

SOMEBODY'S WATCHING ME: EXAMINING THE IMPACT OF  
PROBATION OFFICER CASELOADS ON REVOCATION RATES

A Thesis

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by

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Abstract

of

SOMEBODY’S WATCHING ME: EXAMINING THE IMPACT OF  
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There are approximately one quarter of a million individuals on supervised probation in California. This is more than the number of people incarcerated in, or on parole from, state prisons, and equates to roughly one in every hundred California adults. As the most substantial means of correctional supervision in the state, probation is a crucial piece of public safety when policymakers consider potential changes to any statewide approach to criminal justice.

Prior research into probation as a system indicated several critical factors for predicting the likelihood of a probationer’s success or failure: education, criminal background, economic and family ties, race and ethnicity, and mental health. These important elements of a probationer’s life are significant predictors of whether the probationer will complete the term of his or her supervision. However, these are systemic realities that are often hard to solve, or even clearly identify, through targeted policy decisions.

However, there are other factors entirely within reach of policy intervention. One example is the use of standardized or well-defined and appropriate caseloads for probation officers. Historically, researchers have explored the impact of probation officer caseload sizes on outcomes and found mixed results, mostly because of the unique circumstances of each study.

My research utilizes a regression analysis of probation revocations in California’s 58 counties over eight years between 2010 and 2017. The primary focus of the regression is a

comparison of the revocation rate and the overall caseload size in each county, although I also examined other factors such as county racial demographics, education attainment, and economic metrics. Additionally, I provide additional context and insight into the implications suggested by the regression results and potential policy avenues to improve probation in California.

I found in my regression results that population density, the county's median age, the ratio of probationers to probation officers, and the level of state funding provided through the California Community Corrections Performance Incentive (SB 678) program all impact a county's probation failure rate at statistically significant levels. Comparing against existing literature and noting the limitations of this particular study, I find that careful management of differentiated caseloads based on an offender's potential risk to re-offend and increasing financial incentives to counties are beneficial policy actions to reducing the likelihood of probationers failing the terms of their supervision.

\_\_\_\_\_, Committee Chair  
Robert Wassmer, Ph.D.

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Date

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## TABLE OF CONTENTS

Page

Acknowledgements .....	vii
List of Tables .....	x
List of Figures .....	xi
Chapter	
1. INTRODUCTION .....	1
A Background on Probation .....	1
The Origins and Purposes of Probation .....	3
Tough on Crime, Strict Compliance, and Back to Rehabilitation .....	6
California's Criminal Justice Reforms and the Impact on Probation .....	11
2. LITERATURE REVIEW .....	15
General Factors that Impact Probationer Success .....	15
Racial Bias and Implications for Probation Outcomes .....	21
Mental Health Issues and Probation .....	25
Utilizing Caseload Size as a Factor Affecting Results .....	26
Caseloads, Officer Morale and Retention, and the Impact .....	39
Unmanageable Specialty Caseloads and Officer Stress .....	42
Summary .....	44
3. VARIABLES, DATA, AND MODEL .....	46
The Dependent Variable: Probation Failure Rate .....	46
The Regression Model .....	49
Variable Descriptions and Expected Impacts .....	51
Variations in the Data .....	53



Limitations of the Study .....	58
4. REGRESSION ANALYSIS .....	60
Multicollinearity Testing .....	60
Regression Methodology .....	62
Regression Results .....	64
Summary of Findings .....	71
5. CONCLUSION .....	76
Demographic Implications .....	77
Economic Implications .....	81
Law Enforcement Policy Implications .....	82
Suggestions for Future Research .....	86
Final Comments .....	89
Appendix A. Simple Correlation Coefficients Between all Explanatory Variables .....	91
References .....	94

## LIST OF TABLES

Tables		Page
3.1	Variable Description and Expected Effect Indicator .....	52
3.2	Descriptive Statistics .....	54
3.3	2017 Revocation Rates by County .....	56
4.1	Variance Inflation Factors of the Explanatory Variables .....	62
4.2	Fixed Effects Panel Data Regression Results Using Statewide Total Revocation Rate as Dependent Variable (Robust Standard Errors) .....	65
4.3	Statewide Prison Revocation Rate .....	66
4.4	Statewide Jail Revocation Rate .....	67
4.5	Statewide Prison Revocation Rate for New Offenses .....	68
4.6	Statewide Jail Revocation Rate for New Offenses .....	69
4.7	Comparison of Statistically Significant Variables .....	70

## LIST OF FIGURES

Figures	Page
1.1 California Probation Population, 1966–2017 .....	9

## CHAPTER 1

### INTRODUCTION

There are approximately one quarter of a million individuals on supervised probation in California. This is more than the number of people incarcerated in, or on parole from, state prisons, and equates to roughly one in every hundred California adults. As the largest means of correctional supervision in the state, probation is a crucial piece of overall public safety matters when policymakers consider potential changes to any statewide approach to criminal justice. A critical metric for probation is working to ensure that those on supervised probation are successful in completing their sentences. When individuals fail, they are often “revoked” to prison or jail, a more costly punishment with numerous negative consequences.

Given limited resources, the question of how to most effectively increase probation success is a crucial question for policymakers. My analysis seeks to examine two distinct policy choices: (1) a county-level determination on caseload sizes, and (2) a statewide incentive-based funding formula for the potential impact average caseload sizes have on the probation revocation rate in each of California’s 58 counties. This thesis presents a regression analysis of county probation revocation rates between 2010 and 2017 and examines the relationship between several county demographic, educational, and economic factors and these two policy choices.

#### **A Background on Probation**

Probation is the most significant single component of California’s criminal justice system. Moreover, while it is one of the cheapest forms of criminal punishment and California’s probation population is smaller than other states per capita, the sheer size of the state necessitates that probation affects many people and provides numerous opportunities for assessment and evaluation. However, as probation is a responsibility of California’s 58 separate counties, some probation departments struggle to receive adequate funding to address their probationers’ needs

and must necessarily allocate limited resources to the best of their ability. Given that each county has unique concerns, there is no statewide standard for an established ratio between a single probation officer and several probationers.

As a percentage of the state's adult population, California ranked 43rd of the 50 states in the number of adults on probation per 100,000 adult residents in 2016. However, given the size of California's population, the state still had the third-largest population of probationers in the United States, behind only Georgia and Texas. In 2016, approximately 252,000 supervised probationers reside in California, with roughly one in every hundred adult residents currently serving a probation term (Kaeble, 2018; Grattet and Martin, 2015). For perspective, California's population of adults on probation terms is roughly half of Wyoming's total population.

Among the states, California is unique in that it does not have a formal state agency associated with the oversight of probation. Instead, the state's 58 individual counties individually supervise California's probationers through county-run departments (Petersilia, 1998). With the largest population of California's four forms of correctional supervision—the others being jail, prison, or parole—probation is the most likely form of supervised criminal justice involvement utilized on Californian criminal offenders. Despite the large population served, California does not have a singular, unified focus on probation efforts and instead primarily allows counties to prioritize resources on probation as they deem appropriate.

According to Grattet and Martin (2015), the cost associated with supervising a probationer is roughly \$12 per day, which is considerably cheaper than costs for the state to supervise parolees or house prisoners, or for counties to jail offenders. One of the principal reasons for probation's relative affordability is that it requires significantly fewer officers and support staff than necessary to operate jails or prisons, where the inmate-to-correctional officer ratio was as low as 3.9:1 in 2016 nationally (Zeng, 2018). Despite its relative affordability,

probation remains a billion-dollar-a-year issue that touches the lives of many Californians.

Policies affecting probation have considerable financial and human costs, and the question of how the public provides funding and procedural direction for probation is essential.

One of the many questions associated with this complex subject is how to determine the appropriate level of supervision for probationers. As a metric, one way to quantify this question is to look at the ratio between officers and offenders. Intuitively, the ratio does not need to be as low as the four-to-one ratio of correctional officers to prison and jail inmates, who require twenty-four-hour supervision and face much stricter levels of control. However, what is an appropriate ratio? Do larger ratios, which suggest less intensive monitoring of an individual probationer, result in increased rates of crime or probation failure, when offenders violate the terms of their probation and courts send them to jail or prison? If procedures require an officer to supervise and rehabilitate too many probationers, will the intended outcome of probationary supervision—reintegration into the community and non-criminal behavior—fail? The question for policymakers, then, is what supervision ratio is appropriate?

In this chapter, I explore the origin of organized probation, examine some of the more prominent definitions and theories of its purpose, and chart its development from a method of lenient social counseling to a stricter form of regular supervision, and explore some of the more current trends that suggest a return to probation's rehabilitative roots. I also consider significant reforms to California's broader criminal justice system in the last decade and how those reforms have impacted probation across the state.

### **The Origins and Purposes of Probation**

The use of imprisonment as a punishment in western culture is a relatively new idea. Several monarchies began using incarceration expressly as a sanction for certain crimes rather than the previous legal prescriptions that called for maiming or death beginning in the sixteenth

and seventeenth centuries in continental Europe and England (Langbein, 1976). Before that, imprisonment and confinement served the more practical purpose of detaining individuals before and during the trial, lest the accused flee before losing a hand or a head as required by a harsh sentence. Probation is an even newer concept for addressing criminal action.

Probation likely developed informally out of practices involving the total suspension of sentences. Langbein (1976) explains that common law courts in England, building from judicial grants of dismissal, began releasing petty offenders under the condition that they offer a guarantee to the court to a specific action. These actions included things like appearing in court at a future date or maintaining “proper” behavior for an enumerated duration, with an associated penalty presented at release for failure to comply. The first appearance of a more formalized form of probation came in the middle of the 19th century.

Many historians identify Boston shoemaker John Augustus as the creator of the modern concept of probation (Labrecque, 2017; Diana, 1960). Beginning in 1841, Augustus posted bail for manifold minor offenders who lacked the resources to pay their fines. Augustus subsequently supervised these individuals, assisted them in finding work and stable living conditions, and testified on their behalf when they returned to court for sentencing (Labrecque, 2017). As a result of Augustus’ enduring efforts, the Massachusetts legislature began codifying similar practices: By 1869, Massachusetts provided agents to represent children’s interests, search for alternative placements other than jail, and supervise unincarcerated children after sentencing (Sacramento County, n.d.). Massachusetts enacted a formalized probation law and a staffed system with officers in Boston in 1878, and statewide in 1880. By 1933, most states had both juvenile and adult probation laws. However, even by 1950, Mississippi, Nevada, New Mexico, Oklahoma, and South Dakota still lacked laws establishing adult probation systems; only by 1960 did all 50 states and the federal government have laws and procedures for adult probation (Diana, 1960;

Labrecque, 2017). As a formal system of responding to crime and addressing criminals, probation is only around 150 years old. At its outset, and through the early years of its development and expansion, the legal system perceived and used probation in a largely rehabilitative capacity.

Writing a review of probation literature in 1960, University of Pittsburgh sociology professor Lewis Diana, an expert on criminal justice and juvenile delinquency, found the view “of probation as either case work or [an administrative process], or a combination of the two” to be the most common perception among professionals working in the field. As a result, Diana (p. 197) defines the concept of probation:

*[A]s the application of modern, scientific case work to specially selected offenders who are placed by the courts under the personal supervision of a probation officer, sometimes under conditional suspension of punishment, and given treatment aimed at their complete and permanent social rehabilitation.*

The intention of rehabilitation, reintegration, and maintaining community relationships are prominent in this view of probation. Current probation officer Mandeep Bhangoo agrees with this perspective, arguing that the end goal of probation is to successfully integrate defendants into society (personal communication, November 21, 2019). By avoiding incarceration, offenders can retain employment, continue to support any dependents financially, make ongoing restitution payments to victims, attend counseling or other programs available in the community, and otherwise participate in society. Imprisonment, the alternative sanction, removes many of these options, distances the offender from society, and requires a more significant investment of public resources while detaching the individual from the community economy that, in most cases, the offender will inevitably return.

Importantly, this is not the only definition of probation. Diana (1960, p. 190) also estimates that the best representation of the public perception of probation is a form of



punishment with “a measure of leniency,” a reduced or lesser penalty that recognizes the elements of a given individual and his or her criminal actions. These two different perspectives of the role of probation persist and add complexity to a process initially intended to serve reformatory, rather than punitive, purposes.

Depending on the circumstances, the media has portrayed the view of probation as a lenient form of punishment as both a positive and negative: The public viewed the 2013 sentencing of teenager Ethan Couch to 10 years of probation following a conviction for drunk driving that resulted in four deaths as an injustice stemming from Couch’s wealth and privilege (Voorhees, 2013). In this view, Couch escaped proper punishment via the lenient alternative of probation because of an inequitable system. Conversely, other media examples highlight probation initiatives intended to “keep the youthful offenders out of locked facilities without risk to the community,” and stress the rehabilitative and social reform aspects of probation (Wilson, 2018). Because there are myriad views on the ultimate purpose of probation, changes in public attitudes regarding criminal punishment have resulted in changes to the practical operation of probation programs.

### **Tough on Crime, Strict Compliance, and Back to Rehabilitation**

California recognized probation as a criminal justice process in 1903, amending Section 1203 of the Penal Code to allow a court to place a defendant on probation. In 1923, the Legislature amended Section 1203 to establish limits on the types of defendants and offenses eligible for probation (Melnick, 1962). By 1962, California law specified a complicated scheme prohibiting specified offenders from receiving probation, including individuals with one or two prior felonies—dependent on the nature of those prior felonies—and those convicted of murder, burglary, or arson.

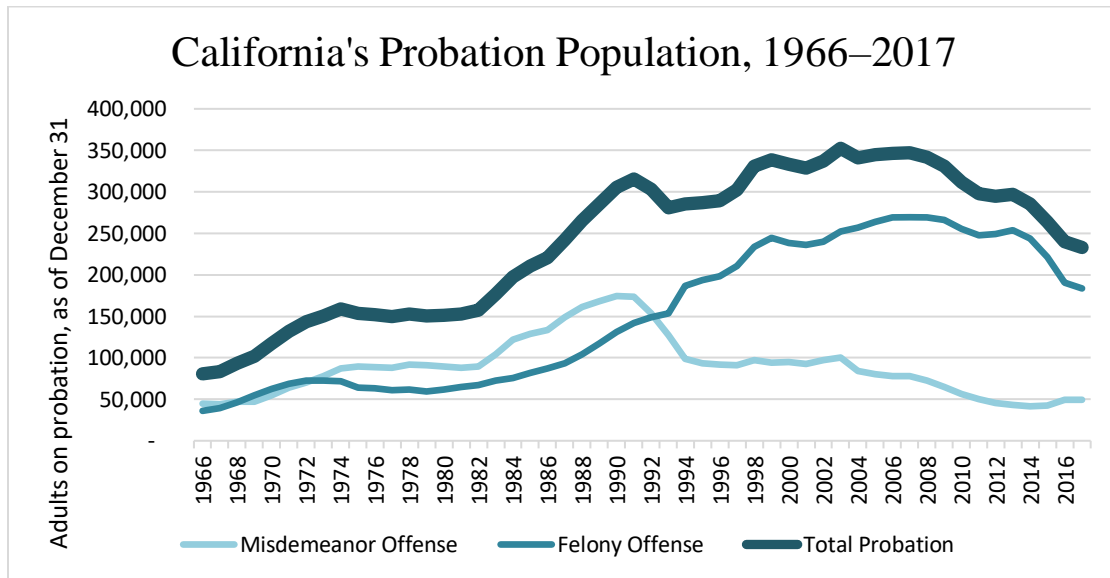
According to Melnick (1962), many of these restrictions on probation eligibility in California came despite little factual evidence that such constraints promoted deterrence, or that excluded categories of criminals were less likely to rehabilitate than other offenders. The creation of these legal prescriptions did not arise as a response to courts routinely releasing violent murderers and rapists into society on probation terms following their convictions. Using surveys of judges and probation officers, Melnick found that only a tiny percentage of offenders made legally ineligible for probation by these restrictions were suitable for probation regardless: Total probation sentences mostly held constant before and after state legislatures began rendering new categories of offenders and crimes ineligible for probation. Regardless of the effectiveness in changing sentencing practices, though, these legal limitations represent part of the gradual change in societal views on criminal justice occurring in the middle of the twentieth century.

By the early 1970s, criminal justice literature began to suggest that rehabilitative efforts in prisons and through sentences of probation were not resulting in measurable reductions in crime or on recidivism (Labrecque, 2017). This literature also coincided with a period of social unrest and a noteworthy alignment of conservative and liberal concerns regarding crime: Conservatives saw judges as too lenient in sentencing and liberals were concerned with inequitable judicial discretion (Cullen and Gendreau, 2000). These factors all contributed to the beginning of the “tough on crime” era in the United States that had significant impacts on prison, parole, and probation.

In this “tough on crime” period, prison populations began to grow because of increased sentence enhancements, mandatory minimum sentences, and legal concepts such as “three strikes” laws that punished repeat offenders with lengthy sentences. At first glance, growth in the number of incarcerated Americans might suggest a reduction in the number of individuals on probation; presumably, with more people in jail, there would be fewer serving the alternative

sentence of probation in the community. However, the population of probationers nationally also grew significantly during these years: In 1980, there were approximately one million adult probationers across the country; within twenty years, that number stood at four million, a 400 percent increase (Labrecque, 2017). California similarly experienced significant growth in its probation population, particularly in the 1980s, as shown below in Figure 1.1. According to the California Department of Justice (2017), California's adult probation population grew from approximately 151,000 individuals in 1980 to 306,000 by 1990, a 103 percent increase. This massive increase in the number of both incarcerated and supervised individuals stemmed from increasingly strict enforcement and sentencing associated with nation-wide campaigns such as a "war on crime," and the subsequent "war on drugs." The broad tough on crime period saw an increase in both traditional punishment like imprisonment but also included the issuance of more sentences for terms of probation.

**Figure 1.1: California Probation Population, 1966–2017**



SOURCE: Table 41 from *Crime in California 2017*: California Department of Justice (2018).

Operationally, the functional practice of probation also began to shift away from the socially rehabilitative case management frame that it had been under Augustus. Instead, the aim of probation became one of supervision and control with practices like mandatory check-ins, random drug tests, and adherence to making restitution payments (Labrecque, 2017; Taxman, 2012). Failure to meet any of these requirements could result in the revocation of a grant of probation and the resumption of a jail or prison sentence.

These trends also occurred during a time when the use of misdemeanor and felony probation sentences began to shift dramatically. As shown in Figure 1.1, beginning around 1990, the use of misdemeanor probation sentences fell considerably. Misdemeanor probation, like felony probation, can involve jail terms, the imposition of fines, community service, counseling, or other legal prescriptions. However, misdemeanor probation sentences are “supervised by the court, not the probation department,” and offenders “are held accountable by the court” (San Bernardino County Probation Department, n.d.). County probation departments supervise felony

probationers who have committed more serious offenses. Therefore, not only did the overall number of probationers in California expand throughout the 1980s, but, beginning in 1990, the share of offenders under the jurisdiction of county probation departments began an equally rapid increase. Currently, most of California's probationers are felony probationers.

The rise in probation populations coincided with the stagnation or decline of county funds allocated towards their probation departments (DeMichele, 2007). This limitation on resources, a growing number of probationers, and the shift in probation objectives away from the time-intensive work of rehabilitation and towards a more manageable effort of cursory supervision contributed to a steady increase in the number of individual probationers assigned to each officer. Unable to increase the number of officers commensurate with the number of probationers, counties require that each officer be responsible for more offenders. A higher caseload results in less time spent with each offender, with the focus shifting from counseling to compliance monitoring. It is much easier and faster for an officer to require the probationer to travel to an agency headquarters for a random drug test than to dedicate a significant amount of time and effort operating more like a case manager and addressing the needs of the probationer in finding employment or accessing healthcare and other community resources.

Presently, there appears to be a broad political consensus across liberal and conservative leaders who now advocate for the reversal of many of the "tough on crime" policies (Kim, 2018). This trend stretches across levels of government, evidenced by both state and federal reforms like California's Proposition 47, which reduced the penalties for specified crimes, and the passage of the federal Formerly Incarcerated Reenter Society Transformed Safely Transitioning Every Person Act, which increased credit earning opportunities for federal inmates, among other changes (Arango, 2019; Head, 2019). New criminal justice reform efforts have seen reductions in mandatory minimums, the elimination of sentence enhancements based on elements like the

involvement of a firearm in a crime, and increased opportunities for release from prison through instruments such as credit earning for completion of educational, counseling, or vocational programs. Coinciding with this bipartisan movement, there are growing calls for probation to move away from the methods of monitoring and strict compliance and towards using evidence-based intervention and rehabilitative practices to reduce recidivism and improve outcomes.

One essential element in enabling these effective practices is to change the relationship between officer and probationer in order to “balance the goals of care... and control” (Labrecque, 2017). Because of the significance of the relationship between officer and probationer, the topic of caseload and workload is worth study. Accepting that fiscal constraints require that a single probation officer must supervise several probationers, does the size of the officer’s caseload allow for the development of a deep enough relationship to achieve rehabilitation? If the policy expectation of probation officers is that they actively engage with probationers on deeper levels than essential behavioral compliance monitoring, California counties should carefully consider how they allocate resources to ensure that there are enough officers to develop these connections to provide appropriate levels of care and control.

### **California’s Criminal Justice Reforms and the Impact on Probation**

California has engaged in several significant reforms to its criminal justice system in the past decade. In this section, I explore three of these significant changes.

#### 2009 — *The California Community Corrections Performance Incentives Act*

In 2009, California launched a pilot program jointly through the Judicial Council of California and the Chief Probation Officers of California in Napa, San Francisco, Santa Cruz, and Yolo counties to incorporate evidence-based practices and risk and needs assessments into adult felony probation sentencing and supervision. The four pilot programs demonstrated success at sending fewer probationers to prison and jail than other counties through “revocations,” the

termination of their probation terms due to violations or commission of new crimes (Criminal Justice Services, 2019). This pilot resulted in the passage of the California Community Corrections Performance Incentives Act (SB 678), which established a formula to provide counties additional funding based on the number of individuals on probation that county courts kept from out of state prison through utilizing other forms of punishment like mandatory drug treatment, local jail terms, or lengthened probation.

The formula resulted in considerable state savings: Statewide, counties diverted approximately 6,000 probationers from new prison terms in 2010, the first full year of implementation. Over five years, the state saved some \$934.6 million in prison-related costs and distributed \$574.6 million back to the counties (Judicial Council of California, 2019a) to spend on “evidence-based community corrections practices and programs,” including “providing more intensive probation supervision” (SB 678). Considering the expenses and social justice concerns associated with mass incarceration, SB 678’s passage and implementation demonstrated a shift in thinking about probation. State policy dictated that counties take additional responsibility in their probation populations and provided financial incentives to support probation departments’ efforts to keep offenders in their communities and out of prison.

#### 2011 — Public Safety Realignment

Another major criminal justice reform in California was “realignment,” the word used regarding the massive shift of responsibility from the state to California’s 58 counties. The 2011 public safety realignment occurred because of several federal lawsuits and the resulting court decision that required California to reduce its statewide prison population to 137.5 percent of the system’s design capacity. At the time of realignment, the state’s prisons held populations around 180 percent of the designed capacity (Golaszewski, 2011). The impact on probation was significant: Between 2011 and 2015, some 80,000 offenders left prison or state parole supervision

and shifted to county probation departments (Misczynski, 2012). While SB 678 incentivized counties to send fewer individuals to prison, counties also became increasingly responsible for supervising offenders previously under state jurisdiction through prison and parole supervision. The increase in probation populations occurred through two mechanisms.

Before realignment, the California Department of Corrections and Rehabilitation released certain eligible prisoners—namely those convicted of crimes not considered violent, serious, or sexual—to state parole supervision after release from prison. After realignment, these individuals became eligible for “post-release community supervision,” a form of supervision handled at the county level by probation departments. Additionally, certain felony offenses carried “split sentences,” where the sentence included both a jail term and a subsequent period of supervision under the county probation department (Nguyen, Grattet, and Bird, 2017). These two new caseloads became additional responsibilities for California counties on top of “traditional” felony and misdemeanor probation populations, comprised of individuals not sentenced to prison or jail.

#### 2014 — Proposition 47

Lastly, the 2014 voter initiative Proposition 47 reclassified several offenses for theft and drug possession from felonies to misdemeanors (Judicial Council of California, 2019b). The felony reclassification resulted in a considerable decrease in both felony and misdemeanor probation populations. In a survey of 12 counties, Nguyen, Grattet, and Bird (2017) found that the average of new felony probation cases fell by some 30 percent in the year following Proposition 47’s passage and that misdemeanor probation cases also fell, suggesting that overall enforcement of these offenses declined.

Altogether, these three changes and other criminal justice reform efforts in California have dramatically altered the state’s probation landscape. The 2009 change of SB 678 closed one pipeline to prison and monetarily incentivized counties to keep offenders out of formal



incarceration, broadening the overall statewide probation population. Realignment in 2011 expanded the number of probationers even more dramatically by changing the release process for roughly half of the state's prisoners: Instead of falling under the authority of statewide parole, many individuals return to their counties of residence and become the responsibility of local county probation departments. Proposition 47, a statewide initiative, also continued in the same vein as earlier reforms, but reduced California's overall probation population by reclassifying offenses. While the trend towards reducing the harsh penalties of earlier decades continues, the impacts to California's extensive probation system are complicated: Where one reform may reduce existing penalties that sentence offenders to prison and jail and possibly expand the number of probationers, another may potentially reduce punishments further and decrease the probation population.

For its relatively short existence, probation has seen considerable change. What began in America as one individual's crusade to ensure children escape the confinement of prison and have opportunities for rehabilitation and reform transformed into a stricter form of compliance monitoring, only to somewhat recently begin to reverse course away from its more punitive practices. Simultaneously, California has seen tremendous criminal justice reforms that have significantly impacted probation populations and the types of offenders that the law requires probation officers to supervise. In the next chapter of this paper, I will explore the literature on probation caseloads, demographics, and factors that affect probationer success and failure. Specifically, I will focus on those studies that have examined the role that officer-to-probationer ratios and caseload sizes play in determining outcomes.

## CHAPTER 2

### LITERATURE REVIEW

In this chapter, I provide a review of the existing literature on factors that affect probation success and failure—with success measured as to whether probationers do not violate the terms of their probation and complete the duration of their sentence. To begin, I will review common sociological and demographic characteristics researchers identify as being significant in predicting the odds of a probationer completing their supervision term. An assessment of predictive characteristics is essential, as I include many of these factors as control variables when exploring the specific impact of caseload size. I will also highlight several particularly fundamental characteristics, including race and ethnicity, the nature of the probationer's community, and the probationer's mental health.

I spend the bulk of this chapter reviewing the existing literature that explored the relationship between caseload sizes and the impact that high- or low-ratio caseloads have on probationer outcomes. I break this topic down further by exploring several survey-based studies that investigated the link between probation *officer* mental wellness, stress, and turnover, the impact of those factors on caseload determination, and what the findings suggest policymakers should prioritize.

#### **General Factors that Impact Probationer Success**

Studies seeking to determine and categorize the significant factors that affect the “success” or “failure” of sentenced offenders to rehabilitate and return to society stretch back to the early days of formal alternative sanctions like probation and community supervision. In 1925, Wisconsin's State Board of Control asked the University of Wisconsin's Sociology Department to explore the effectiveness of the state's parole and probation systems. As part of this request, the University examined a cohort of parole “successes” and “failures,” with successful

individuals defined as those who did not return to state prison or the Wisconsin Reformatory for Men. The study found several factors likely to affect the “success” of individuals released from prison or the Reformatory: age, marital condition, use of alcohol, previous record, previous occupation, commitment offense, sentence length, length of parole, institutional behavior, grades in the reformatory school, place of residence before commitment, type of community paroled to, occupation on parole, and monthly earnings while on parole (Witmer 1927).

These factors remain integral for modern consideration of parole suitability. The California Board of Parole Hearings (n.d.) considers the presence of juvenile records, social history, criminal history, age, future plans, and institutional behavior when considering inmates for parole. Existing literature and national policy practices also reinforce the continued consideration of these factors when parole boards make decisions (Caplan, 2007). The continued use of similar demographic factors for nearly a century when assessing whether a convicted criminal is likely to “succeed” in his or her supervised release into the community suggests their perennial importance as control variables when considering options in parole and probation.

Of course, parole and probation are different forms of punishment, and the characteristics of individuals under the two sentences are not going to be the same. For one, the types of crimes associated with the two punishments are often very different. Additionally, an individual released from prison is probably different from someone briefly incarcerated in a local jail or potentially never detained for any significant length of time. Similarly, the factors used to estimate and assess success and failure are not going to be the same. Institutional behavior would not be a useful criterion when examining the probation population, because a relatively small percentage of this group is likely to have a record of behavioral infractions within a jail or prison. However, several studies examining the critical sociological characteristics specific to probation populations

found that many factors associated with probation success or failure overlap with previously mentioned parole factors.

Morgan (1994) examined a Tennessee probation sample population of 266 cases between 1980 and 1989 and utilized a chi-square test on probation outcome and multiple independent variables. A chi-square test is a type of analysis applied to a set of categorical data to determine whether the included variables are independent of each other. For example, a researcher may use chi-square analysis to determine whether a probationer's age, controlling for other factors included in the data and considered in the analysis, affects whether the probationer completes their probation term. A chi-square analysis could suggest that as a probationer's age rises, his or her odds of failing probation declines.

Her study sought to answer twelve hypotheses, including the assumption that females will be more successful than males, whites will be more successful than blacks, the higher the hourly wage of the probationer the more likely they will achieve probation success, and that married offenders will be more successful than unmarried probationers. As with Witmer's earlier examination of factors associated with successful parole, Morgan's independent variables encompassed several socio-economic characteristics.

In her conclusion, Morgan (1994) noted that her findings implied that the assumptions behind all twelve of her hypotheses were valid; however, she did not find that all relationships were statistically significant and could not validate all twelve. When scrutinized, she found five statistically significant variables in predicting probation outcome: (1) sex, (2) marital status, (3) work status, (4) prior felonies, and (5) conviction offense. Citing previous research, Morgan emphasized the importance of interpersonal "commitment as an element of the social bond," (p. 352), through institutions like marriage and employment, as beneficial towards successful completion of probation terms. Individuals without secure family connections, employment, and

who have consistent histories of deviance with extensive criminal records are the most likely to have “nothing to lose” and risk noncompliance with probation rules.

Sims and Jones (1997) also examined probationer characteristics, utilizing a sample of 2,850 North Carolina felony probationers between July 1 and October 31, 1993. They also used a chi-square analysis and categorized probationer information into two models: (1) background variables and outcomes, and (2) initial client assessment scores. The first model included necessary demographic and select historical information, including the probationer’s race and gender, age, category of crime, size of the county of arrest, and the probation outcome and the given reason for probation termination. The second model included more social factors, including employment history, the number of address changes in the last year, whether the probationer had an identified drug or alcohol problem, current marital status, and education level.

They observed similar outcomes to Morgan’s (1994) earlier study, with marital status a statistically significant positive indicator of probation success, while precarious employment and the number of past convictions predicted higher rates of failure. Their study provided additional insight by identifying that a probationer with fewer home address changes, a higher level of education, and financial stability—regardless of employment—was less likely to fail probation than a probationer with steady employment or in a marriage. They also found that probationers aged 24 years or older and those without drug problems were significantly less likely to fail the terms of their probation. The finding suggests the continued importance of social connection but implies that there are likely myriad measures for such connections: Financial stability, even when coupled with a string of jobs or inconsistent employment, is predictive of success.

Discussing their findings, Sims and Jones (1997) noted that a quarter of the probationers in their study failed because of “technical violations [like] testing positive for drugs” (p. 325), while only 13 percent of the probationers committed new crimes, including drug and property

offenses. Referencing earlier studies, they observe that prior research suggests that a significant portion of probation “failures” stem from drug and alcohol addictions. Because of that, they argue that probation departments and agents should view a probationer’s attempts to stop the use of addictive substances with the expectation that there will be occasional relapses and focus the probationer towards recovery and treatment options rather than reincarceration. They believe that such a policy shift would do well to dispel “the myth that the majority of probationers or parolees pose a safety threat to local communities” (p. 327), potentially result in less crowded jails and prisons, and serve to better treat the underlying cause of an individual’s criminality rather than continually cycling the person through the justice system. This type of approach to probation, while harmonious with John Augustus’ perspectives, does rely on a certain level of trust and understanding between officer and client.

Another comparative frame to study probation—and one that refers to one of Witmer’s (1927) identified factors of parole outcomes—is the location where the probationer resides. This distinction is essential for several reasons, namely that the expectation from previously referenced studies that areas of high crime are likely to foster a “nothing to lose” perspective or have little in the way of positive avenues for rehabilitation. Another potentially important distinction is to explore differences between rural and urban locations, with a focus on whether the density and diversity of a denser location might provide additional resources for drug, alcohol, or behavioral counseling than might be available in rural jurisdictions. In my assessment of caseload size impact on California probationers, I utilize several measures of place, including population density and rates of poverty.

Olson, Weisheit, and Ellsworth (2001) investigated data from the Administrative Office of the Illinois Courts, and a sample of 2,468 adult probationers discharged from supervision between November and December 1997 to determine what the impact of a probationer’s location

has on their odds of success. Just under one-fifth of this population were from rural counties, which they defined as having a total population under 50,000. In their study, Olson *et al.* found little difference in the distribution of many characteristics, including age, gender, and education, between rural and urban probationers. However, the most significant difference they did identify between the two populations was race, with 89 percent of the rural probationers being white, compared with only 51 percent of the urban probationers. The outcomes for probationers also displayed significant differences between rural and urban probationers.

The rate of urban probationers having their probation revoked was nearly twice as high as that of rural probationers, approximately 15 percent to 8 percent. Police also arrested 34 percent of urban probationers for new crimes committed while on supervision, compared with only 24 percent of rural probationers. Finally, 39 percent of urban probationers received technical violations of their probation terms, whereas officers cited only 29 percent of rural probationers for similar violations.

Olson *et al.* (2001) acknowledge the significant differences between the two populations, with urban probationers more likely to be minorities, have longer probation sentences, and histories of drug abuse. However, even when controlling for these various factors in a multivariate regression analysis, Olson and Lurigio (2000) found that the difference between urban and rural location was still a significant predictor of probation success: Urban probationers were between 50 and 100 percent more likely to have their supervision revoked, be arrested for a new crime, or receive a technical violation of their probation term. Olson *et al.* do not, unfortunately, offer a conclusion on why these differences exist. They do note that there are several complex levels of geographic differentiation, ranging from police training in urban versus rural settings, the practices of courts in these different environments, and differences in the availability of services between densely populated and sparsely populated counties. Suffice it to

say, a probationer's location alone can be a significant factor for determining his or her odds of success or failure.

### **Racial Bias and Implications for Probation Outcomes**

While Olson *et al.* (2001) found evidence that the origin and location of a probationer's period of supervision demonstrated significant differences in outcomes even when attempting to account for racial disparities, a probationer's location does not operate within a vacuum. For example, white probationers in urban environments may endure a lesser likelihood of revocation than nonwhite probationers in the same settings, but may also still face a higher chance of revocation than a white probationer in a rural setting because of broader, systemic issues, such as a system of urban policing that is inherently more attuned to policing and enforcing a largely nonwhite population more likely to be found in the urban setting.

On this point, several studies emphasize the critical role that race plays in probation outcomes. Unfortunately, these are not problems that researchers can quickly identify as existing at singular points of contact within the justice system. It is not as clean to identify one issue, such as prosecutorial charging and sentencing, as being the primary cause of the racial discrepancy in criminal justice outcomes. Numerous studies suggest that racial disparities, particularly for African Americans, exist at every step in the justice system: From jury selection to the types of plea deals offered and accepted, to probation revocations (Kahn and Kirk, 2015). Regarding probation outcomes, several recent studies demonstrate the vital role that race continues to play.

Jannetta *et al.* (2014) explored data from the probation departments of Dallas County, Texas; Iowa's Sixth Judicial District; Multnomah County, Oregon; and New York City across several years, resulting in a cumulative study sample size of 105,220 probationers. After performing logistic regressions, they found that the odds of a revocation for black probationers between 18 and 39 percent higher than for white probationers, even after controlling for other



standard demographic variables previously mentioned (age, gender, marital status, education, employment, prior convictions, drug and alcohol addictions, and risk assessment scores), at the 99 percent confidence level.

They also performed a Blinder-Oaxaca (B-O) decomposition regression to analyze the disparities further by highlighting explained—the amount of the observed disparity that would decline if the two probationer groups, white and black, had the same characteristics—and unexplained portions of the disparity. Using the B-O method, Jannetta *et al.* (2014) found that criminal history and risk assessment scores factor heavily in contributing to the racial disparity: “higher risk scores were related to higher odds of revocation” (p. 7). This is an issue because, as previously referenced, offenders have multiple points of contact with the justice system before court placement on probation, and pervasive racial bias can result in different outcomes even if one component of the overall system, such as probation, operates without bias. The existence of a demonstrated history of racial bias results in complications, if not the outright continuance of racial disparity, in contemporary criminal justice practices and outcomes.

Jannetta *et al.* (2014) make this argument, acknowledging that “[f]ront-end disparity could have compounding effects beyond the initial decision point” (p. 9). As a result of this broader concern, one of their policy recommendations is that probation departments develop and support revocation alternatives and intermediate sanctions, which can include “boot camps, intensive supervision, house arrest, and electronic monitoring, day reporting centers, community service, and day fines” (Tonry and Lynch, 1996, p. 103). They also recommend that probation departments issue fewer revocations, noting that the racial and ethnic disparities in revocations decline naturally in environments with fewer revocations. This recommendation suggests that probation departments with adequate resources, staffing, and an interest in reducing probationers’ involvement with harsher punishment in the criminal justice system will result in reduced racial

disparity among their probationer populations. It also aligns with Sims and Jones (1997) acknowledgment that drug offenses often drive revocations and new offenses, and their suggestion to reconsider the responses to these setbacks.

In a later study of an unidentified midwestern department of corrections between 2004 and 2014, Steinmetz and Anderson (2016) examined a sample of 15,728 unique probation cases to determine the impacts of race and ethnicity on probation outcomes. They performed two analyses: A logistic regression to predict probation failure and a multinomial analysis to predict four specific types of probation failure. Logistic regressions are simply a means to study a dichotomous dependent variable—in this case, probation failure or not—and potential variables associated with the dependent variable such as race, risk assessment, educational background, and others. A multinomial analysis can be used to study different categories of a particular outcome. For Steinmetz and Anderson, these categories were for types of probation failures and included administrative closure, technical violations, new felonies, and new misdemeanors.

In their logistic model, Steinmetz and Anderson (2016) found that being black was associated with a 75.3 percent “increase in the log odds of probation failure relative to White probationers” (p. 333). The only factors with higher predictive odds of probation failure were the length of the probation term and a risk assessment score associated with the individual probationer’s education level and employment history. They also found that being Hispanic and having an identified alcohol or drug addiction were significant predictors of probation failure. In their multinomial analysis, they found that “Black and Hispanic status alternated as the most potent racial/ethnic predictors among the probation failure categories” (p. 335). Like Jannetta *et al.* (2014), Steinmetz and Anderson (2016) noted that such findings do not prove that probation officers are consciously making racially-biased decisions and that many of these findings may result from “cumulative discrimination” occurring throughout “the criminal justice process” (p.

335). Unlike Jannetta *et al.*, though, Steinmetz and Anderson proposed narrower policy recommendations, emphasizing the need for increased training, additional research, and periodic auditing of probation decisions to monitor against disproportionate outcomes based on a probationer's race and ethnicity.

In a study of roughly the same population, reduced to 13,529 cases after removing Asian/Pacific Islanders and Native Americans/Alaskan Natives because of their low representation both in probation and the general population, Murphy (2018) also explored the correlations between offender race and probation outcomes. With a dependent, binary variable of white or black, Murphy's study contained eleven other control variables, including probation duration, age, type of offense, marital status, and others.

Murphy (2018) ran six different logistic regression models, each focusing on a factor like the intersection of race and ethnicity, or race and gender, and consistent with previous literature found that racial minorities and black males were most likely to fail probation; while white or Hispanic males were not as strongly predictive of failing probation. Murphy also pointed out that "these findings support racial disparity, but not necessarily discrimination" (p. 78). Murphy's study is helpful in that, unlike prior research, she focused several hypotheses and regression analyses on intersectional aspects of identity, such as gender *and* race, and noted that binary gender identification poses some limitations in available data. She recommends further research that includes broader racial, ethnic, and gender classification to provide additional information. By expanding the categories considered, probation departments and other criminal justice policymakers can better ensure officers apply procedures equitably and, should the data indicate disparities, training and procedural reform can target specific systemic failings.

## **Mental Health Issues and Probation**

Another factor likely to impact the interplay between caseload size and probation outcomes is the mental health needs of the probationer. Nearly a third of California's prison inmates receive treatment for severe mental disorders, which represents an increase of approximately 150 percent since 2000 (Romano, 2017). Following statewide policies such as the 2011 Realignment, California releases roughly half of its inmates onto Post Release Community Supervision, a form of probation, following their release from prison. As the share of individuals experiencing mental illness increases in the criminal justice system broadly, policymakers should anticipate that probation will similarly reflect this demographic trend and that an increasing percentage of probationers will have a mental illness.

In a longitudinal study between 2005 and 2013, Skeem, Manchak, and Montoya (2017) examined whether the probation outcomes of 359 diverse probationers with matching demographics in different, but similar, urban areas changed based on whether the probation departments assigned the offenders to a specialty or traditional caseload. The mean caseload size for the specialty caseloads, "composed exclusively of people with mental illness and supervised by officers with relevant expertise," were 50 probationers, while the traditional caseload officers oversaw 100 probationers, including those with and without mental illness. (p. 944). After the conclusion of the study period, Skeem *et al.* (2017) used targeted maximum likelihood estimation models to determine whether, given other variables, placement into the specialty caseload resulted in an increased probability of success in probation.

One of the outcome metrics Skeem *et al.* (2017) explored was violence within one year, and they found that there was no significant difference between the traditional and specialty caseload probationers. There was, however, a significant reduction in rearrest within two years, with probationers on traditional caseloads just over two-and-a-half times more likely to be

rearrested than probationers on the specialty caseloads. They also found that the probation officers in specialty caseloads referred probationers to more treatment services, reported more positive contacts with the probationers, and generally “established higher-quality relationships” with those they supervised (p. 947). Although the latter finding of better relationships did not include the “relevant expertise” of specialty caseloads as a measurable variable, it is possible that having a lower caseload and workload, in addition to some experience working with individuals with mental illness, did result in stronger relationships, supporting Clark-Miller and Steven’s (2011) hypothesis regarding officer turnover and the importance of familiarity.

In a subsequent study exploring the same data, Skeem, Montoya, and Manchak (2018) found that specialty probation, despite its decreased ratio between officer and probationer and the higher level of service provided, cost approximately \$12,000 less per offender “because the additional costs for supervision of specialty caseloads were offset by reduced recidivism” and fewer medical costs associated with emergency, inpatient, and residential health care costs borne by other community agencies. As with many policies, the upfront costs associated with small, treatment-oriented probation caseloads appear daunting when deciding on the initial resource allocation; however, judicious initial spending may reduce costs in other ways in the out years.

### **Utilizing Caseload Size as a Factor Affecting Results**

The characteristics of individual probationers are not the only factors that influence their odds of success. Previous studies demonstrated the importance of social commitments like stable finances, employment, and marriage. However, several issues extend beyond the individual decision-making ability of a single probationer. A probationer may be released from prison and onto a term of community supervision in the county of their commitment where few opportunities for employment exist. A probationer with significant drug or alcohol dependency issues may find,

even with a supportive probation officer, that the funding for their county drug treatment peer or counseling programs is lacking.

If the prison release process returns an offender to serve a term of community supervision in a county with few opportunities for employment or a county with a disparity between genders and low marriage rates, the probationer may have fewer opportunities to create these types of commitments. In addition to location factors, local probation departments have different policies and standards, and these also significantly impact probationer outcomes.

One regularly studied aspect, again not necessarily within the control of the individual probationer, is the relationship between the probationer and the probation officer. As originally intentioned, probation is an alternative sanction that emphasizes community reintegration and rehabilitation, and the relationship between a probationer and his or her assigned officer can be essential in the rehabilitative process. In its formative period at the end of the 19th century, John Augustus and other Massachusetts probation agents provided supervision, assistance, and counseling to individuals sentenced to probation to keep them out of prison and help them become established members of their communities. The importance of this factor cannot be overstated. Kings County probation officer Mandeep Bhangoo remarked that two of the biggest factors resulting in a failure of the terms of probationer are a defendant who is not inclined to change his or her lifestyle and a probation officer who does not believe that defendants are capable of changing (personal communication, November 21, 2019). Both probationer and probation officer must have shared goals and some level of familiarity and the informal and social connections between officers and offenders can have dramatic impacts on whether the probationer will successfully complete their supervision term.

Roughly around the same period probation began crystalizing as a formal, publicly funded criminal justice policy option, social scientists grew interested in ideas associated with

scientific management and labor productivity. Frederick Winslow Taylor was a foundational figure in the development of this line of thinking. In 1898, while consulting with Bethlehem Steel on improving the company's efficiency, Taylor identified that twenty-one and a half pounds were the most efficient load of iron ore or coal, regardless of the size and strength of the individual doing the shoveling (Klaw, 1979). Workload studies in realms beyond industrial efficiency stretch even further back in history.

In trying to find evidentiary support for a particular policy decision on the allocation and funding of federal judgeships, Secretary of State James Madison initiated a federal court caseload study in 1801 to support the repeal of the Judiciary Act of 1801, which would result in fewer judges and a presumed increase—but a manageable one, in the view of repeal supporters—in workload (Federal Judicial Center, n.d.). The use of workload and caseload evaluations to determine the most appropriate and efficient allocation of resources is a standard method of developing evidence-based public policies.

Another policy area that receives considerable interest from political and social scientists regarding the definition of an “appropriate caseload” is public education. In a meta-analysis of class sizes and student achievement, Glass and Smith (1979) identified four periods of research: “the pre-experimental era (1895–1920); the primitive experimental era (1920–1940); the large-group technology era (1950–1970); and the individualization era (1970–present)” (p. 3) Recent teacher strikes continue to highlight the issue. Teachers raised concerns about class size and teacher-to-student ratios during highly publicized teacher strikes in West Virginia, Arizona, and Los Angeles (Adams, 2019; Small, 2019; Holder, 2019).

Given over a century of interest, the consideration of class size and its relationship with student achievement has been the subject of a great deal of research. However, despite the attention, research has primarily suggested a complicated relationship between class size and

student achievement rather than provide a definitive answer. In a study of the literature before World War II, Rockoff (2009) found that initial research focused primarily on high school students and determined that class size had no significant effect on achievement. Education experts mostly held these views until the post-World War II baby boom and the 1960s Coleman Report, which highlighted issues in public education. In addition, as a problem, early increases in class sizes stabilized with population changes in the 1920s and 30s and became less of a concern for researchers and the public (Chingos, 2013).

Generally, more recent studies have shown mixed or negligible effects of class size reduction efforts on student achievement. In 1985, Tennessee began the Tennessee Student/Teacher Achievement Ratio (STAR) experiment and randomly assigned teachers and students in 79 schools to small classes (13 to 17 students), regular classes (22 to 25 students), and regular classes with an additional teacher's aide. Multiple researchers (Mosteller, 1995; Krueger, 1999) found that the small class sizes did improve student achievement through third grade. However, others (Hoxby, 2000), found in a review of a more natural experiment in Connecticut that there was no significant increase in student test scores following even a ten-student reduction in average classroom size.

One major takeaway from the extensive literature on the relationship between classroom size and student achievement is that experiments and policies operate in very different environments, and that changes in policy may also carry additional complications to already complex issues. For example, when California enacted a comprehensive statewide incentive policy of reduced class sizes in 1997, the need to hire 25,000 new teachers resulted in significant shortages and positions filled with non-certified or new teachers. Jepsen and Rivkin (2009) found the small achievement gains in mathematics and reading from class size reductions offset by adverse effects such as having a first-year teacher compared with a teacher with two or more



years of experience. They noted that the adverse teacher quality effects declined in the years following the policy's implementation but cautioned against broad policies like statewide class size reduction that may result in unintended consequences.

When turning back to criminal justice, the role of parole and probation officers is somewhat analogous to teaching: Both supervise individuals and provide a level of support and information to assist their respective clients. The issue of parole and probationer caseloads, though, does not have the same lengthy history, or provocative popularity within the media and the public. However, it remains an important policy to consider.

Interest in parole and probation caseload sizes did not manifest in the academic literature until the post-war period, the “large group technology era” referenced above regarding optimal classroom sizes. One early study occurred in California, where Reimer and Warren (1957), in coordination with California's Division of Adult Paroles and the Adult Authority—then distinct from the California Department of Corrections—explored the relationship between standard, high-ratio caseload supervision in an experiment known as the Special Intensive Parole Unit. This experiment included several components, including the early release of some offenders, and the placement of 1,479 parolees on intensive caseloads of 15 parolees to parole agent and 2,314 parolees on 90-man caseloads between February 1954 and December 1955. They found that the intensive caseloads resulted in fewer new arrests or parole violations in the first 13 months of the study, but that the control group of offenders on larger caseloads had lower rates during the subsequent 10-month period. While acknowledging several limitations of their limited study, Reimer and Warren (1957) suggest the possible “contamination” of high-intensity practices into the control group, noting that “some of techniques and attitudes of [the high-intensity units] were accepted by the regular group” (p. 227). Whether this example of the quasi-experimental use of

smaller caseloads positively impacted probation outcomes, at least over the full two-year period explored, was uncertain.

In a literature review up to 1970, Vetter and Adams (1971) lamented that “our state of knowledge concerning a variable of considerable and continuing concern to correctional practitioners has not progressed beyond the condition it attained almost a half-century ago” (p. 341) and that even the more recent studies on the impact of caseload size were inadequate. Referring to a 33-month period in San Francisco where the probation department randomly assigned probationers to “ideal” (50-to-1 ratio), “normal” (100-to-1 ratio), “intensive” (25-to-1 ratio), and “minimum” (self-reporting and no direct supervision) caseloads, Vetter and Adams criticized that “the project contributed little to the research question it was designed to answer” and “provides few bases for significant conclusions” (p. 336–337). They also note that although the 1967 President’s Commission on Law Enforcement and Administration of Justice recommended that a caseload of between 40 and 50 was optimal, correctional agencies should consider caseloads of 35. Additionally, they identified that most offenders fell in caseloads larger than both recommendations, between 71 and 100, but that there was no real scientific basis for any of these options. According to Vetter and Adams (1971), “decision makers continue to operate as though they understood the nature of the variable” of caseload size, despite there being little substantiating evidence that they did (p. 341). They conclude by noting that the impact of caseloads and supervision intensity on probation and parole outcomes remains elusive and urge for increased scientific investigation in developing caseload-size policy.

This period of interest in caseloads before the 1980s primarily focused on finding “the optimal number of clients to be supervised in a single caseload” (Clear, 1990). Later, social scientists again grew interested in enhanced supervision, but primarily as a result of a new problem: Dramatically increasing prison populations. In just one year, between 1985 and 1986,

the United States prison population grew nearly nine percent, resulting in nearly half a million people housed in prison (Latessa and Vito, 1988). In response, states grew increasingly interested in alternative sanctions. One option was the use of “shock probation,” where the state releases offenders from prison early and places them on local probationary supervision. Latessa and Vito examined Ohio’s Lucas County Adult Probation Department, which established an Incarceration Diversion Unit (IDU) intended to provide additional services to probationers by reducing probation officer caseload sizes and increasing contacts. In a quasi-experiment, between February 1978 and April 1983, the IDU chose 58 probationers and compared them against 42 matched individuals on regular probation caseloads with similar race, gender, and risk characteristics.

As part of the study, Latessa and Vito (1988) examined several individual probationer characteristics (drug and alcohol dependencies, education, age, and prior criminal history) and found no differences between the experimental and the control group statistically significant at the 95 percent confidence level. There was, however, a significant difference in the percentage of probationers employed upon entry into the program. Only 16 percent of the IDU shock probationers had employment at the beginning of their probation term, while nearly 40 percent of the regular shock probationers did.

When it came to outcomes, Latessa and Vito (1988) found no significant difference in the recidivism rates between the two groups. Measuring arrests, convictions, technical violations, and reincarceration rates, they found the misdemeanor conviction rate of IDU probationers significantly higher than regular shock probationers, but that the comparison group had more technical violations. In another comparison that utilized a “criminal behavior severity scale” with higher numbers equated with more serious offenses (aggravated murder is -11, technical violations are -0.5), the experimental group’s mean score was -4.48 compared with -4.76 for the

comparison, and the difference was not significant. These findings suggest that the level of supervision, intensive or standard, had little impact on public safety.

The one area where there were statistically significant differences between the two groups emanated from probation officer case records and regarded probationer contact and services provided. Probation officers on the IDU contacted probationers an average of three times per month, while regular probation officers interacted with their cases less than once a month on average. Additionally, IDU probation officers made referrals to vocational training, employment, and several types of counseling services more frequently than probation officers working regular caseloads. In conclusion, Latessa and Vito (1988) note that while the recidivism rates appeared roughly the same, the intensive supervision unit increased the number of contacts between officers and offenders and provided more connections to various community services. As to whether recidivism rates matter, they note that “[t]he true goals of intensive supervision may be different” (p. 328) than only reducing recidivism, and there may be benefits solely in connecting probationers with community services. Given the small sample size studied and the mixed results, the connection between probation caseload sizes and outcomes remained indeterminate.

Despite the relative haste that many jurisdictions began implementing these measures to reduce prison populations, some researchers doubted that enhanced or intense probation supervision reduces costs. Clear (1990) identified two commonly-cited mechanisms for savings identified by politicians and policymakers: (1) The state could either close or significantly reduce a prison as a result of declining populations, or (2) avoid future costs because intensive supervision diversion programs reduce the demand to build new prisons. Including several assumptions such as a 25 percent failure rate of individuals on supervision and similar lengthier terms of incarceration, the anticipated prison savings are likely smaller than policymakers assume. However, Clear concludes by noting that “staff and administration associated with these

programs commonly impress outsiders with both professional vision and personal integrity,” and that increased policy interest in probation and rehabilitation is ultimately good for improving public safety, even if it does not immediately realize financial savings.

The various attempts to slow or reverse the growth in prison populations had downstream impacts on other criminal justice systems: The Chief Probation Officer of Contra Costa County, Gerald Buck, noted that some probation officers managed caseloads as high as 400 probationers by the second half of the 1980s (Byrne 1989). This significant upward trend in probation caseloads suggested that policymakers were no longer interested in “right-sizing” caseloads to the extent that they had once been. The era of thoughtful consideration and suggesting caseloads as low as 35-to-1 or lower was over. Now, the policy situation stressed triage, and the most “effective” or optimal caseload could very well be in the range of 60 probationers to one officer or higher, so long as serious crime statistics did not rise and prison populations did not continue ballooning. As the policy objective shifted towards utilizing probation to decrease the prison population, the question of whether probation caseload sizes were manageable and reasonable fell aside in the face of political expediency of growing probation populations to avoid the more costly expense of building and maintaining prisons.

However, studying the impact of probation caseload size on recidivism, whether measured by arrest, technical violations, rearrest, conviction, or reincarceration, is only one way to measure effectiveness. Worrall, Schram, Hays, and Newman (2004) observed that after more than thirty years of research, “the effectiveness of lower caseloads in reducing recidivism remains uncertain,” with some studies indicating that smaller caseloads positively impact offender outcomes while others show no conclusive connection (p. 234). Therefore, Worrall *et al.* took a different tack: They explored a possible link between probation caseloads and public safety, as measured by the property crime rate.

For their study, Worrall *et al.* (2004) used data from California's fifty-eight counties from 1990 to 1998, resulting in 522 observations. They categorized variables as deterrent variables and socioeconomic variables, with the former comprised of the property crime arrest and clearance rate, the per capita law enforcement expenditures for city and counties, and the local jail population per capita; the latter category included the percentage of males between 13 and 25, the unemployment rate, the per capita welfare rate, and per capita income. Their methodology utilized a dynamic two-way fixed effects regression model, which is related to ordinary least squares (OLS) regression with some alteration. A two-way fixed effects model allows for a time-lagged dependent variable (the property crime rate, in this case) to help control for serial autocorrelation. Serial autocorrelation is a situation where errors in a series of data over time can transfer from one period to subsequent periods. For example, the underestimation of property crime arrests in one period may result in either continued underestimations, or an opposite overcorrection, in the next period. The purpose of the two-way fixed effects model is to account for this possibility.

Worrall *et al.* (2004) found that crime rates and probation caseloads were associated and that property crime rates rose as probation caseload size increased, significant at the 95 percent confidence level. Local police expenditures and property crime clearance rates also had similar, though opposite, statistically significant interaction with the predicted property crime rate. Among county societal factors, the percentage of males aged 13 to 25 had the highest impact on a county's property crime rate, and the interaction of that variable was significant at the 99 percent confidence level. Other social factors did not demonstrate statistical significance.

Although Worrall *et al.* (2004) note several limitations to the study, namely that the analysis was cross-sectional and demonstrated only an association and was not appropriate for suggesting causation, it suggests another potential benefit in maintaining smaller probation

caseloads. Their study implied that, with fewer probationers to supervise, officers could spend more time individually with the offenders and provide better guidance or connection to services such as job training, drug and alcohol counseling, resulting in fewer instances of new property crimes.

As to the ambiguous impact of caseload size on probation outcomes, recent years have seen interest in an antithetical policy decision: Increasing caseload size. Given the relative uncertainty on whether probation caseloads impact recidivism, some policymakers and agencies sought to explore the opposite end of the spectrum and explored if, for some populations of offenders, probation departments could find savings through expanding caseloads. Between October 2007 and October 2008, the Philadelphia Adult Probation and Parole Division (APPD) ran an experiment to test whether a low-intensity supervision program for “low-risk” offenders resulted in any significant difference compared to standard supervision models. Before release from prison or through court proceedings, actuarial risk assessment scores determined an offender’s designation as “low-risk.” Across the experiment, APPD assigned 1,559 “low-risk” offenders randomly to two groups: (1) an experimental low-intensity supervision group with a caseload of four hundred offenders per officer, or (2) a control group with caseloads of about 145 offenders per officer (Gill, 2010). Additionally, the low-intensity group featured more telephone reporting appointments and fewer office visits.

Examining the same experiment and follow-up data from the subsequent 18 months, Barnes, Hyatt, Ahlman, and Kent (2012) found “that reduced supervision intensity does not increase the prevalence or frequency of new offending by low-risk probationers” (p. 200). However, they also cautioned that both the “low-risk” control and experimental low-intensity caseload groups possessed several distinctions from APPD probationers overall: They were whiter, older, lived in wealthier neighborhoods with lower proportional populations of African

Americans, and had less-extensive criminal histories. To an extent, this was an intentional distinction, as the APPD intentionally distributed “low-risk” probationers in the experimental and control groups to determine whether such probationers needed regular supervision, and therefore it is reasonable they displayed characteristics correlated with reduced risk of recidivism.

In comparing the frequency of new offenses and jail incarceration, Barnes *et al.* (2012) found no statistically significant difference between offenders randomly placed in the experimental caseload of 400 offenders and fewer mandatory points of contact or the control group with 150 offenders and specified monthly in-person contact requirements. Barnes *et al.* found that in five of the seven tests used for recidivism (prevalence of new property offenses, days incarcerated, and so on), the experimental group performed better. These results suggest that, when given a comprehensive and meaningful risk assessment, offenders determined to be “low-risk” could potentially benefit from low-ratio caseloads in completing the term of their supervision and without risk to public safety.

In a somewhat amusing take on the question of caseload size, Barnes *et al.* (2012) ponder in their conclusion, “just how far can supervision be reduced without increasing negative outcomes” (p. 216)? To some extent, this perspective seems entirely appropriate given the time of the APPD experiment, with the nation enduring a significant economic recession. Noting that very little work has been done examining intentional *reductions* in supervision history, Barnes *et al.* caution that the research is far too incomplete to conclude that “supervision simply has no effect whatsoever on the recidivism of probationers and parolees” (p. 216) and that the categorization of the offenders in the APPD randomized control trial as “low-risk” based on a complicated risk assessment score affected the study greatly. Additionally, it is possible that low-risk offenders are less likely to face repercussions for unobserved technical violations or even low-level crimes if, facing declining budgets, local law enforcement agencies shift workload



efforts towards serious crimes. Budget-constrained police departments and sheriffs are more likely to focus on murders and violent crimes, and the APPD experiment may have benefited from its unique circumstance in timing, with few of its “low-risk” offenders drawing enough attention for misdeeds like probation violations or nonviolent misdemeanors to warrant revocation or rearrest and a failure of their probation term.

However, not all recent studies find that caseload size does not matter, or that smaller caseloads are not effective in improving probation outcomes. In a randomized controlled trial study in Oklahoma City, Jalbert and Rhodes (2012) explored data from August 2007 and August 2010, with one group of probationers assigned to officers managing caseloads of 54 probationers and a control group of officers supervising caseloads of 106 probationers. The experiment populated both the treatment and control groups with probation officers who volunteered to participate in the experiment, but a high attrition rate for officers randomly placed into the control group resulted in the study utilizing a difference-in-difference quasi-experimental design, as opposed to a purely experimental framework. With a sample of 5,073 probation cases, Jalbert and Rhodes found that smaller caseloads resulted in increased contacts between officer and probationer, and increased alcohol and drug treatment services provided. The treatment group experienced approximately 36 percent more contacts than the control, and about 27 percent more treatment group probationers received alcohol and drug treatment services than those in the control group, with the differences all significant at the 99 percent confidence level.

As to recidivism itself, Jalbert and Rhodes (2012) explored fewer metrics as other studies but did show statistically significant differences between treatment and control groups. The treatment group had 56 percent fewer negative urinalysis drug tests than the control group. They also compared recidivism, both excluding minor crimes and technical violations, and found “that reduced caseloads lead to better probation outcomes provided the follow-up period is longer than

about one and a half years” at a 95 percent confidence interval (p. 231). However, they note that these impacts were less significant than referrals to, and services provided by, alcohol, drug, and mental health treatment services.

Jalbert and Rhodes (2012) also observed a significant finding regarding the probation officers. They found that “many of the officers who were randomly assigned to regular caseloads quit their jobs or transferred to other assignments that did not involve direct supervision of probationers (p. 232). While not measured as part of the study, Jalbert and Rhodes (2012) speculate that “one reason why reduced caseloads lead to better outcomes is that reduced caseloads” result in better morale, retention, and result in more senior and experienced probation officers more interested in continuing the work (p. 233). The importance of content probation officers is reasonable, as the relationship between officer and probationer is consequential and having officers eager to perform their duties—mainly if those duties are in the Augustusian mold of providing rehabilitative services and connecting probationers with their communities—is key to reducing recidivism and establishing former offenders as productive members of society.

### **Caseloads, Officer Morale and Retention, and the Impact**

Although tangential, Jalbert and Rhode’s (2012) observation of the possible correlation between caseload size and probation officer morale and turnover is significant. In addition to management consideration associated with substantial workloads, officers working in the less hectic environment of a smaller caseload may experience less stress, improved morale, and foster more meaningful relationships with the offenders, promoting a foundation between both officer and offender of rehabilitation rather than supervision. It is likely easier, after all, to check that a probationer has clean urine, no infractions, and adheres to curfew than to proactively work towards addressing a substance use disorder, providing employment assistance, or otherwise

working on social reintegration. Several researchers have explored this topic and found that large caseloads impact probation officers, which subsequently impacts probationers and outcomes.

In a survey of 228 probation and parole officers, with 199 officers working in exclusively probation-oriented departments or in agencies that supervised both probationers and parolees, DeMichele (2007) found that the mean size of offenders on any given caseload was 106. Approximately 68 percent of the surveyed officers identified that their caseloads were either slightly or much too large, with only 28 percent finding their caseload sizes were appropriate, and a single respondent replying that his or her caseload was “much too small” (p. 44). Similarly, 72 percent of the respondents described their overall workload as either “slightly too large” or “much too large.” When asked to describe what they thought would be the ideal caseload size, respondents, on average, identified that 77 offenders are a suitable number of offenders for a manageable caseload. That number implies that these officers operated with caseloads about 25 percent larger than their preferred amount.

Additionally, DeMichele (2007) found that most responding officers identified that they spend a significant amount of time addressing court-mandated conditions of supervision that did not personally reflect the needs of the probationer. DeMichele wonders “how an officer’s time could have been used if he or she was not administering dozens of alcohol and drug tests each week, then making decisions of whether to violate someone for failure of a urinalysis, and finally going through the bureaucratic and legal procedures to complete a violation” (p. 59). When it comes to the critical, interpersonal work of probation supervision, it can be mentally draining to provide unnecessary “services” instead of allowing for additional flexibility to address the actual needs of the individual offender.

More recent studies explore caseload sizes impact officers with greater frankness and ask, “how being supervised by a large number of officers affects probation outcomes for the offender”

(Clark-Miller and Stevens, 2011). In a study of just over 5,000 probationers in a large metropolitan county, with the period limited to all offenders whose probation ended in calendar year 2009, Clark-Miller and Stevens began with the hypothesis that “the more officers an offender has during the term, the greater their likelihood of failure.” A probation department with significant officer turnover would ostensibly result in worse probationer outcomes as each newly assigned officer has to work to build trust and a meaningful relationship with the offender, minimizing the pair’s ability to successfully work towards the shared goal of rehabilitation and community reintegration. It is also reasonable to assume that a general state of disorder or change is unlikely helpful for an individual to establish healthy, lawful habits.

Looking at the binomial dependent variable of “probation revocation,” measured as either a 1 to indicate a failure to complete probation and a 0 for successful completion, they found that about 26 percent, or about 1,300 probationers, failed the term of their probation. The leading independent variables included officer count, the number of officers who supervised a single probationer’s case, and officer continuity. To measure officer continuity, Clark-Miller and Stevens (2011) utilized measures associated with market concentration studies to consider the amount of time each officer spent supervising the probationer: For example, a probationer with three officers each monitoring four months would result in a score of 0.33; but if the first officer monitors for nine months, the second for two, and the final for three, the value would be 0.60. They also included various standard sociodemographic control variables, including age, gender, race, risk assessment score, needs assessment score, number of charges in the probationer’s case file, and the number of programs courts ordered the probationer to attend before the termination of their probation term.

In their findings, Clark-Miller and Stevens (2011) identified statistically significant correlations that suggested probationers with revoked terms were more likely to have higher

numbers of supervising officers and a lower continuity score or a higher turnover amongst the officers they did have. Having just one probation officer over a term had dramatic impacts, with the odds of successful completion increasing by 58 percent in those circumstances when compared against all other cases studied.

They consider several possible reasons for this association. One problem they identify is that probation departments administer caseloads primarily on a geographic basis so that if the officer moves to a different zip code within the county, officers received a new caseload. They question whether this treatment of probationers as actuarial subjects, grouped as distinct and portable entities, diminishes their individuality and associated needs. They also wonder if officers treat newly assigned probationers more suspiciously, with an increased likelihood of technical violations as the officer and probationer both explore what the pair considers acceptable or unacceptable behavior. A more intimate relationship may result in less strict supervision, with the officer understanding that a small mistake or even purposefully willful defiance from the probationer is not likely to result in a significant issue. Lastly, Clark-Miller and Stevens (2011) wonder, similar to current debates about teacher pay and retention, if funding for probation departments should prioritize pay and retention of their peace officer staff at the expense of other services that may not provide meaningful and measurable improvements in probationer outcomes.

### **Unmanageable Specialty Caseloads and Officer Stress**

In some instances, the intersection of probationer characteristics, caseload sizes, and the perspective of the probationer officers all interact to influence outcomes. Probation departments often assign officers to “specialized” caseloads who have distinct supervisory or criminogenic needs. A prominent example of such caseloads are sex offender and gang caseloads. Offenders placed by probation departments in either of these two categories may be subject to restrictions on where they can live, require global position system monitoring, or have curfews or other

association limitations. Because these classifications often require more supervision, or at least more complex requirements to complete terms of supervision, departments often assign these offenders to smaller caseloads. However, despite specialized and smaller caseloads, “difficult” offenders nevertheless can still affect the level of stress placed on their supervising officers, resulting in adverse outcomes.

Another typical specialty caseload is for those offenders with diagnosed severe mental illness. As is the case with offenders suffering from drug or alcohol use disorders, these offenders often require special assistance in maintaining their mental health through medication and various treatment services. For individuals involved in the criminal justice system, probation and parole officers often provide this type of assistance. While the interpretation of opioid or other drug abuse as a form of self-medication for mental illness is different from earlier and harsher perspectives that saw combating drug use as a literal war, in some ways this treatment view is not so different from John Augustus’ original goal of rehabilitating young offenders by providing counseling and helping to reintegrate his wards back into society.

In a broad survey of probation and parole officers working in North Carolina—where officers generally supervise both parolees and probationers together—Gayman, Powell, and Brandley (2017) evaluated whether the number of individuals with mental health problems on a probation and parole officer’s caseload is associated with depressive symptoms and emotional exhaustion in the officers. The final survey consisted of a sample of 798 officers working as parole and probation officers in 2009, about 60 percent of the total population. The responses indicated an average caseload size of 77, with a mean of 13 individuals possessing significant mental health problems and assigned related services.

Using an ordinary least squares regression—a type of analysis used to estimate relationships between a dependent variable and one or more independent variables—Gayman *et*

*al.* (2017) found that having more individuals with mental health problems on a caseload is associated with more depressive symptoms reported by the officers. Noting previous studies that indicate that individuals with serious mental health issues have decreased chances of successful parole and probation terms, Gayman *et al.* postulate that officers working closely with these individuals are “at greater risk for poor mental health, in part, due to increased emotional exhaustion” associated with the higher difficulty in guiding these offenders to successful outcomes. This study demonstrates the complexity of interpersonal relationships in the context of probation and parole caseload sizes. Individuals experiencing severe mental health issues, particularly when placed on traditional caseloads with high ratios, struggle to complete their probation terms, and the interplay between their difficulties and increased emotional exhaustion of their supervisors is likely a compounding factor in poor outcomes.

### **Summary**

Overall, the literature on probation outcomes—and particularly regarding the impact of probation caseload sizes—suggest general trends within an extremely complex environment. Specific individual demographics are associated with better outcomes: Older, whiter, female offenders with limited criminal histories and no current diagnosis of mental illness or a history of drug or alcohol use will be far more likely to complete probation terms successfully than others.

However, there is no clear consensus among researchers that reduced probation caseload sizes result in improved outcomes. Changing caseload sizes as a policy matter may result in different outcomes, such as an increase in probation contacts between officer and probationer or more instances of referrals to drug and alcohol treatment programs. Additionally, the types of probationer and the circumstances of caseload determinations are also incredibly important factors to consider, particularly when some studies suggest that higher caseloads for low-risk probationers improve outcomes. While it is clear that caseloads can and do have impacts, it is

essential that policymakers consider the myriad complexities of establishing and maintaining caseloads when allocating resources for probation departments. New equipment, increased treatment services, and strict compliance requirements might make more headlines, but the ability of probation officers to manage a reasonable workload and sufficiently build deep enough relationships with their clients appears to be an essential facet in promoting the successful completion of a probation term and the rehabilitation of offenders.



## CHAPTER 3

### VARIABLES, DATA, AND MODEL

This chapter describes the variables, data, and the model used in my regression analysis. Specifically, in this chapter I will explain my chosen dependent variable, what it represents and how it is measured; the model I have chosen to use, including sources and constraints of my data; and a summary of the explanatory variables included and my expectations of the influence that these variables will have on the dependent variable. Lastly, I will discuss some of the major limitations of this study in providing concrete answers to certain relevant questions.

#### **The Dependent Variable: Probation Failure Rate**

My dependent variable in this analysis is the annual county probation failure rate, which I define as the number of probationers committed to prison and jail by count, divided by the overall average annual county probation population. I term this overall rate as the “probation failure rate,” in the sense that individuals are not successful on probation, and the court orders the individual to jail or prison, based on their initial sentence. The probation failure rate is not a measure of criminality or recidivism and is particular to individuals given a sentence of probation. Criminal sentencing in California is complicated, involves considerable judicial discretion, and frequently involves numerous factors including a defendant’s criminal background and history, the nature of the crime, and other considerations. Broadly, sentencing decisions by the court or questions on crimes and crime rates are beyond the scope of this paper.

Instead, my goal for this paper is to explore one tiny piece of the much larger public safety puzzle. Specifically, I am interested in the relationship between a probation officer and a probationer, and how the nature of that relationship—as measured by a probation officer’s caseload—might impact the success or the failure of a probationer’s sentence. Utilizing the quantitative measure of caseload size and associated assumptions regarding access, time

allocation, and attentiveness, I seek to see whether a probationer on a smaller caseload is more or less likely to “fail” probation.

For the purpose of explaining this further, here is a hypothetical situation involving a crime, a sentence, and the categorization of probation failure: California Penal Code 273.5 prescribes punishment for the corporal injury of a spouse or family member as imprisonment in state prison for two, three, or four years, or in a county jail for not more than one year, a fine of up to six thousand dollars, or both fine and imprisonment. In this case, the determination of whether to sentence a convicted individual to one year in a county jail or a more extended period in a state prison rests with the court. This law also allows for a probation sentence instead of jail or prison, with specified requirements for the term and conditions of probation.

As this relates to this paper, an individual who has his or her probation revoked will go to either prison or jail, depending on the initial decision of the court. There are several reasons an individual probationer might have his or her sentence revoked: a violation of some condition of probation, which can include failing a drug test, failing to attend court-ordered community service classes or counseling, or the commission of a new crime. As a result, my dataset includes several subcategories of the primary dependent variable, the “total revocation rate.” These four additional measures include the total prison revocation rate, total jail revocation rate, and, beginning in 2013, prison and jail revocation rates for “new offenses,” which are criminal offenses unrelated to any violation of a condition of probation and associated with court actions for new crimes. This paper includes regression results for each of these four subcategories in addition to the overall probation revocation rate. Therefore, I run regressions on the following:

1. Total revocation rate
2. Prison revocation rate
3. Jail revocation rate

4. Prison revocation rates for new offenses
5. Jail revocation rates for new offenses

Based on the discretion awarded to judges in California, I assume that individuals revoked to prison are more “serious” offenders compared to those revoked to jail, based on either the details of the crime or the history of the particular offender. The distinction between prison and jail revocations does not necessarily mean that those who fail probation and go to prison committed different or more serious crimes, it just means that the initial sentence of the court was harsher and provided for a more extended period of incarceration in prison.

Regarding the two categories associated with new crimes, the previous assumption of a prison sentence and seriousness holds, but these categories expand the level of detail further by counting only individuals who have their probation terms revoked for committing an entirely new crime. Continuing with the spousal or familial abuse scenario, the two previous categories include all reasons for the court to revoke the probation term. These reasons might include both criminal reasons such as illegal drug use, a new violation for drunk driving or assault, but also violations of a parole condition that is not otherwise illegal such as failure to attend counseling, to make restitution, or the violation of some component of a restraining order. The two categories for new offenses, therefore, exclude these probation term violations.

I included these subcategories in this paper to determine whether law enforcement policy and particularly the caseload size of county probation officers, impacts different types of offenders in different ways. For example, are more “serious” offenders more susceptible to having their probation terms revoked than others? Does caseload size impact whether or not probationers commit new crimes differently than it impacts probationers who only violate probation terms? By including these subcategories, I anticipate subtle, but significant, differences in the affected populations.

### The Regression Model

For my regression analysis, I use the following model:

**Probation Failure Rate** = f (*County Demographic Factors, County Economic Factors, and Law Enforcement Policy Factors*)

*County Demographic Factors* = f (Population Density, Median Age, Percent Hispanic or Latino, Percent Black, Percent American Indian and Alaska Native, Percent Asian, Percent Native Hawaiian and Other Pacific Islander, Percent Other Race, Percent Two or More Races, Education [Percent Less than 9th Grade; Percent 9th to 12th Without Diploma, HSD, or GED; and Percent High School Graduate or GED])

*County Economic Factors* = f (Percent of All Residents in Poverty, Unemployment Rate)

*Law Enforcement Policy Factors* = f (Ratio of Probationers to Probation Officers, Ratio of Probationers to Other Probation Staff, Average Probation Officer Salary, Chief Probation Officer Salary, SB 678 Funds Received Per Probationer)

This model will analyze the impact of various explanatory variables, such as the percentage of county residents living in poverty, on that county's probation failure rate.

The variables included in this regression come from a dataset I created using several sources: (1) The Judicial Council of California for annual probation populations and revocation data; (2) summary statistics from the American Community Survey extracted by the California State Census Data Center, Demographic Research Unit, California Department of Finance; (3) county budgeting information from the State Controller's Office; and (4) county salary surveys of all probation departments from the Chief Probation Officers of California. Because I am

exploring data at a county level, I organized the data longitudinally between 2010 and 2017, both to increase the number of observations from 58 to 464 and to account for any potential short-term fluctuations in a county's revocation rate.

For the variables included in the data and measured in dollars (Probation Officer Salary, Chief Probation Officer Salary, SB 678 Funds Received Per Probationer), I have indexed the figures to 2017 values to account for inflationary changes between 2010 and 2017.

There are some variables included in my dataset but excluded from my regression analyses to establish "base" comparative categories. Specifically, I excluded the percentage white population and the percentage of additional levels of education beyond high school graduation in the county demographic factors. Additionally, I did not include several economic categories such as the average per capita income and the percentage of individuals without health insurance because they would have likely been endogenous with other explanatory measures included in the final dataset.

I use data aggregated at the county level, resulting in 464 overall observations, covering the years 2010 through 2017. Some of the dependent variables I run, like the categorization of revocations associated with new offenses, are based on data that counties only began reporting in 2013 and, therefore, have fewer observations. Several counties failed to report revocation rate data to the Judicial Council, so there are also some instances of missing dependent variables, primarily in smaller counties.

The principal explanatory variable in my regression analysis is the ratio of sworn probation officers to the total average number of annual probationers in each county. Unfortunately, this level of analysis will not provide an exact accounting for a caseload effect because, at a county level, the data does not provide sufficient information about the use of specified caseloads. Additionally, by utilizing county demographic factors rather than the actual

employment rates or demographics of the probationers specifically, I am only exploring available substitutes for the actual variables, because it is likely that the probation populations differ from the overall racial and economic characteristics of all residents in a county.

However, I anticipate that an exploration of a county's overall resource allocation towards its probation officers—measured primarily through average caseload size, but also through average probation officer salary—will be informative in assisting local policymakers in deciding if more probation officers, or higher probation officer salaries, are beneficial policies in reducing probationers' failure rates.

### **Variable Descriptions and Expected Impacts**

Table 3.1, shown below, provides the name of the variable used in the analysis, a brief description of what it measures, and whether I think it will have a positive, negative, or an unknown effect on the dependent variables. For example, a “-” sign indicates that I think that an increase in the explanatory variable will reduce the dependent variable. Therefore, I anticipate that an increase in a county's median age will reduce the revocation rate for that county. As referenced previously, I group the explanatory variables within three categories: county demographic factors, county economic factors, and law enforcement policy factors.

**Table 3.1: Variable Description and Expected Effect Indicator**

<b>VARIABLE NAME</b>	<b>VARIABLE DESCRIPTION</b>	<b>EXPECTED EFFECT</b>
<b>TRevRate</b>	<b>Annual Total Probation Failure Rate</b>	
<b>JailRevRate</b>	<b>Annual Rate of Probationers Revoked to Jail</b>	
<b>PrisonRevRate</b>	<b>Annual Rate of Probationers Revoked to Prison</b>	
<b>JailRevRateNO</b>	<b>Annual Rate of Probationers Revoked to Jail for a New Offense</b>	
<b>PrisonRevRateNO</b>	<b>Annual Rate of Probationers Revoked to Prison for a New Offense</b>	
<b>County Demographic Factors</b>		
<b>PopDens</b>	Population density, residents per square mile	?
<b>MAge</b>	Median age	-
<b>PCT_HI</b>	Percent Hispanic or Latino	+
<b>PCT_BLA</b>	Percent black	+
<b>PCT_AI</b>	Percent American Indian and Alaska Native	?
<b>PCT_AS</b>	Percent Asian	-
<b>PCT_PI</b>	Percent Native Hawaiian and Pacific Islander	?
<b>PCT_OT</b>	Percent other race	?
<b>PCT_TWO</b>	Percent two or more races	?
<b>PCT_9TH</b>	Percent with less than a 9th-grade education	+
<b>PCT_SOMEHS</b>	Percent with some high school but without a diploma or GED	+
<b>PCT_HSG</b>	Percent with a high school diploma or GED	?
<b>County Economic Factors</b>		
<b>PCT_POVALL</b>	Percent of all in poverty	+
<b>UnemRate</b>	Unemployment rate	+
<b>Law Enforcement Policy Factors</b>		
<b>RatioProbsTo PROBOFFS</b>	The ratio of probationers to probation officers	+
<b>RatioProbsTo OTHPROB</b>	The ratio of probationers to other probation staff	+
<b>AvgPROBSal</b>	The average probation officer salary	?
<b>ChiefPROBSal</b>	Chief probation officer salary	?
<b>SB678Pay</b>	SB 678 funds received, per probationer	-

### **Variations in the Data**

California is a massive state with diverse geology, climate, and population. This is reflected very clearly in some of the differences presented when looking at the raw data collected, and impacts both the selected dependent and independent, explanatory variables.

As shown below in Table 3.2, the variation between the minimum and maximum in all variables can be considerable. For example, when just looking at the total probation revocation rate, the rates between all years and all counties range from 0.215 percent to just over 53 percent. In 2011, Contra Costa County had a probation population of 3,718 individuals but reported revoking only eight to prison. One reason this figure might be so low is a result of insufficient data, as counties did not report jail revocations until 2013. Nevertheless, on the opposite end of the spectrum is Imperial County in 2016, which had an annual probation population of 1,427 and revoked 757 probationers to prison or jail.

The differences are also evident in county demographics, economics, and law enforcement policies. One county has a population density of about one-and-a-half residents per square mile, while another manages to fit just under 19,000 residents in the same square mile of space. African Americans make up an average of approximately three percent of California overall, but at least one county reported zero percent African American residents while another has an African American population of 14 percent. Similarly, the unemployment rate across the state on average was just shy of 10 percent, but some counties reported a rate as low as 3.3 percent, while others had an unemployment rate as high 19.3 percent. Lastly, the statewide ratio of probationers to probation officers was 26-to-1 but, between counties, those caseloads ranged from 5.5-to-1 to 93-to-1. Although these differences capture both year-over-year and county-by-county variations, it is nevertheless clear that California is diverse.



**Table 3.2: Descriptive Statistics**

<b>VARIABLE</b>	<b>OBS.</b>	<b>MEAN</b>	<b>STANDARD DEVIATION</b>	<b>MIN</b>	<b>MAX</b>
<b>TRevRate</b>	455	9.277	6.914	0.215	53.048
<b>JailRevRate</b>	333	5.613	5.733	0.094	47.941
<b>PrisonRevRate</b>	449	5.238	3.519	0.215	22.117
<b>JailRevRateNO</b>	264	1.386	1.404	0.000	11.817
<b>PrisonRevRateNO</b>	276	2.153	1.828	0.000	21.875
<b>County Demographic Factors</b>					
<b>PopDens</b>	464	674.944	2,405.56	1.556	18,860.38
<b>MAge</b>	464	39.153	6.219	29.7	55.2
<b>PCT_HI</b>	464	29.519	17.642	6.5	84.3
<b>PCT_BLA</b>	464	2.996	2.961	0.0	13.9
<b>PCT_AI</b>	464	1.576	2.846	0.1	20.6
<b>PCT_AS</b>	464	6.919	7.977	0.0	36.2
<b>PCT_PI</b>	464	0.332	0.319	0.0	2.3
<b>PCT_OT</b>	464	0.183	0.179	0.0	1.8
<b>PCT_TWO</b>	464	2.936	1.191	0.0	7.5
<b>PCT_9TH</b>	464	8.239	5.301	0.4	21.6
<b>PCT_SOMEHS</b>	464	8.294	2.900	2.0	15.7
<b>PCT_HSG</b>	464	23.453	4.945	10.4	34.6
<b>County Economic Factors</b>					
<b>PCT_POVALL</b>	464	15.903	5.026	4.9	28.3
<b>UnemRate</b>	464	9.857	3.516	3.3	19.3
<b>Law Enforcement Policy Factors</b>					
<b>RatioProbsTo PROBOFFS</b>	464	26.151	14.717	5.652	93.197
<b>RatioProbsTo OTHPROB</b>	455	61.879	38.887	5.141	216
<b>AvgPROBSal</b>	457	60,807.49	11,579.63	34,195.33	96,169.44
<b>ChiefPROBSal</b>	457	150,129.8	41,514.7	75,842.5	334,592.8
<b>SB678Pay</b>	406	779.91	1,253.763	4.30	10,302.96

The above table, however, includes variations due to time and location, because it captures all data points for each of California's 58 counties entered between 2010 and 2018. Table 3.3, below, indicates the differences in county probation failure rates in just 2017, but still shows that there is considerable variation, even within a single year.

Despite the variation, there are several general trends evidenced by this level of examination. For one, the number of revocations associated with new offenses is significantly lower than the more substantial, inclusive revocation measures. Additionally, the rate that counties send individuals to prison who fail probation, compared with the number of individuals that counties send to jail for failing probation, is also higher, suggesting that the more serious offenders referenced earlier in this chapter are more likely to fail probation. This table also underscores one of the challenges in this analysis—missing data—as Plumas and Sierra counties did not report revocation data for 2017 and Alpine was missing some of its figures.

Another distinction to note is that smaller counties are more likely to have more different revocation rates simply due to the nature of their having low probation populations overall. For example, Amador County's total revocation rate of 24.68 percent situates it among some of the higher percentage counties, but their total average probation population for 2017 was only 235, with 58 individuals revoked to prison or jail. Los Angeles, on the other hand, with its 5.27 percent revocation rate, sent over 5,000 individuals to prison or jail from its probation population.

The differences between counties is a crucial distinction, because the focus of this study is on the broad relationship of probation officer to probationer, measured most specifically through caseload size but also policy choices like a probation officer's salary or level of state funds received. A policy intervention that addresses an issue specific to Los Angeles will likely result in a much more impactful change than one targeted on Amador County or even across the state, but that level of county-specific recommendation is beyond the scope of this paper.

**Table 3.3: 2017 Revocation Rates by County**

COUNTY	Total Revocation Rate	Jail Revocation Rate	Prison Revocation Rate	Jail Revocation Rate (for New Offenses)	Prison Revocation Rate (for New Offenses)
Alameda	8.73%	4.75%	3.98%	2.14%	0.47%
Alpine	6.78	N/A	6.78	N/A	3.39
Amador	24.68	4.26	20.43	2.13	3.40
Butte	34.81	8.43	26.38	3.59	1.77
Calaveras	8.16	3.59	4.57	0.65	0.00
Colusa	27.26	15.20	12.06	4.19	1.05
Contra Costa	8.65	2.43	6.23	1.33	1.20
Del Norte	30.65	12.57	18.07	5.89	0.00
El Dorado	8.38	4.35	4.03	1.52	0.87
Fresno	23.38	7.71	15.67	3.25	1.12
Glenn	7.71	4.57	3.14	1.71	0.00
Humboldt	15.65	8.14	7.50	4.39	1.12
Imperial	50.88	6.48	44.40	2.50	11.61
Inyo	15.59	3.98	11.61	0.66	0.33
Kern	15.61	4.50	11.11	3.05	1.39
Kings	19.10	6.82	12.28	2.65	0.85
Lake	14.44	9.63	4.81	4.81	1.05
Lassen	40.77	17.73	23.04	9.45	11.82
Los Angeles	5.27	2.71	2.56	1.27	0.23
Madera	9.053	3.36	5.70	0.76	1.65
Marin	6.93	2.36	4.57	0.79	0.31
Mariposa	21.05	3.76	17.29	1.50	0.00
Mendocino	30.94	9.48	21.47	4.68	2.51
Merced	10.58	6.64	3.94	2.06	0.28
Modoc	11.99	1.50	10.49	0.00	1.50
Mono	4.43	1.11	3.32	0.55	1.11
Monterey	11.82%	6.26%	5.55%	2.60%	0.87%
Napa	11.48	5.35	6.13	2.24	1.56
Nevada	4.09	3.48	0.61	1.43	0.20
Orange	12.07	2.41	9.67	0.58	0.50
Placer	13.48	3.39	10.09	1.47	1.61
Plumas	N/A	N/A	N/A	N/A	N/A
Riverside	22.60	5.65	16.96	2.67	3.38
Sacramento	11.45	6.45	5.00	3.40	1.20
San Benito	13.7	7.54	6.22	2.07	0.19
San Bernardino	13.70	7.48	6.22	2.75	0.86
San Diego	27.86	8.45	19.41	2.94	0.95
San Francisco	8.77	1.33	7.44	0.40	5.11
San Joaquin	4.45	2.65	1.79	2.04	0.90

COUNTY	Total Revocation Rate	Jail Revocation Rate	Prison Revocation Rate	Jail Revocation Rate (for New Offenses)	Prison Revocation Rate (for New Offenses)
COUNTY	Total Revocation Rate	Jail Revocation Rate	Prison Revocation Rate	Jail Revocation Rate (for New Offenses)	Prison Revocation Rate (for New Offenses)
San Luis Obispo	11.76	5.86	5.91	2.10	0.73
San Mateo	14.76	5.25	9.51	1.70	2.11
Santa Barbara	6.97	2.88	4.09	1.19	0.22
Santa Clara	9.06	4.86	4.2	1.854	0.85
Santa Cruz	5.91	2.085	3.83	0.99	0.87
Shasta	14.06	9.72	4.34	4.07	1.13
Sierra	N/A	N/A	N/A	N/A	N/A
Siskiyou	13.06	12.71	0.34	4.98	0.17
Solano	14.30	4.39	9.91	0.65	0.61
Sonoma	13.83	3.13	10.70	0.57	0.49
Stanislaus	13.75	5.43	8.32	2.48	1.30
Sutter	23.99	8.22	15.77	3.15	1.72
Tehama	4.17	2.86	1.31	1.07	0.12
Trinity	21.98	14.65	7.33	5.86	0.73
Tulare	7.49%	5.06%	2.43%	2.60%	0.96%
Tuolumne	6.85	4.11	2.74	1.52	0.46
Ventura	22.67	7.89	14.77	2.27	0.98
Yolo	11.71	7.13	4.58	3.25	0.64
Yuba	27.27	13.57	13.71	5.87	1.96
<b>AVERAGE</b>	15.37	6.11	9.36	2.48	1.47
<b>MINIMUM</b>	4.09	1.11	0.34	0.00	0.00
<b>MAXIMUM</b>	50.88	17.73	44.4	9.45	11.82

### **Limitations of the Study**

In addition to the diverse nature of the state and the incompleteness of some of the data elements, there are several limitations on this study that hinder my ability to make more precise conclusions about what the data available has to say. The two major weaknesses in the data studied in this thesis are: (1) probation data is aggregated at the county level, and (2) the demographic, educational, and economic characteristics apply to the counties broadly and not specifically towards the probation population within those counties.

The first limitation reduces the precision when it comes to interpreting the law enforcement policy factors used as dependent variables. By aggregating data to the county level, this thesis does not address the likely operational organization of the reporting county probation departments. For example, the data used in this study can note that Los Angeles had one probation officer for every 23.65 probationers, while Sacramento had one probation officer for every 33.96 probationers in 2017, but those ratios do not necessarily reflect the actual supervision ratios used by either department. Further, counties often run multiple caseloads to reflect differing subpopulations of probationers within the county's authority. The data used in my thesis did not categorize these sub-populations and constructed ratios based on the overall rates within the county. However, to the extent that specialty caseloads aggregate into a single mean per county, the variation between sub-populations within counties is nevertheless captured within the data.

Additionally, the data available did not include offender information, so it is possible that Sacramento appears to have larger caseloads than Los Angeles because, comparatively, the probationers in Sacramento committed less serious crimes, have been deemed less risky by the court and are more capable of being adequately supervised within a large caseload. Such a determination may allow Sacramento to use funds that it might otherwise spend on probation

officers, resulting in smaller caseloads, on other services such as drug and alcohol treatment programs that it finds beneficial to provide to its probationer population.

The other major weakness of this thesis is that I lacked probationer population characteristics when measuring demographics, education, and economic factors. This is important because, while I assumed that probationers broadly would reflect their counties of residence, it is very likely that the probation population and the overall county population differ significantly in race and ethnicity, educational attainment, and economic opportunities. Although my utilization of county-level factors can allow for broad conclusions, like the correlation between increased age and decreased criminality, or potential relationships between highest educational attainment or financial and social network opportunities, the lack of data specific to individuals on probation in this thesis renders conclusions about demographic characteristics heavily caveated and restricted to high-level observations.

In the next chapter, I will provide additional details on the regression analysis, including tests for multicollinearity between my chosen variables, and provide the results for the chosen regressions and my reasoning for utilizing specific methodologies over others.

## CHAPTER 4

### REGRESSION ANALYSIS

This chapter provides the results for the regressions run on my dataset to determine statistical significance between variables. All regressions utilize a fixed-effect model, which captures differences in the probation failure rate associated with each county over several years of observed data. I chose this method because it is likely that there are several significant unobserved variables in my data—such as the general court disposition within each of California’s 58 counties—that are correlated with several of my observed variables but difficult to capture in any one variable. Using fixed effects also factors in effects that do not change over time in panel data, such as a county’s location (Lam, 2018). My intention is to control for these unobserved and uniform characteristics when examining longitudinal data and determine the statistical significance of the remaining variables included in my data.

This chapter includes several sections, beginning with assorted tests for multicollinearity in my dataset, a detailed description of the methodology I use, the results of the several regressions run using the different categories of probation failure as dependent variables, and a brief summary of regression results and what types of expected impacts they suggest for one example county. In the next chapter, I will further develop my conclusions based on the regression results and provide additional context about the implications of the findings.

#### **Multicollinearity Testing**

Before running the regression analyses, I began by testing for multicollinearity, which is when two or more explanatory variables in a regression model are highly related. Multicollinearity can be an issue because its presence can result in skewed estimates that make it difficult to determine the impact of any one independent variable on the dependent variable. However, only one pair of my explanatory variables, as shown in Appendix A, display

multicollinearity in the correlation coefficients: the percentage of Hispanic residents in a county and the percentage of residents in a county with a ninth-grade education or below.

The Variance of Inflation Factor (VIF) is another means of checking for multicollinearity. A VIF higher than five indicates that multicollinearity is likely for a given variable, while a VIF larger than ten indicates very probable multicollinearity. Like the correlation coefficients, both “percent Hispanic” and “percent with a ninth-grade education or below” indicate a substantial likelihood of multicollinearity, as shown below in Table 4.1. The percentage of individuals with some high school education but no high school diploma or general education equivalency certificate and a county’s median age also demonstrate some degree of multicollinearity. However, I keep all these variables in the regression because of their statistical significance and importance when assessing the racial and educational make-up of the counties.

Another reason for keeping these variables is that they involve county control variables for race and education. When it comes to the variables of interest, particularly the county’s law enforcement policies, the VIF results for these variables are all low and, in the case of probation staff ratios to probationers and the level of SB 678 funding, the VIF scores are below two, suggesting very little multicollinearity for these policy choice variables. Therefore, I find the presence of multicollinearity in several control variables acceptable and leave them in the data.



**Table 4.1: Variance Inflation Factors of the Explanatory Variables**

EXPLANATORY VARIABLE	VIF
Percent Hispanic or Latino	<b>12.77</b>
Percent with less than a 9th-grade education	<b>9.56</b>
Percent with some high school but without a diploma or GED	<b>5.98</b>
Median age	<b>5.62</b>
Percent with a high school diploma or GED	4.79
The average probation officer salary	4.33
Percent Asian	4.23
Chief probation officer salary	4.07
Percent of all residents in poverty	3.08
Percent American Indian and Alaska Native	2.38
Percent black	2.34
Percent two or more races	2.33
Population density	2.02
Unemployment rate	1.90
Percent Native Hawaiian and Pacific Islander	1.68
SB 678 funds received, per probationer	1.54
Percent other race	1.36
The ratio of probationers to other probation staff	1.30
The ratio of probationers to probation officers	1.27
<b>MEAN VIF</b>	<b>3.82</b>

### Regression Methodology

This section provides the methodology used for the fixed effect regressions run on the five separate dependent variables that I described earlier: (1) the total revocation rate, (2) the total prison revocation rate, (3) the total jail revocation rate, (4) the prison revocation rate for new offenses, and (5) the jail revocation rate for new offenses. Specifically, using STATA software and the `.xtreg` command, these regressions estimate “within-group variation by computing the differences between observed values and their means” (Indiana University, 2018). I also applied a fixed-effects modifier to the `.xtreg` command to account for the various unchanging variables that are not measured but that likely affect probation revocations. Lastly, these regressions include robust standard errors to reduce the impact of heteroskedasticity, which occurs when the variability of groupings within a population display differing levels of variance.

Heteroskedasticity can invalidate statistical tests of significance by overestimating the significance of an explanatory variable on a dependent variable, potentially leading to results that reject no effect when the regression should not.

One important distinction to note on these regressions is that I used the natural log of all five dependent—and most of the included independent—variables, creating a log-log model with a key exception: I was not able to use natural logs of two variables, the “percent Pacific Islander” and “percent Other” racial categories because both variables had enough valid entries of zero to dramatically reduce the number of available observations. The log-log form is useful because it provides a simple method for interpreting the coefficients in the regressions. For example:

$$\ln(\text{TRevRate})_i = \beta_0 + \beta_1 \ln(\text{RatioProbsToPROBOFFS})_i + \varepsilon_i$$

Indicates that a one percent increase in the ratio of probationers to probation officers is associated with a one percent increase in the total revocation rate. This means that a coefficient of 0.250 suggests that a one percent increase in the ratio of probationers to probation officers will increase the expected total revocation rate for a county by one-quarter percent of that county’s current rate. Therefore, if a county has a total revocation rate of 10 percent and a probationer to probation officer ratio of 55-to-1 and the county increases its standard ratio to 65-to-1, the regression suggests that the county’s revocation rate will increase to 10.455 percent.

Similarly, a 0.250 coefficient for the logged percentage of black residents within a county suggests that a one percent increase in the percentage of black residents within a county will increase the probation revocation rate for that county by one-quarter percent of the current rate. If a county has a total revocation rate of 10 percent and 5 percent of its residents are black, if that county’s black population increased by 20 percent to 6 percent, the expectation is that its revocation rate would rise by 5 percent to 10.5 percent.

This is not, however, the case for “percent Pacific Islander” and “percent Other” racial categories. As I did not naturally log these variables, a one “unit” of increase (somewhat confusingly measured by percentage) is a single full percent change. Therefore, for these two categories, a change from 5 to 6 percent in a county’s Pacific Islander population with a coefficient of 0.250 would only increase the revocation rate by 0.250 of a percent. So, if the county’s revocation rate was 10 percent with a Pacific Islander population of 5 percent, if the Pacific Islander Population increased to 6 percent, the expected revocation rate would only increase to 10.025 percent.

While this confusing qualifier is unfortunate, I found it to be the best methodology given that logging the two racial categories would dramatically reduce the number of available observations by excluding counties that recorded zero percentage populations of Pacific Islander and Other racial categories. Another option, clustering those two categories and excluding them with the percentage of White residents, would result in more considerable confusion in the county racial data and what demographic factors are important. As such, I conclude that the additional difficulty of translating the findings of these regressions is the best available option.

### **Regression Results**

This section provides the results of the five regression analyses run, each exploring a different dependent variable. Table 4.2 provides the regression for the statewide total revocation rate of all probationers. Table 4.3 provides the statewide revocation rate for probationers returned to prison. Table 4.4 displays the regression for probationers returned to jails. Table 4.5 provides the subset of probationers sent to prison for new offenses, and Table 4.6 displays the regression results for probationers sent to jail for new offenses. Lastly, table 4.7 includes each of the five dependent variables and the regression results for independent variables, with those that were statistically significant indicated in bold for comparison.

**Table 4.2: Fixed Effects Panel Data Regression Results Using Statewide Total Revocation Rate as Dependent Variable (Robust Standard Errors)**

ln (Total Revocation Rate)	Coef.	Robust Std. Err.	t	P >  t	[95% Conf. Interval]	
ln (Population density)	0.170**	0.065	2.61	0.012	0.040	0.300
ln (Median age)	-1.460**	0.659	-2.21	0.031	-2.780	-0.140
ln (Percent Hispanic)	0.143	0.310	0.46	0.646	-0.478	0.764
ln (Percent Black)	0.015	0.062	0.24	0.812	-0.110	0.140
ln (Native American)	0.215**	0.105	2.06	0.044	0.006	0.424
ln (Percent Asian)	-0.144	0.099	-1.46	0.150	-0.343	0.054
(Percent Pacific Islander)	-0.073	0.221	-0.33	0.744	-.517	0.371
(Percent other race)	0.471***	0.150	3.15	0.003	0.172	0.771
ln (Percent two or more races)	0.245*	0.145	1.68	0.098	-0.046	0.535
ln (Percent with less than 9th-grade education)	-0.300	0.215	-1.39	0.169	-0.731	0.132
ln (Percent some high school)	0.317	0.322	0.98	0.329	-0.328	0.962
ln (Percent high school graduate)	0.794*	0.427	1.86	0.068	-0.061	1.650
ln (Percent all residents in poverty)	0.048	0.272	0.18	0.861	-0.497	0.593
ln (Unemployment rate)	-0.585***	0.128	-4.58	0.000	-0.841	-0.329
ln (Ratio of probationers to officers)	-0.367***	0.091	-4.04	0.000	-0.549	-0.185
ln (Ratio of probationers to other probation staff)	0.029	0.078	0.37	0.712	-0.127	0.185
ln (Average probation officer salary)	0.108	0.320	0.34	0.736	-0.533	0.750
ln (Chief probation officer salary)	0.013	0.363	0.03	0.972	-0.714	0.739
ln (SB 678 pay per probationer)	-0.187***	0.040	-4.71	0.000	-0.267	-0.108
_cons	0.819	5.450	0.15	0.881	-10.096	11.733

\* Significant at the 90 percent confidence level

\*\* Significant at the 95 percent confidence level

\*\*\* Significant at the 99 percent confidence level

<b>Number of Observations</b>	386
<b>F (19,57)</b>	17.17
<b>Prob &gt; F</b>	0.0000
<b>R-squared within</b>	0.3137
<b>R-squared between</b>	0.0203
<b>R-squared overall</b>	0.2354

**Table 4.3: Statewide Prison Revocation Rate**

<b>ln (Prison Revocation Rate)</b>	<b>Coef.</b>	<b>Robust Std. Err.</b>	<b>t</b>	<b>P &gt;  t </b>	<b>[95% Conf. Interval]</b>	
ln (Population density)	0.103*	0.056	1.84	0.070	-0.009	0.216
ln (Median age)	-1.818***	0.555	-3.28	0.002	-2.929	-0.707
ln (Percent Hispanic)	-0.336	0.307	-1.10	0.278	-0.952	0.279
ln (Percent Black)	0.002	0.052	0.05	0.964	-0.101	0.106
ln (Native American)	0.117	0.091	1.28	0.206	-0.066	0.300
ln (Percent Asian)	-0.164**	0.082	-2.01	0.050	-0.327	-0.000
(Percent Pacific Islander)	-0.069	0.190	-0.37	0.716	-0.450	0.311
(Percent other race)	0.302	0.222	1.36	0.179	-0.142	0.746
ln (Percent two or more races)	0.404***	0.137	2.96	0.005	0.130	0.678
ln (Percent with less than 9th-grade education)	-0.011	0.221	-0.05	0.961	-0.453	0.431
ln (Percent some high school)	0.451	0.286	1.58	0.121	-0.122	1.024
ln (Percent high school graduate)	0.586	0.384	1.53	0.133	-0.183	1.355
ln (Percent all residents in poverty)	-0.082	0.179	-0.46	0.650	-0.439	0.276
ln (Unemployment rate)	-0.202	0.132	-1.53	0.132	-0.467	0.063
ln (Ratio of probationers to officers)	-0.196*	0.086	-2.27	0.027	-0.369	-0.023
ln (Ratio of probationers to other probation staff)	-0.028	0.072	-0.39	0.700	-0.172	0.117
ln (Average probation officer salary)	-0.155	0.306	-0.51	0.614	-0.768	0.457
ln (Chief probation officer salary)	0.289	0.318	0.91	0.368	-0.348	0.927
ln (SB 678 pay per probationer)	-0.219***	0.042	-5.21	0.000	-0.303	-0.135
_cons	2.041	4.777	0.43	0.671	-7.525	11.607

\* Significant at the 90 percent confidence level

\*\* Significant at the 95 percent confidence level

\*\*\* Significant at the 99 percent confidence level

<b>Number of Observations</b>	382
<b>F (19,57)</b>	21.12
<b>Prob &gt; F</b>	0.0000
<b>R-squared within</b>	0.2955
<b>R-squared between</b>	0.0153
<b>R-squared overall</b>	0.2393

**Table 4.4: Statewide Jail Revocation Rate**

<b>ln (Jail Revocation Rate)</b>	<b>Coef.</b>	<b>Robust Std. Err.</b>	<b>t</b>	<b>P &gt;  t </b>	<b>[95% Conf. Interval]</b>	
ln (Population density)	0.255**	0.105	2.42	0.019	0.044	0.466
ln (Median age)	-1.406	1.013	-1.39	0.170	-3.434	0.622
ln (Percent Hispanic)	0.721*	0.392	1.84	0.071	-0.064	1.506
ln (Percent Black)	-0.023	0.078	-0.29	0.770	-0.180	0.134
ln (Native American)	0.451***	0.147	3.06	0.003	0.156	0.745
ln (Percent Asian)	-0.131	0.159	-0.82	0.415	-0.449	0.188
(Percent Pacific Islander)	-0.047	0.301	-0.16	0.877	-0.650	0.556
(Percent other race)	0.558*	0.287	1.95	0.056	-0.016	1.131
ln (Percent two or more races)	0.167	0.227	0.74	0.464	-0.288	0.622
ln (Percent with less than 9th-grade education)	-0.471	0.282	-1.67	0.101	-1.037	0.094
ln (Percent some high school)	-0.088	0.437	-0.20	0.841	-0.962	0.786
ln (Percent high school graduate)	0.887	0.553	1.61	0.114	-0.219	1.993
ln (Percent all residents in poverty)	-0.407	0.330	-1.23	0.222	-1.068	0.254
ln (Unemployment rate)	-0.414**	0.189	-2.19	0.033	-0.793	-0.035
ln (Ratio of probationers to officers)	-0.376***	0.124	-3.04	0.004	-0.624	-0.128
ln (Ratio of probationers to other probation staff)	-0.129	0.099	-1.31	0.196	-0.328	0.069
ln (Average probation officer salary)	0.064	0.495	0.13	0.898	-0.928	1.055
ln (Chief probation officer salary)	-0.225	0.458	-0.49	0.625	-1.143	0.692
ln (SB 678 pay per probationer)	-0.151***	0.055	-2.76	0.008	-0.261	-0.042
_cons	3.276	8.365	0.39	0.697	-13.475	20.027

\* Significant at the 90 percent confidence level

\*\* Significant at the 95 percent confidence level

\*\*\* Significant at the 99 percent confidence level

<b>Number of Observations</b>	325
<b>F (19,57)</b>	14.53
<b>Prob &gt; F</b>	0.0000
<b>R-squared within</b>	0.2203
<b>R-squared between</b>	0.0085
<b>R-squared overall</b>	0.1527

**Table 4.5: Statewide Prison Revocation Rate for New Offenses**

<b>ln (Prison Revocation Rate for New Offenses)</b>	<b>Coef.</b>	<b>Robust Std. Err.</b>	<b>t</b>	<b>P &gt;  t </b>	<b>[95% Conf. Interval]</b>	
ln (Population density)	0.143*	0.0738	1.94	0.057	-0.005	0.290
ln (Median age)	-0.926	1.022	-0.91	0.369	-2.973	1.120
ln (Percent Hispanic)	0.059	0.379	0.16	0.877	-0.700	0.818
ln (Percent Black)	0.149*	0.088	1.70	0.094	-0.026	0.325
ln (Native American)	0.211*	0.116	1.82	0.073	-0.021	0.442
ln (Percent Asian)	-0.232**	0.113	-2.05	0.045	-0.459	-0.006
(Percent Pacific Islander)	0.397**	0.192	2.06	0.044	0.012	0.781
(Percent other race)	0.058	0.351	0.17	0.868	-0.644	0.761
ln (Percent two or more races)	0.598**	0.232	2.58	0.013	0.134	1.062
ln (Percent with less than 9th-grade education)	-0.040	0.234	-0.17	0.864	-0.510	0.429
ln (Percent some high school)	-0.218	0.395	-0.55	0.582	-1.009	0.572
ln (Percent high school graduate)	1.243***	0.385	3.23	0.002	0.473	2.014
ln (Percent all residents in poverty)	0.440*	0.238	1.85	0.070	-0.037	0.917
ln (Unemployment rate)	-0.689***	0.188	-3.66	0.001	-1.065	-0.312
ln (Ratio of probationers to officers)	0.141	0.127	1.11	0.270	-0.113	0.396
ln (Ratio of probationers to other probation staff)	-0.115	0.093	-1.24	0.220	-0.30	0.071
ln (Average probation officer salary)	-0.753	0.466	-1.62	0.112	-1.686	0.180
ln (Chief probation officer salary)	0.127	0.372	0.34	0.734	-0.618	0.871
ln (SB 678 pay per probationer)	-0.306***	0.068	-4.53	0.000	-0.442	-0.171
_cons	3.424	7.180	0.48	0.635	-10.954	17.802

\* Significant at the 90 percent confidence level

\*\* Significant at the 95 percent confidence level

\*\*\* Significant at the 99 percent confidence level

<b>Number of Observations</b>	270
<b>F (19,57)</b>	17.54
<b>Prob &gt; F</b>	0.0000
<b>R-squared within</b>	0.4209
<b>R-squared between</b>	0.0031
<b>R-squared overall</b>	0.3011

**Table 4.6: Statewide Jail Revocation Rate for New Offenses**

<b>ln (Jail Revocation Rate for New Offenses)</b>	<b>Coef.</b>	<b>Robust Std. Err.</b>	<b>t</b>	<b>P &gt;  t </b>	<b>[95% Conf. Interval]</b>	
ln (Population density)	0.375***	0.093	4.03	0.000	0.188	0.561
ln (Median age)	-3.937***	1.205	-3.27	0.002	-6.349	-1.525
ln (Percent Hispanic)	-0.302	0.398	-0.76	0.452	-1.100	0.496
ln (Percent Black)	0.072	0.095	0.76	0.450	-0.118	0.262
ln (Native American)	0.369***	0.095	3.89	0.000	0.179	0.559
ln (Percent Asian)	-0.383***	0.136	-2.82	0.007	-0.655	-0.111
(Percent Pacific Islander)	0.224	0.279	0.80	0.426	-0.335	0.782
(Percent other race)	0.124	0.393	0.32	0.753	-0.662	0.910
ln (Percent two or more races)	-0.160	0.282	-0.57	0.572	-0.724	0.404
ln (Percent with less than 9th-grade education)	-0.110	0.2852	-0.43	0.665	-0.615	0.396
ln (Percent some high school)	-0.563	0.419	-1.34	0.184	-1.402	0.276
ln (Percent high school graduate)	0.901*	0.530	1.70	0.094	-0.159	1.962
ln (Percent all residents in poverty)	-0.591*	0.349	-1.69	0.096	-1.290	0.109
ln (Unemployment rate)	0.322	0.225	1.43	0.158	-0.128	0.772
ln (Ratio of probationers to officers)	-0.216	0.144	-1.50	0.140	-0.506	0.073
ln (Ratio of probationers to other probation staff)	.0195**	0.093	2.11	0.039	0.010	0.381
ln (Average probation officer salary)	-0.158	0.563	-0.28	0.781	-1.286	0.970
ln (Chief probation officer salary)	-0.685	0.613	-1.12	0.269	-1.914	0.543
ln (SB 678 pay per probationer)	-0.159**	0.065	-2.45	0.017	-0.289	-0.029
_cons	19.846	8.993	2.21	0.031	1.837	37.854

\* Significant at the 90 percent confidence level

\*\* Significant at the 95 percent confidence level

\*\*\* Significant at the 99 percent confidence level

<b>Number of Observations</b>	259
<b>F (19,57)</b>	7.56
<b>Prob &gt; F</b>	0.0000
<b>R-squared within</b>	0.2457
<b>R-squared between</b>	0.0220
<b>R-squared overall</b>	0.1263



**Table 4.7: Comparison of Statistically Significant Variables**

	<b>ln Total Rev. Rate</b>	<b>ln Prison Rev. Rate</b>	<b>ln Jail Rev. Rate</b>	<b>ln Prison Rev. Rate (New Offense)</b>	<b>ln Jail Rev. Rate (New Offense)</b>
ln (Population density)	<b>0.170**</b>	<b>0.103*</b>	<b>0.255**</b>	<b>0.143*</b>	<b>0.375***</b>
ln (Median age)	<b>-1.460**</b>	<b>-1.818***</b>	-1.406	-0.926	<b>-3.937***</b>
ln (Percent Hispanic)	0.143	-0.336	<b>0.721*</b>	0.059	-0.302
ln (Percent Black)	0.015	0.002	-0.023	0.149*	0.072
ln (Native American)	0.215**	0.117	<b>0.451***</b>	<b>0.211*</b>	<b>0.369***</b>
ln (Percent Asian)	-0.144	<b>-0.164**</b>	-0.131	<b>-0.232**</b>	<b>-0.383***</b>
(Percent Pacific Islander)	-0.073	-0.069	-0.047	<b>0.397**</b>	0.224
(Percent other race)	<b>0.471***</b>	0.302	<b>0.558*</b>	0.058	0.124
ln (Percent two or more races)	<b>0.245*</b>	<b>0.404***</b>	0.167	<b>0.598**</b>	-0.160
ln (Percent with less than 9th-grade education)	-0.300	-0.011	-0.471	-0.040	-0.110
ln (Percent some high school)	0.317	0.451	-0.088	-0.218	-0.563
ln (Percent high school graduate)	<b>0.794*</b>	0.586	0.887	<b>1.243***</b>	<b>0.901*</b>
ln (Percent all residents in poverty)	0.048	-0.082	-0.407	<b>0.440*</b>	<b>-0.591*</b>
ln (Unemployment rate)	<b>-0.585***</b>	-0.202	<b>-0.414**</b>	<b>-0.689***</b>	0.322
ln (Ratio of probationers to officers)	<b>-0.367***</b>	<b>-0.196*</b>	<b>-0.376***</b>	0.141	-0.216
ln (Ratio of probationers to other probation staff)	0.029	-0.028	-0.129	-0.115	<b>0.195**</b>
ln (Average probation officer salary)	0.108	-0.155	0.064	-0.753	-0.158
ln (Chief probation officer salary)	0.013	0.289	-0.225	0.127	-0.685
ln (SB 678 pay per probationer)	<b>-0.187***</b>	<b>-0.219***</b>	<b>-0.151***</b>	<b>-0.306***</b>	<b>-0.159**</b>
_cons	0.819	2.041	3.276	3.424	19.846

\* Significant at the 90 percent confidence level

\*\* Significant at the 95 percent confidence level

\*\*\* Significant at the 99 percent confidence level

## Summary of Findings

Following the regression analyses, Table 4.7 is illustrative in pointing out some of the major contributing factors of a county's probation rate across the different chosen subsets of probationers. As indicated by bold in Table 4.7, the following independent variables are statistically significant in at least three of the examined probation populations:

- County population density
- County median age
- Percentage of county population that is American Indian or Alaska Native
- Percentage of county population that is Asian
- Percentage of county population that is two or more races
- Percentage of county population with a high school diploma or GED
- The county's unemployment rate
- The ratio of probationers to probation officers
- The amount of SB 678 funds received per probationer

Of those variables, both a county's population density and the amount of SB 678 funds received per probationer were statistically significant in every category, with increasing population density associated with higher revocation rates and greater per-probationer levels of SB 678 funds corresponding with lower revocation rates. Additionally, SB 678 funding demonstrated statistical significance at the 99 percent confidence level in all but one category, which suggests that a county's level of SB 678 funding per probationer is highly correlative with declines in its probation revocation rates. I will further discuss the policy implications of this particular finding in greater detail in the next chapter.

Regarding the correlation coefficients presented in Table 4.7, I refer back to the regression methodology section of this chapter and will provide some examples of what the

coefficients suggest regarding the relationship between some of the dependent and independent variables. For each of these examples, I will utilize Sacramento and its reported 2017 data as the baseline to explore.

### *Demographic Impacts*

For population density, Sacramento in 2017 reported approximately 1,508 people per square mile. Between 2010 and 2017, Sacramento's population density per square mile has increased by about one percentage point annually. Based on the correlation coefficients presented in the regressions, if Sacramento's population density increased one percent to 1,523 people per square mile in 2018, the county's total revocation rate would increase by about one-sixth of a percent. This results in a relatively small increase when looking at the actual numbers involved. For example, Sacramento's average annual total probation population in 2017 was 17,626, and there were 2,021 revocations to either jail or prison for all reasons. If the county's population density increases by one percent in 2018, the data suggests that there will be an additional three revocations, holding that the probation population remains the same. Based on the current distribution, one of those revocations would be to a prison sentence while the other two could be expected to be sent to complete a jail sentence.

Median age displayed higher correlation coefficients, so the impact is anticipated to be more significant. Between 2010 and 2017, Sacramento's median age has increased from 34.9 to 36.3, averaging an increase of roughly half a percent annually. Assuming the aging trend in Sacramento continues as it has been, these correlation coefficients imply that Sacramento will see a reduction in the number of revocations. Based on the 2017 probation population of 17,626 and that year's 2,021 revocations, a half-percent increase in the county's median age in 2018 could see approximately 15 fewer total probation revocations, about a 0.7 percent decrease. The

decrease in the number of individuals revoked to jail for new offenses is a more substantial portion of a smaller number: 220 revocations declining to 216, a 1.9 percent decrease.

Some other demographic factors that appear to impact county probation revocation rates include the percentage of a county population that is American Indian or Alaska Native, which appears to increase a county's jail revocations to a degree. Conversely, an increase in a county's percentage of Asian residents appears to very marginally decrease the county's revocation rate. The percentage of a county's residents reporting two or more races correspond with slightly increasing prison revocations.

The percentage of a county with the highest level of education as a high school diploma or GED is also positively correlated with higher revocation rates overall and for new crimes. A caveat about this variable is that it does not measure the percentage of the population with "at least" a high school diploma or GED, but specifically of the percentage of the population who indicated their highest level of education completed. Therefore, counties with relatively low figures in this category are generally counties with higher levels of educational attainment—measured either in some college, associate degrees, bachelor's degrees, or graduate degrees.

### Policy Impacts

One of the interesting takeaways about the impact of probationer to probation officer ratio is that the effects were not statistically significant regarding probation revocations for the commission of new crimes. However, the regressions suggest that probation officer caseload does correspond with changing a county's overall revocation rate, namely that larger caseloads result in less frequent revocations. This suggests that a probation officer's caseload size may have little to do with whether any of his or her assigned probationers commit new offenses, but that the caseload size does matter when it comes to technical, non-criminal violations.

Between 2010 and 2017, Sacramento averaged between 27 and 48 probationers per probation officer annually, with the average across the eight years at 36, and the 2017 ratio at 33-to-1. The regression suggests that if the caseload rose three percent to 34-to-1, the county's total revocation rate would decline by about 1.1 percent. Assuming that Sacramento made the policy decision to set its probation caseload officially at 40-to-1 and staffed close to that level, this represents an increase of 21 percent over the 2017 ratio. A 21 percent increase corresponds with an expected reduction of total revocations by about 7.7 percent, prison revocations by 4.1 percent, and jail revocations by 7.9 percent. Practically speaking, these are relatively significant shifts. Again, based on an assumed static probation population of 17,626, these changes result in 155 fewer total revocations, with about 60 percent of those revocations returning to jail sentences and 40 percent resuming prison sentences. Conversely, the regression suggests that reducing Sacramento's official caseload to 26-to-1 would increase the number of revocations by the same amount. I will explore the implications of these results, that larger caseloads correspond with fewer revocations, in a broader discussion in the next chapter.

Lastly, I want to briefly explore what the correlation coefficients suggest about the impact of a county's SB 678 funding per probationer. In 2017, Sacramento received approximately \$15.5 million in SB 678 funds from the state, or roughly \$881 per probationer. Between 2011 and 2017, Sacramento has averaged about \$791 per probationer, with a low of \$549 in 2011 and a high of \$1,117 in 2014. Based on the coefficients presented in the regression, a one percent increase or decrease in SB 678 funds per probationer correspond with about a one-sixth or one-third percent increase or decrease in the revocation rate, depending on the population. The most significant impact is in revocations of probationers to prison for new offenses, which makes inherent sense as the intention of SB 678 funding is to reduce the number of individuals that counties send to prison.

Assuming that California's state policymakers decided to provide Sacramento an additional \$2 million in SB 678 funding and that the number of probationers holds constant, this additional grant would result in the funding-per-probationer set at \$992, a figure below Sacramento's historic high but still an impressive 12.7 percent increase over 2017 levels. Based on the regression coefficients, these additional funds could be expected to drop the county's total revocations by about 48 probationers, with about 65 percent of those revocations encompassing individuals returned to prison.

Although based on very preliminary and generalized information, the above results suggest both the importance of county demographic and policy decision factors in determining the county's probation revocation rate. In the next chapter, I will further explore the implications of these results, provide additional context, and investigate what some of these results suggest about the nature of probation in California and the efficacy and viability of specific policy decisions available to counties.

## CHAPTER 5

### CONCLUSION

This thesis analyzed several factors impacting probation revocations, or the failure for a probationer to complete his or her term of supervision. The dependent variable in my model was the annual county probation failure rate, segmented into five different categories based on the circumstances of the revocation: sent to either jail or prison for failure to complete the term of the probation, or sent to jail or prison for a new offense unrelated to the initial grant of probation.

I identified several variables that prior research indicated played significant roles in determining probation success and placed them into three broad categories: county demographic factors, county economic factors, and law enforcement policy factors. The variables included in county demographics were population density, median age, percentages of ethnicities residing in that county, and average educational attainment in those counties. I measured the percentage of all residents in poverty and the unemployment rate as economic indicators. Lastly, I measured law enforcement policies by including the ratio of probationers to probation officers, the ratio of probationers to other probation department staff, the average salaries of both rank-and-file probation officers and the county's chief probation officer, and the proportion of SB 678 funds per probationer received within the county.

In the previous chapter, I provided the summary results of my regression analyses and identified which of my chosen explanatory variables demonstrated statistically significant impacts on the dependent variables. I also provided several hypothetical examples of what the correlation coefficients from the regression analysis suggested might occur using Sacramento county as the example county. Although the results provide additional insight into the nature of probation

supervision in California, I noted the several major limitations on this study in earlier chapters that hinder my ability to make more precise conclusions about what the available data implies.

In this chapter, I will explore what my study's findings imply more broadly, compare how they related to previous research findings, and provide suggestions for future research to explore the relationships identified in this thesis.

### **Demographic Implications**

As displayed in Table 4.7, there are several demographic factors that show statistical significance concerning a county's probation revocation rates. Although the percentage of black and Hispanic residents in a county appeared to show no consistent significant in my regression results, the county's population density, median age, percentage of Native Americans, Asians, individuals identifying as two or more race, and the percentage of residents in the county with a high school diploma as their highest educational attainment all had significant impact on a county's revocation rate.

#### **Population Density**

A county's population density was one of only two explanatory variables that demonstrated statistical significance across all five categories of the dependent variable of probation failure, and all impacts demonstrated a positive association, with higher density corresponding with higher revocation rates.

Researchers have long examined population density and urbanization trends as possible predictors of *crime*, but there are far fewer examinations of density as a factor associated explicitly with the far narrower punishment of probation, and whether individuals under supervised probation are more or less likely to succeed in an urban or rural setting. Additionally, although long studied, there is relatively little consensus on whether or not density is positively associated with higher rates of crime, lower rates of crime, or some much more nuanced predictor



of specific types of crimes. Watts (1931), declared that “it is abundantly evident that the crime rate is materially affected by the growth and urbanization of the population” (p. 20). However, numerous other studies demonstrated the opposite, particularly when examining particular classifications of crimes. Shichor, Decker, and O’Brien (1979) found that property crimes with contact—such as burglary—did increase with density, but that all other property crimes and violent crimes declined. More recently, Battin and Crowe (2017) similarly found no significant relationship between population density and violent crime.

However, this thesis is not focused on crime. My regressions identified a robust and positive correlation between population density and probation failure, which, while it certainly can include criminal acts, measures a distinct variable. Even a differentiation between correlation coefficients within population density suggests an intriguing facet: The revocation rates to jails, both broadly and specifically for new crimes, are more significant than other types of revocations. This suggests that lower-level offenders, those less probable to receive prison sentences, are more likely to have the term of their probation revoked or commit a new low-level offense in more densely populated regions.

Unfortunately, determining the reasons driving this correlation is beyond the scope of this research, but could be informed by several elements researchers apply to associations between density and crime. One is the idea that population density provides more significant opportunities for crime in the sense that there are significantly more contacts between individuals and property (Harries, 2006). To a degree, this makes sense. An individual in an urban setting is much more likely to encounter a stranger’s property to steal, have access to drugs, and, if frustrated, lash out and victimize a bystander. The same concept can apply equally to a probationer: Proximity to a higher level of temptation in an urban versus a rural setting.

Relatedly, urban density results in a far higher likelihood of surveillance, either directly or indirectly. In the direct sense, this could be simply more law enforcement officers, more security, or other types of technological surveillance. Indirectly, a denser population inherently increases the likelihood of a witness to any given act. In the case of a probationer, the surveillance relationship is a direct association: Regardless of caseload size or other factors, it is possible that in a densely populated area, a probation officer is more likely to encounter his or her probationer performing an revocable act than they would be in an expansive geographical area. Given the limitations of this study, I remain curious about how the implications of broader population density trends impact whether an individual is more or less likely to complete his or her period of supervision successfully.

### Age

As noted by Hirschi and Gottfredson (1983), criminologists mostly hold the negative association between increasing age and declining crime as a truism. My regression results similarly associate counties with higher median ages with lower revocation rates. One aspect to highlight is the significantly more significant negative correlation between median age and the percentage of revocations to jail associated with a new crime. This suggests that individuals given probation terms for comparatively minor crimes coupled with a jail sentence are unlikely to fail their probation term if they reside in counties with higher median ages.

At a macro level, this association is important as California's senior population grows. Projections suggest that California's over-65 population will increase from approximately 12 percent of the state's population in 2012 to 19 percent by 2030 (Beck and Johnson, 2015). It is possible that, as the state's population ages, counties can safely and prudently shift resources currently expended on probation services towards elder care programs such as In-Home Supportive Services or that offer routine medical transportation.

### *Race and Ethnicity*

This study also considered the racial and ethnic composition of the counties studied and whether they impacted that county's probation failure rate, excluding white as a category for comparative purposes. The regressions showed that the percentage of Native Americans and individuals listing their race as "two or more" were positively associated with higher revocation rates. Additionally, counties with higher percentages of Asian residents had fewer probation revocations than others.

Although the consideration of race at a county level greatly simplifies the implication of important racial characteristics explored in Chapter 2, neither of these findings are particularly surprising given existing literature. In a federal Bureau of Justice report, Greenfeld and Smith (1999) found that American Indians disproportionately represented for minor offenses resulting in jail terms, with high arrest rates for driving under the influence or other alcohol-related crimes. The high correlation between jail revocation rates and jail revocations for new offenses appear to be consistent with those findings.

The negative correlation between counties with high Asian populations is also an interesting relationship, but the implication beyond potentially adding fuel to the controversial characterization of labeling Asian Americans a "model minority" is difficult to discern. As demonstrated by Burt's (2017) rebuttal of a Walsh and Yun (2017) paper, comparing Asian Americans against other minority groups in America is a contentious issue worthy of significantly more study. Unfortunately, at a county-level, this thesis can only indicate a general association.

In something of a curious absence, the percentage of a county's population of black or Hispanic residents did not generally show statistical significance in this study. As explored more broadly in the chapter on methodology that explored several of this study's limitations, this is likely an artifact of the dataset, which drew only from the overall county population and not the

narrower population on probation supervision. As an example, black Californians constitute just below eight percent of the state's population but comprise just under 23 percent of the supervised probation population (Nguyen, Grattet, and Bird, 2017). Given the importance of race in criminal justice interactions, it is very probable that the percentage of black and Hispanic citizens in a county broadly may not show measurable significance associated with caseload size but that the percentage of those races comprising the probation population could.

### Education

Lastly, the average educational attainment within a county appears associated with revocation rates. Counties with high percentages of residents with high school completion as their greatest educational attainment corresponded with higher rates of probation failure. It is without question that this measurement corresponds with several other previously identified factors like economic opportunity, income and wealth, and social engagement not contained within the confines of this particular study. However, the general implication that counties with higher proportions of residents with educational attainment beyond a high school diploma or equivalent are less likely to fail probation terms appears consistent with existing research.

### **Economic Implications**

For my regression, I only included two measures of a county's economic status: the county's unemployment rate and its percentage of all residents in poverty. The percentage of all residents in poverty indicated a mixed impact: higher poverty corresponded with greater prison revocations for new offenses but a lower jail revocation rate to jail for new offenses.

Similarly, the regression results for the unemployment rate are curious but provide only surface-level illumination. An increase in a county's unemployment rate corresponds with a decrease in the probation revocation rate, and the negative correlation coefficients are some of the larger measured within this study. Again, the most significant limitation with this finding is that

my research examined an entire county's unemployment rate rather than the unemployment rate of individuals on supervised probation. In this example, what this might imply is that reduced disparity between probationer unemployment—which is likely higher than the general population's unemployment given the general characteristics of justice-involved populations—and the county unemployment rate overall results in fewer instances of probation failure.

Necessarily, if it is equally hard for the probationer to find employment as it is for an average resident in that county, the probationer may find social commiseration with his or her peers or a more robust public assistance system less likely to discriminate against the probationer. The opposite situation might also be right: an unemployed probationer in a county with a low unemployment rate might find his or her inability to find work frustrating and perform an action—such as drug use or theft—that results in probation revocation. Several studies (Choe, 2008; Costantini, Meco, and Paradiso, 2017) highlight the correlation between high inequality measures and increased crime rates. However, I again caution that the limitations of county-level examinations of economic factors in probation revocations raise more questions than they answer.

### **Law Enforcement Policy Implications**

In this thesis, I explored several law enforcement policy variables, including probation officer salaries, the ratio of probationers to probation officers, and the amount of SB 678 funding received per probationer. Of these variables, both the ratio of probationers to probation officers and, to an even greater extent, the amount of SB 678 funding per probationer evidenced statistically significant impacts on the county probation revocation rate. Interestingly, high ratios of probationers to officers were associated with low revocation rates. Less surprisingly, a high level of SB 678 funding—the state incentive intended to provide additional funds when counties send fewer probationers to prison for technical or criminal violations—was also associated with counties with low revocation rates.

### Probationer Ratios

Although somewhat counter-intuitive, the correlation between high probationer to officer ratios is not unsupported by prior research. Both Gill (2010) and Barnes *et al.* (2012) found that low-risk offenders placed into large, minimal supervision caseloads recidivated at lower rates than probationers placed in comparison groups of traditional caseload sizes. However, this study does not explore the actual probationer population at a level of detail that could provide suggestions on *why* counties with greater ratios display lower revocation rates. Although correlated, it may be the low revocation rates driving the increased ratios: the probation population in a county may be comparatively low risk to other counties, and, because they are generally at less risk of recidivism, the county is comfortable utilizing larger caseloads generally.

The association of larger caseloads with decreased revocation rates was consistent across jail and prison populations but did not demonstrate statistical significance for either category when involving the commission of a new crime. This suggests that caseload size, either large or small, is likely not associated with preventing new crimes in the traditional sense. Although equally high-level, this distinction implies that a primary reason that a decline in caseload size is related to an increase in the revocation rate is that increased supervision is more likely to result in an officer finding a probationer has technically violated the term of his or her probation.

Unfortunately, it is difficult to interpret whether more observations of technical violations and more revocations inherently increase overall public safety. I can argue that a technical violation, and revocation to jail, for failure to comply with counseling or a positive test of drug use does not adequately improve public safety. Conversely, I could also argue that it is possible that identifying the technical violation of drug or alcohol use could potentially prevent the commission of a new crime such as theft or driving under the influence in the future. However, while the specific reasons driving the relationship or whether or not revocations should be

directly associated with public safety are beyond the scope of this study, my regression results nevertheless demonstrated a vital correlation between probation success and caseload size.

The Council of State Governments (2018) recently released a report highlighting best practices following a 50-state survey that includes several mentions of resource utilization and caseload sizes. The recommended practices for probation departments include using risk assessments to identify individuals most likely to re-offend, provide differentiated caseloads based on risk assessments, and creating “reduced supervision strategies for people at low-risk of reoffending.” Establishing specialized and differentiated caseloads dependent on the offender is a worthwhile policy effort that aligns with the existing literature, which indicates that both small and large caseloads can improve outcomes, depending on the characteristics of the offenders. Although the results of this regression, which demonstrate an association between large caseloads and fewer revocations, only demonstrate one side of this coin, I think small caseloads and more intervention such as drug and alcohol treatment may also reduce recidivism and revocation.

In Kings County, the probation department utilizes a static risk assessment tool to determine if a probationer is most appropriately supervised on a larger caseload or if their needs warrant a smaller caseload, which facilitates increased contact between the probation officer and the probationer (Mandeep Bhangoo, personal communication, November 21, 2019). Creating and using specialized caseloads based on evidence-based practices such as risk assessment tools also moves away from a generalized, one-size-fits-all approach that does not adequately consider the different needs and characteristics of individual probationers.

#### *SB 678 Funding*

The level of funds received through the Community Corrections Performance Incentive Grant program also demonstrated a statistically significant relationship with revocations. The results indicate that higher levels of funding per probationer are associated with lower numbers of

revocations. To some extent, this close relationship derives from the very nature of the program, which provides counties financial incentives for sending fewer individuals on probation to state prison than a previous baseline. Generally, the lower a county's prison revocation rate, the more SB 678 funding that county receives. However, SB 678 funding is associated only with a county's prison revocation rate, and the regression results suggest that higher levels of state funding are associated with decreased prison and jail revocation rates. The consistent negative relationship implies that counties are not merely shifting probation revocations to county jails but are using diversion funds in ways to reduce the overall rate of probation revocations.

Additionally, it is the prior year's revocation rate that determines the level of funding provided to a county in the following year. This delay reduces the criticism that the level of funding and revocations are linear and directly correlated. Such a confounding relationship would be real if the county obtained payment immediately, but the one-year shift from performance to payment lessens the connection and suggests that increased payments per probationer from the previous year still correlate with lower revocation rates in the following year. A study focusing specifically on SB 678 funding and revocation rates would benefit from using a dynamic regression with lagged explanatory variables and would likely show that increasing SB 678 funding drives lower revocation rates and not the reverse.

One interesting aspect to note regarding the use of funds is the relationship between how counties spend SB 678 funds and the counties' caseload sizes. As part of an annual Judicial Council report on the SB 678 Program, Lower (2019) noted that 52 counties self-reported spending an average of about 60 percent of their funds on the "hiring, support, and/or retention of case-carrying officers/supervisors" in 2018 (p. 21). The report notes that counties expend the second highest amount of SB 678 funding on evidence-based treatment programs, using roughly 20 percent of their SB 678 dollars on these types of intervention.



Based on the survey, counties self-identify spending the most significant portion of their SB 678 funds are expenses likely to result in reduced caseload sizes. However, the data in my regression implies that smaller caseloads increase revocations, while increasing levels of SB 678 funding result in an inverse relationship, with more funds associated with fewer revocations. The contrary nature of these findings suggests that low revocations may be best obtained by utilizing state SB 678 funding more on things like evidence-based treatment programs, use of risk and needs assessments, or other evidence-based practices.

However, there are no statutory requirements on how counties utilize the funds they receive. Therefore, while the inherent flexibility provided to local probation departments on how to spend their funds allows experimentation in search of best practices, it also carries risk. For example, Fremon (2017) reported that Los Angeles County was not regularly expending the SB 678 funds received, resulting in a motion by county supervisor Mark Ridley-Thomas to require Los Angeles' chief probation officer to provide detailed spending plans for how Los Angeles Probation planned to spend its hundreds of millions of unspent probation funds. Counties must ensure their probation departments are appropriately using funds provided by the state on initiatives that demonstrate success in diverting probationers from prison or jail sentences.

### **Suggestions for Future Research**

As I previously noted, the most considerable limitations of this thesis mainly revolve around the broad and high-level nature of the data. Ideally, future research into the relationships between probation caseload sizes and how to most efficiently allocate resources will include additional nuances and details not captured in this paper. I find three major elements that would add beneficial context for policymakers: (1) more comprehensive demographic data, (2) more detailed offender and offense information, and (3) better tracking of probation department practices and spending.

Firstly, future research should endeavor to differentiate the three major populations involved: The individuals on supervised probation, the individuals who actively supervise them, and the overall population within the county. Age, race, education, and potentially other measures such as community engagement—measured perhaps through more informal surveying, voting and volunteering responses—will allow researchers to identify any specific issues that may arise between differing probation populations, and could potentially indicate other trends when the probation population differs significantly from the overall county population or the population of probation officers. For example, the demographics of San Francisco County’s probation population is likely very different from Shasta County’s, and more detailed data can highlight these differences and provide insight into what they mean.

Additionally, better information regarding the demographics of the probation officers and the county could highlight issues that may arise when the probation population differs significantly from either the officer or overall county disposition. For example, probation departments that look racially more like the probation population they supervise may demonstrate lower revocations than those departments with very different racial compositions from the supervised population. In another case, a probation population with a low average education residing within a county with a high level of average education may suggest an increased need for the county to incentive educational attainment for its probationers, perhaps reducing terms of probation in coordination with attendance or completion of education or certification programs. Overall, more research in this broadly sociological realm can provide fascinating information on how to craft broader policies to improve probationer outcomes.

Second, a much more granular exploration of the probation offenders themselves will illuminate the unique needs of specialized populations. By using information about the criminal history of probationers at an individual level, research can indicate if violent offenders, drug

users, or perpetrators of property crimes demonstrate particular characteristics worth addressing with county policy decisions. Counties with high percentages of probationers abusing drugs or alcohol may need to prioritize funding increased social services and counseling over small caseloads, where a county with a large population of violent offenders may need the reverse. Utilizing more individualized data at the offender level could also demonstrate myriad other relationships worth further study, such as the types of offenses in a given county or region, the average revocation rates for different offender classifications, and which counties—given similar demographics and offender types—perform better than others, potentially establishing a number of model county best practices that can be used by other, similar counties.

Lastly, and connected with my previous two recommendations for future research and the findings of this current paper, future studies should take particularly close note of the practices and operational realities of each of California's 58 probation departments. This paper, for example, assumed average county caseloads by dividing the total probation population by the number of reported officers. However, as previously noted, this methodology does not consider critical policy decisions such as differentiated, specialized caseloads. By incorporating the actual allocations into the dataset, future research can control for things such as low-risk probationers residing within larger, minimally supervised caseloads when considering the various factors that contribute to a county's revocation rate.

Similarly, by delving more in-depth into existing county policies, future research can inform better, evidence-based decision making. For example, probation and parole departments often place certain types of offenders, such as sex offenders, on low-ratio, closely supervised caseloads due to their perceived threat of recidivism and risk to society. However, a close study of offender characteristics and existing county practices may show that it is, in fact, alcohol

abusers who are more likely to recidivate and have probation revoked for a fatal driving-under-the-influence action and that counties should more closely supervise this offender population.

Obtaining detailed information from probation departments will also control for some of the other previously mentioned concerns, such as the actual use of SB 678 funds. Using only the distribution schedule from the Judicial Council or State Controller's Office will show where those individual state funds went in terms of dispersal. They do not account for how counties spend those funds. Although the Judicial Council surveys counties regarding how they spend those funds, the Los Angeles case suggests that not all counties are appropriately spending the money as intended. By studying the actual expenditures of funds like SB 678, future research can demonstrate which interventions—such as reduced caseload sizes, utilization of comprehensive risk assessments, increased and more flexible counseling and treatment services, or support for other evidence-based practices—are most active at promoting probationer success.

### **Final Comments**

While the cry for “more data” seems to be the eternal grievance of economists and policymakers, I found the results from this preliminary examination of California probation caseload impacts and SB 678 funding nevertheless informative despite the high-level and generalized nature of the data. The association between high caseload size and low revocations appears to contradict the first blush assumption that closer supervision will result in better behavior and fewer infractions, and the data appears to show the efficacy in SB 678 funding in reducing all probation revocations and not just those for individuals sentenced to prison terms.

Based on the existing literature and the results of the regressions in this thesis, I find that larger caseloads are associated with fewer probation revocations to jail and prison for technical violations. I also find a positive correlation between the level of SB 678 received by counties and reduced numbers of individuals sent to state prison and suggest policymakers seriously consider

expansion of the program, provided legislators tie expansion with increased oversight and study of how counties utilize the funding to determine best practices. On this latter front, I can say with some excitement that this process already appears to be in progress.

In August 2019, the Chief Probation Officers of California launched the California Probation Research Institute (CaPRI) to “fill the current lack of cumulative data and analysis about California probation’s approach” and provide the state’s counties with increased qualitative evidence and resources for developing and implementing more informed policies. One of the first reports from CaPRI will focus on SB 678, with leadership provided by Mia Bird and Ryken Grattet, two academic experts in California criminal justice and sociological trends. Another report will focus on juvenile justice. I am excited that this research will provide greater insight and detail into California’s probation system, and hopeful that my work has contributed even slightly to this pertinent aspect of criminal justice policy.

**Appendix A: Simple Correlation Coefficients Between all Explanatory Variables**

VARIABLE	TRevRate	PopDens	MAge	PCT_HI	PCT_BLA	PCT_AI	PCT_AS	PCT_PI
<b>TRevRate</b>	1.0000							
<b>PopDens</b>	-0.1218*	1.0000						
<b>MAge</b>	-0.1292*	-0.0672	1.0000					
<b>PCT_HI</b>	0.1212*	-0.0829*	-0.7843*	1.0000				
<b>PCT_BLA</b>	0.0454	0.2017*	-0.3916*	0.1905*	1.0000			
<b>PCT_AI</b>	-0.0040	-0.1283*	0.2867*	-0.3279*	-0.2295*	1.0000		
<b>PCT_AS</b>	-0.0811*	0.6127*	-0.3107*	0.0342	0.4729*	-0.2979*	1.0000	
<b>PCT_PI</b>	0.0519	0.0726	0.0285	-0.2131*	0.3328*	0.2243*	0.3374*	1.0000
<b>PCT_OT</b>	-0.0236	0.2896*	-0.1023*	-0.0229	0.3061*	-0.1589*	0.3424*	0.1567*
<b>PCT_TWO</b>	0.0687	0.1244*	0.0727	-0.4477*	0.2636*	-0.0387	0.3138*	0.2289*
<b>PCT_9TH</b>	0.0306	-0.0004	-0.7571*	<b>0.9305*</b>	0.1255*	-0.3170*	0.0642	-0.2042*
<b>PCT_SOMEHS</b>	0.2507*	-0.2178*	-0.4907*	0.5700*	0.1682*	0.0684	-0.2914*	-0.1154*
<b>PCT_HSG</b>	0.1589*	-0.4066*	0.2478*	-0.1017*	-0.1103*	0.4676*	-0.5874*	-0.0024
<b>PCT_POVALL</b>	0.1460*	-0.1766*	-0.3251*	0.3310*	0.0063	0.1262*	-0.3183*	-0.1827*
<b>UnemRate</b>	-0.0091	-0.1965*	-0.1508*	0.1881*	0.0397	0.0290	-0.2600*	-0.0609
<b>ProbOffRatio</b>	-0.2425*	0.0592	-0.1813*	0.0988*	0.1569*	-0.0084	0.1660*	0.0751
<b>ProbOthRatio</b>	-0.0755	-0.1403*	-0.1993*	0.2126*	0.0093	-0.1715*	-0.0533	-0.0643
<b>AvgPROBSal</b>	-0.1247*	0.4072*	-0.1697*	0.0113	0.2612*	-0.0163	0.6724*	0.3156*
<b>ChiefPROBSal</b>	-0.0294	0.3923*	-0.4079*	0.2854*	0.4861*	-0.4642*	0.6474*	0.1059*
<b>SB678 Pay</b>	-0.0998*	-0.0671	0.4565*	-0.3381*	-0.1924*	0.4821*	-0.2326*	0.1672*

VARIABLE	PCT_OT	PCT_TWO	PCT_9TH	PCT_SOMEHS	PCT_HSG	PCT_POVALL	UnemRate	ProbOffRatio
<b>PCT_OT</b>	1.0000							
<b>PCT_TWO</b>	0.2381*	1.0000						
<b>PCT_9TH</b>	-0.0390	-0.4225*	1.0000					
<b>PCT_SOMEHS</b>	-0.1744*	-0.2983*	0.5790*	1.0000				
<b>PCT_HSG</b>	-0.3551*	-0.1443*	-0.0937*	0.5072*	1.0000			
<b>PCT_POVALL</b>	-0.1902*	-0.0953*	0.3898*	0.6930*	0.5023*	1.0000		
<b>UnemRate</b>	-0.1738*	-0.1319*	0.2160*	0.5158*	0.3984*	0.5421*	1.0000	
<b>ProbOffRatio</b>	0.0020	-0.0721	0.1208*	0.0951*	0.0067	0.0969*	0.2890*	1.0000
<b>ProbOthRatio</b>	-0.1710*	-0.0810*	0.1903*	0.0432	0.0540	0.0931*	0.1393*	0.1675*
<b>AvgPROBSal</b>	0.3194*	0.1476*	-0.0186	-0.4403*	-0.6119*	-0.5062*	-0.3756*	0.0958*
<b>ChiefPROBSal</b>	0.3460*	0.0903*	0.2032*	-0.2563*	-0.6201*	-0.3229*	-0.3111*	0.0937*
<b>SB678 Pay</b>	-0.1562*	-0.0915*	-0.2993*	-0.0975*	0.2869*	-0.0310	-0.1062*	-0.1316*

VARIABLE	ProbOth Ratio	Avg PROBSal	Chief PROBSal	SB678 Pay
<b>ProbOthRatio</b>	1.0000			
<b>AvgPROBSal</b>	-0.0142	1.0000		
<b>ChiefPROBSal</b>	0.0474	0.6530*	1.0000	
<b>SB678 Pay</b>	-0.1712*	-0.0487	-0.3519*	1.0000



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