selection begun and the date the jury was sworn. Case disposition time is defined to be the number of days between the filing of the complaint and the announcement of a verdict or decision. From the nonparametric density estimate plot of case disposition time, we find a likely mode in the region approximately between 400 and 420 days. The largest component in case disposition appears to be the time elapsed between the filing and addressing of a complaint. From its nonparametric density estimate, we find a likely mode in the region approximately between 40 and 60 days. It is also useful to notice that the period of deliberation is but a relatively small component of the overall case disposition period. From its density estimate, we find a likely mode in the region approximately between 0 and 2 days.




Variables regarding Arbitration or Mediation

That variables describing the receptivity and success of avenues for alternative dispute resolution should be included in this analysis should be expected given the usual attention that is typically conferred in any initiative to manage caseload. Indeed, a major proposition of the Civil Justice Reform Act is the burden that can be relieved from courts if the more cases are referred instead to mediation or arbitration. A cursory analysis as presented in the pie-charts below provides little evidence to suggest that ADR has lived up to the expectations of the Act's proponents. While 41.67% of cases were referred to ADR, less than 3% of those referrals concluded with the case being settled.

Variables regarding Case Characteristics

Miscellaneous variables that do not fit cleanly into a common theme are categorized under "Case Characteristics" by the Civil Justice Survey. These variables include indicators for whether personal injury or wrongful death was claimed, whether punitive damages were sought and whether the verdict was unanimous.

Variables regarding Awards, Award Amounts and Post-trial Relief

Data provided by the Civil Justice Survey on the type of damages and relief awarded as well as their amounts are not included in the reduced dataset that is used to build the model to estimate case disposition time. The rationale behind their exclusion is that the model this study is attempting to build should help estimate case disposition time on the outset of a trial; as such, post-trial relief and award amounts would not have been known.

Variables regarding County Characteristics

a) Geographic Identification Variables

In addition to variables that record state and county FIPS codes, the dataset also maintains information about the Census Region, Core Based Statistical Area and Metropolitan Division that counties belong to. Among these variables that identify the geographical location of counties, the Census Division Code is chosen. Most of the other variables either define location too broadly to be useful or relate more to how surveys by governmental agencies are conducted in those counties. Factors indicating state and county are excluded because the focus of the study is to look at specific aspects of those state and counties that contribute to case disposition time.

b) Variables regarding Components of Population Change

Only variables describing component changes to the size of the population in 2005 are included. Components of population change recorded in the dataset include figures for county resident population, births and deaths, net international and internal migration. Records of the number of housing units and the population living in group quarters such as nursing homes and military barracks can also be found under this category of variables. Fitting our model with the corresponding variables from other years in the period examined by the county study might lead to issues with serial or auto-correlation.

c) Variables regarding County Population by Age Group, Race and Sex in 2005

Only variables for the male and female resident population as well as variables for the median ages of males and females are included. Connections between case disposition time and the other variables in this category are even more far-fetched.

d) Variables regarding Labor Force Size, Employment and Unemployment

Variables in this section include the size of the labor force, the number of employed and unemployed persons, as well as the unemployment rate. All variables in this category are included.

e) Variables regarding County Typology

Variables in this section indicate whether the county falls under various categories designed by the Economic Research Service (ERS). The 2004 ERS Economic Type, for instance, are a set of indicator variables that characterizes a county's economy into six categories of economic dependence: farming-dependent, mining-dependent, manufacturing-dependent, federal or state government-dependent, services dependent and non-specialized. A county is defined to be dependent on a certain industry if the average annual labor and proprietor's income derived from that industry reaches percentage thresholds set by the ERS. Other variables indicate if the county can be characterized as areas of housing stress, low-education, low-employment, persistent poverty, population loss or nonmetropolitan recreation. Two of these variables, the 2003 ERS Rural-urban Continuum Code and the 2003 ERS Urban Influence Code are categorical variables that distinguish counties in metropolitan areas by the size of their population; nonmetropolitan counties on the other hand are distinguished by their degree of urbanization and adjacency to metropolitan areas. Indicator variables that characterize counties as areas of low education and areas of population loss are excluded because this information is reflected by variables in other sections of the dataset.

f) Variables regarding Major Sources of Income and Employment by Industry

This section of the source dataset reports personal incomes, compensations, full and part-time employment recorded according to the North America Industry Classification System (NAICS). Other variables profile the economy of the regional area and records county-level personal current transfer receipts. Variables used to fit this study's preliminary models include personal incomes in 2005, per capital incomes, contributions to government social insurance, components of earnings and employment by industry.

g) Variables regarding Federal Government Expenditures

Variables in this section records federal expenditures that are distributed to the counties in the 2004 fiscal year. These variables describe direct federal expenditures, obligations and assistance to the counties.

h) Variables regarding Local Government Revenue and Expenditures

Variables in this section profile per capita property taxes and local taxes. Also to be found are local government general revenue and direct general expenditure between 2001 and 2002.

i) Variables regarding Ownership of Residential Housing Units

These variables report the numbers of new privately-owned housing units authorized by building permits as well as the cost of their construction. Here, housing units can be a house, an apartment, a group of rooms or a single room intended for occupancy as separate living quarters. It is reasonable to

think that activity in the housing market will have an impact on the volume and complexity of property and contract law cases adjudicated in the county.

j) Variables regarding Health Profession Shortage Areas

Variables in this section indicate whether a geographic area, medical facility or population group within the county is facing a shortage of primary medical care, dental care or mental health care providers. A case can be made about the relationship between the deficiency of heath care providers and the nature of malpractice trials in the jurisdiction.

k) Variables regarding Medicare Enrollment

Variables in this section report the numbers of those who are aged or disabled enrolled in Medicare Part A or Part B. Because of their generalizabilty, it is convenient to only include the total numbers of those who are aged and/or disabled under Medicare Part A and Medicare Part B. As above, a meaningful relationship between these variables and trial disposition time is not far-fetched.

l) Excluded Variables

Because of the large numbers of missing values, variables on crimes reported to law enforcement agencies are excluded from the dataset that is used to build the model to estimate trial disposition time. Data on the percentage of votes casted for presidential candidates at the 2004 general elections are also excluded. Also excluded are data on land surface form typography and climate. For each of these sections of variables, it is difficult to establish a logical argument about the relationship between their individual variables and case disposition time. It is also difficult to make a case for how any potential relationship between these variables and disposition time might help in formulating policies to make civil justice more effective and efficient.

## 5. Modeling Delay

The large number of observations and variables presents a unique opportunity for the application of data-mining techniques to making sense of issues in the social sciences. The choice of variables in the final model was made after several iterations of testing and selection. For starters, qualitative judgments were made about the type of information afforded by individual variables and their relevance to the model for case disposition time that this study is trying to build. Examples of variables eliminated at this stage include those describing the county's climate, geography and voting record at presidential elections. From the remaining variables, those with large numbers of missing values were eliminated. Examples of variables removed from the reduced dataset include the percentage of various crimes reported to law enforcement authorities.

Thereafter, the remaining variables from the Civil Justice Survey of State Courts and County Characteristics were merged to form the working dataset. As is not surprising for a dataset of such size, the degree of missingness was an issue of concern. To this end, the multiple imputation[13] technique was applied. Clustering analysis, made through assessing results from the application of supervised and unsupervised statistical learning methods, showed no clear group structure within the data[14]. Issues of collinearity and heteroskedacity were also of concern. To this end, the study developed algorithms to loop through the dataset to flag individual variables and groups of variables that might display strong correlation. Algorithms were also developed to lend additional perspectives to our analysis by applying the t-test repeatedly to survey the relationship between case disposition time and individual variables.[15]

Finally, this study undertook iterations of stepwise forward regression to find a stable set of variables. Here, the selection criterion is the Akaike's Information Criterion (AIC). Throughout the computation of this study's findings, the dependent variable was scaled logarithmically so as to mitigate the skew-ness in the distribution of case disposition time.

The study's findings are presented in Table 1 below. Model 1 reports the model developed in Heise (1999) which was based on data found in the 1992 version of the Civil Justice Survey of State Courts. Model 2 fits the latter model on the latest data. While both of these models uses county dummies to represent county effects on case disposition time, their coefficient and standard errors are omitted as they are not informative. On the other hand, Model 3 uses the latest iteration of the Civil Justice Survey and replaced county dummies with variables representing specific county characteristics.

Table 2: Comparison of Models

[13] See Schafer, J.L. "Multiple imputation: a primer." *Statistical Methods in Medical Research* (1999) for a comprehensive explanation of multiple imputation principals and techniques. This study utilizes the "mice" package in R to perform multiple imputation.

[14] See Kaufman, Leonard, and Peter J. Rousseeuw. *Finding Groups in Data an Introduction to Cluster Analysis*. New York: Wiley (2005) and Hastie, Trevor J., Robert John. Tibshirani, and Jerome H. Friedman. *The Elements of Statistical Learning*. New York: Springer (2001) for explanation of statistical learning principals and techniques. Techniques explored by this study includes K-means, K-medoids, hierarchical linkage, model-based clustering and spectral clustering.

[15] More specifically, the algorithms regressed individual variables against groups of other variables within the same category. Another algorithm regressed individual variables in the two primary datasets against the dependent variable. The Anova procedure is used for categorical variables. Computations made by this study was done in R.

| | Model 1: Heise's model using 1992 data | | | Model 2: Heise's model using 2005 data | | | Model 3: Includes County Characteristics | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | | Std. Err | B | | Std. Err | B | | Std. Err |
| (Intercept) | 3.16 | ** | 0.07 | 6.47 | *** | 0.05 | 7.05 | *** | 0.31 |
| Prod. liability - Asbestos | | | | -0.20 | * | 0.08 | -0.17 | . | 0.09 |
| Prod liability - Other | 0.04 | | 0.05 | 0.26 | *** | 0.05 | 0.27 | *** | 0.06 |
| Intentional tort | | | | 0.01 | | 0.04 | 0.03 | | 0.04 |
| Malpractice - Med./Dent. | 0.21 | ** | 0.04 | 0.28 | *** | 0.03 | 0.31 | *** | 0.03 |
| Malpractice - Other | 0.15 | * | 0.06 | 0.10 | | 0.06 | 0.13 | * | 0.06 |
| Slander, libel, defamation | -0.08 | | 0.09 | 0.01 | | 0.07 | 0.01 | | 0.08 |
| Animal attack | | | | -0.12 | | 0.08 | -0.08 | | 0.08 |
| Conversion | | | | -0.06 | | 0.06 | 0.01 | | 0.07 |
| False arrest / imprisonment | | | | 0.15 | | 0.10 | 0.16 | | 0.12 |
| Other negligent act/unknown tort | | | | 0.02 | | 0.04 | 0.09 | . | 0.05 |
| Fraud | -0.03 | | 0.04 | 0.07 | * | 0.03 | 0.09 | ** | 0.03 |
| Seller plaintiff (contract) | | | | -0.23 | *** | 0.03 | -0.22 | *** | 0.03 |
| Buyer plaintiff (contract) | | | | -0.09 | ** | 0.03 | -0.07 | * | 0.03 |
| Mortgage foreclosure | | | | -0.52 | *** | 0.11 | -0.53 | *** | 0.11 |
| Employment - Discrimination | | | | 0.02 | | 0.05 | 0.04 | | 0.05 |
| Employment - Other | 0.07 | | 0.05 | -0.01 | | 0.04 | 0.01 | | 0.05 |
| Rental/lease agreement | | | | -0.22 | *** | 0.05 | -0.23 | *** | 0.05 |
| Intentional/tortious interference | | | | 0.11 | . | 0.06 | 0.18 | * | 0.07 |
| Partnership dispute | | | | 0.04 | | 0.08 | 0.08 | | 0.09 |
| Other/unknown contract/commercial | -0.01 | | 0.05 | 0.06 | | 0.06 | 0.05 | | 0.06 |
| Subrogation | | | | -0.27 | * | 0.11 | -0.31 | * | 0.13 |
| Premises Liability | -0.03 | | 0.04 | | | | | | |
| Toxic Torts | -0.08 | | 0.09 | | | | | | |
| (other tort) | 0 | | 0.04 | | | | | | |
| (other property) | 0.05 | | 0.06 | | | | | | |
| Plaintiff Not Individual | 0.01 | | 0.02 | -0.02 | | 0.02 | -0.04 | | 0.02 |
| Defendant Not Individual | 0.07 | ** | 0.02 | 0.08 | *** | 0.02 | 0.08 | *** | 0.02 |
| Total # Plaintiffs | 0 | | 0 | 0.00 | | 0.00 | 0.00 | | 0.00 |
| Total # Defendants | 0.01 | ** | 0 | 0.04 | *** | 0.00 | 0.03 | *** | 0.00 |
| Plaintiff Wins | -0.03 | * | 0.01 | -0.03 | * | 0.02 | -0.03 | * | 0.02 |
| Cross/Counter Claims | 0.1 | ** | 0.02 | 0.10 | *** | 0.02 | 0.11 | *** | 0.02 |
| Referred to ADR | 0.14 | ** | 0.02 | 0.08 | *** | 0.02 | 0.05 | ** | 0.02 |

| | | | |
|---|---|---|---|
| Includes County Characteristics | No | No | Yes |
| R-squared | Not available | 0.2876 | 0.2657 |
| R-squared (adjusted) | 0.34 | 0.27 | 0.25 |
| Std Error | 0.45 | 0.49 | 0.48 |
| # variables | Not available | 138 | 70 |
| F-stat | 44.07 | 13.99 | 20.88 |
| p-value of F-stat | Not available | < 2.2e-16 | < 2.2e-16 |
| # observations | 5432 | 4780 | 4040 |

In comparison to Model 2, we find that the adjusted and unadjusted R-squared statistics of Model 3 are slightly lower. This affirms the influence of county effects on case-disposition time; county effects can include the unique caseload management measures, trial protocols and discovery procedures undertaken by particular county courthouses. While the standard errors of both models are comparable, the F-statistic for Model 3 is higher than that of Model 2 by a substantial margin.

| Model 3 (cont'd): Geographic Identification Variables | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| Census Division Code | | | |
| New England | 0 | | - |
| Middle Atlantic | -0.26 | *** | 0.08 |
| East North Central | -0.65 | *** | 0.09 |
| West North Central | -0.76 | *** | 0.10 |
| South Atlantic | -0.73 | *** | 0.11 |
| East South Central | -0.31 | * | 0.13 |
| West South Central | -0.38 | *** | 0.10 |
| Mountain | -0.51 | *** | 0.13 |
| Pacific | -0.20 | * | 0.10 |

In the continuation of Model 3 here and below, we find that indicator variables for regional divisions are overwhelmingly statistically significant. Their coefficients also suggest a negative relation with the dependent variable. Here, the baseline category is New England. For example, the study's findings suggest that the Middle Atlantic generally has the logarithm of trial disposition times in their counties smaller than those in New England by 0.26. Therefore, this makes the Middle Atlantic the regional division with the second longest case disposition times in the nation. The regions with the shortest disposition times are the South Atlantic and West North Central; they are associated with a reduction in the log of disposition times by 0.73 and 0.76 compared to New England.

| Model 3 (cont'd): Variables regarding Components of Population Change | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| Percent population growth, 7/1/00 to 7/1/05 | -0.02 | * | 0.01 |
| Net International migration 7/1/04 to 7/1/05 | 0.00 | | 0.00 |
| Housing units, 7/1/05 | 0.00 | . | 0.00 |
| Percent housing unit growth, 7/1/2000 to 7/1/2005 | 0.03 | ** | 0.01 |

Estimates in the above table also seem to suggest that less active counties generally find longer trials adjudicated in their jurisdiction. Population growth is negatively correlated with (the logarithm) of case disposition time. This is corroborated by findings in the table below which shows that categorical indicator variables for micropolitian areas are positively correlated with trial disposition time. For instance, the logarithm of case disposition time in micropolitan areas adjacent to small metro areas is generally higher by 0.58.

| Model 3 (cont'd): Variables regarding County Typology | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| 2004 ERS Economic Type | | | |
| Mining-dependent | -0.21 | | 0.28 |
| Manufacturing-dependent | -0.34 | | 0.30 |
| Federal/state government-dependent | -0.29 | | 0.29 |
| Services-dependent | -0.42 | | 0.29 |
| Nonmetropolitan recreation | -0.28 | * | 0.13 |
| Housing stress | -0.07 | | 0.07 |
| 2003 ERS Urban Influence Code | | | |
| Small metro area of less than 1 million residents | -0.05 | | 0.09 |
| Micropolitan area adjacent to large metro area | 0.27 | | 0.59 |
| Micropolitan area adjacent to small metro area | 0.58 | | 0.50 |
| 2003 ERS Rural-Urban Continuum Code | | | |
| Counties in metro areas of 250,000 to 1 million population | 0.13 | . | 0.08 |
| Urban population of 20,000 or more, adjacent to a metro area | -0.42 | | 0.52 |

Another argument can be made that counties with a strong presence by basic industries such as construction and manufacturing litigate more quickly. The estimate associated with the variable for full and part-time employment by the construction industry is interpreted to mean that for every additional worker hired on either a full or part-time basis the logarithm of trial disposition time is expected to decrease by 2.57E-06. This negative correlation can be due to contracts and business interactions already established; judges in counties with a strong presence by particular industries are likely to be familiar with the intricacies of adjudicating cases arising from those specific industries.

| Model 3 (cont'd): Variables regarding Major Sources of Employment by Industry | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| Full-time and part-time private nonfarm employment by industry: | | | |
| Construction, 2005 | -2.57E-06 | | 1.93E-06 |
| Manufacturing, 2005 | -2.20E-06 | . | 1.15E-06 |
| Information, 2005 | 7.67E-06 | *** | 1.45E-06 |
| Management of companies and enterprises, 2005 | -2.07E-06 | | 3.48E-06 |
| Administrative and waste services, 2005 | 8.96E-06 | *** | 1.62E-06 |
| Health care and social assistance, 2005 | 3.08E-06 | * | 1.54E-06 |
| Full-time and part-time employment in government and government enterprises, by sector: | | | |
| Federal, civilian, 2005 | -2.61E-05 | *** | 4.31E-06 |
| Military, 2005 | -7.71E-06 | . | 4.16E-06 |
| Local government, 2005 | -5.05E-06 | * | 1.99E-06 |

The variables in the final model also shed light on how government involvement in the county affects trial disposition time. Variables relating to government involvement include full and part-time employment in government and government enterprises, federal direct loans made to counties and federal direct expenditures and obligations towards counties. In general, it appears that counties with more government employees are associated with shorter trials while counties that are the beneficiary of more government expenditure are associated with longer trials.

| Model 3 (cont'd): Variables regarding Federal Government Expenditures | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| Other federal assistance: Direct loans, fiscal year 2004 | 2.07E-10 | | 1.41E-10 |
| Federal direct expenditures or obligations: Other direct payments for individuals, fiscal year 2004 | 4.10E-09 | *** | 8.01E-10 |

As in the table below, variables regarding major sources of income all display statistical significance, although the directions of their relationships are mixed. On the one hand, there appears a negative relationship between case disposition time and contributions to government social insurance and farm proprietor's income. On the other hand, there seem to exist a positive relationship between the dependent variable and employer contributions for employee pension and insurance funds. In this context, each additional $1000 in employer contributions for employee pension and insurance funds corresponds to an increase in the log of case disposition time by 3.37E-07. Comparing coefficients, farm proprietor's income has the biggest effect on reducing case disposition time.

| Model 3 (cont'd): Variables regarding Major Sources of Income | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| Contributions for government social insurance: Employee and self-employed contributions for government social insurance ($1,000s), 2005 | -8.01E-07 | *** | 1.28E-07 |
| Components of earnings by place of work ($1,000), 2005: | | | |
| Supplements to wages and salaries: Employer contributions for employee pension and insurance funds | 3.37E-07 | *** | 6.28E-08 |
| Proprietors' income: Farm proprietors income | -2.10E-06 | *** | 5.30E-07 |

Variables regarding ownership of residential housing units also displayed strong statistical significance. From the type of residence, we can infer information about the resident's income. 2 family buildings can refer to duplexes, 3-4 family buildings to townhouses and 5+ family buildings to dorms and apartments. In this context, the argument can be made that townhouses are generally resided by professionals too busy to put up with long litigations. On the other hand, duplexes might be resided by families that are wealthy enough to litigate for protracted periods and apartments might be resided by enough families to pool together enough resources to endure long trial periods.

| Model 3 (cont'd): Variables regarding Ownership of Residential Housing Units | | | |
|---|---|---|---|
| | Estimate | | Std. Error |
| New privately-owned residential housing units authorized by building permits: | | | |
| Single family houses | 0 | | - |
| 2-family buildings (estimates with imputation), 2005 | 7.02E-04 | . | 3.76E-04 |
| 3-4 family buildings (estimates with imputation), 2005 | -2.56E-03 | *** | 5.56E-04 |
| 5+ family buildings (estimates with imputation), 2005 | 9.96E-04 | ** | 3.43E-04 |

As in the table below, variables indicating areas facing shortages of health care professionals also display statistical significance although the direction of their relationship are different. A plausible argument can be made that this difference is attributable to the difference in scope of their definitions for care. Mental health care has a narrower definition while primary care refers to a much larger array of care. Being more general, malpractice suites involving primary care might find a bigger range of pre-established due processes and discovery protocols that can expedite trials. Another argument can be made that since primary care refers to health care that is more basic, cases involving the provision of primary might also be less litigious.

| Model 3 (cont'd): Variables regarding Health Profession Shortage Areas | | |
|---|---|---|
| | Estimate | Std. Error |

| | | | |
|---|---|---|---|
| At least one area within the county designated as | | | |
| Geographic Area Primary Care HPSA, 6/21/07 | -8.66E-02 | * | 4.35E-02 |
| Geographic Area Mental Health Care HPSA, 6/21/07 | 1.47E-01 | *** | 4.23E-02 |

## 6. Conclusion and Policy Implications

This project sought on the outset to find determinants of case disposition time in state-level civil justice trials. A review of prior literature suggests that characteristics specific to the locale in which the case was adjudicated has a bearing on the length of time required to dispose the case. As such, focus of this research turned to identifying those local factors that contribute to case disposition time. Results from the study, it is hoped, will aid lawmakers and judicial administrators in their use of resources to manage caseload and in their efforts at making justice more efficient.

The preponderance of significant values in our final model among variables that describe case type and case characteristics should lead decision makers to seriously consider the potential for caseload management by having judges and courts specialize in specific types of trials. This idea is hardly novel, considering that precedents have already been set at the level of international law. The International Maritime Court and the International War Crimes Tribunal, for instance, adjudicates cases specifically related to maritime law and law relating to crimes committed in the course of combat. Judges that sit on these councils have expertise in these specific areas of law and have built their careers on their experience in these issues. This makes for compelling reasons that specialization will improve the efficiency and effectiveness in our nation's civil justice institutions.

The significance of local variables in the study's findings should also urge judicial administrators to guide their reform efforts in the context of local characteristics, particularly aspects of the local economy. Economic factors accounts such as the degree of involvement by various industries account for many of the significant variables in the final model. This makes intuitive sense as tort, contract and real property undoubtedly form the body of law most directly relevant to the functioning of the specific industry. Judicial administrators have compelling reasons to bear these relationships in mind; reform efforts can, for instance, be instituted along the lines of organizing streamlined due processes targeted at specific industries. Pre-trial case processing can also be expedited by having at the ready pre-established councils of expert witnesses and technology useful in reviewing evidence on disputes in particular industrial.

All in all, the study's analysis affirms prior research about the influence of county characteristics to case disposition time. Among county characteristics, the study points to economic factors as being

particularly influential. Further research can be done in the areas of exploring these relationships for while they are statistically significant, correlation does not imply causation.

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