Understanding Payment Barriers To Improve Child Support Compliance



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SUMMARY

The Research and Reporting Unit of the Orange County Department of Child Support Services (CSS) produced a multivariate examination of the number and type of barriers that prevent Non-Custodial Parents (NCPs) from making consistent child support payments. The caseload analysis is based on child support payments from 772 child support cases from Orange County's caseload of approximately 79,000 cases. The study determined the major barriers associated with low payment compliance. In order of influence, the top 10 predictors are: 1) NCP Monthly Gross Income; 2) Education level of the NCP; 3) NCP Age at First Becoming a Parent; 4) Ratio of Order Amount to NCPs Gross Wage (ROTW); 5) Criminal History; 6) Visits Per Month; 7) Number of Children; 8) Substance Abuse History; 9) Currently on Probation/Parole; and 10) Language. NCPs predicted to yield low compliance are associated with multiple barriers. Predictive analytics was used to predict future compliance based on these barriers and can lead to effective policy decisions that emphasize setting appropriate orders for NCPs with barriers. In this study, setting appropriate orders effectively improves compliance for NCPs with barriers.

NCPs with major barriers have the least ability to pay and have the most problematic lives. Results indicate that these NCPs are expected to pay a higher proportion of their monthly gross income towards child support. Knowing these facts can guide policy and child support agencies to set appropriate orders to assure consistency of payments for NCPs with barriers.

Finally, knowing the barriers associated with future compliance can guide child support agencies to partner with vital community organizations through a family-centered services approach. This approach is expected to be highly effective at improving the income of NCPs (and support compliance) when they are connected to appropriate resources.

A combination of setting appropriate orders and utilizing a family-centered services approach can lead to higher incomes and consistent child support payments.

This research also acts as a springboard for future research in developing and promoting future programs to improve child support outcomes for the NCPs with barriers and to measure their effectiveness.



INTRODUCTION

In Federal Fiscal Year 2011, the United States child support program served 15.8 million families and collected and distributed \$27 billion in payments (Office of Child Support Enforcement [OCSE], 2011a). The program served 17.3 million children.

OCSE has made consistent efforts to improve collections year over year through innovative strategies, best practices and collaboration with child support offices within other states. As a result, child support Distributed Collections in the United States increased 9.8 percent or \$2.4 billion from FFY 2007 to FFY 2011.

OCSE outlined a three tier strategy approach for all states to continuously improve future child support performance (Turetsky, 2013). These strategies represent a roadmap for states to follow:

- 1. Focus on the fundamentals. Make sure computer systems, new hire reporting and income withholding (e-IWO) are working well.
- 2. **Identify the performance problem.** Identify the reason for irregular support payments, intervene early and set appropriate obligations.
- 3. **Expand access to services.** Partner with other programs and redirect resources to address barriers to nonpayment through family-centered services.

This study examines tier two and three above: identify reasons for irregular support payments, early intervention, setting appropriate obligations, and partner with other programs to address barriers to nonpayment through family-centered services including collaborations with other government and community organizations.

Previous research on the impact of setting appropriate orders to increase child support compliance and payments examined child support order amounts in relation to the NCP's income (Formoso, 2003). Results demonstrate arrears growth will occur if the ROTW exceeds 20 percent. Further research found compliance (percent of current support collected as a proportion of current support due) and payment consistency will decline if the ROTW is greater than 19 percent (Takayesu and Eldred, 2011). Furthermore, setting orders based on fictional (presumed income) and not actual income will most likely yield \$0 in total payments for the next 12 months from order establishment.

To establish appropriate orders, it is necessary to understand the number and types of barriers preventing NCPs from making consistent child support payments. For example, do NCPs with low education pay consistently if their orders are set above 19 percent of their income? Will NCPs with criminal history have higher compliance if orders are set appropriately? It is imperative there be an understanding of what amount to set an order for it to be appropriate for NCPs with barriers to produce the maximum payments possible.



BACKGROUND

Research on Appropriate Orders

The importance of setting appropriate orders to increase compliance, and prevent arrears growth is well documented in previous research (Turetsky, 2000; Formoso, 2003; Sorensen, Sousa, and Schaner 2007; Formoso and Liu 2010; Takayesu and Eldred 2011). Especially among the poor, support orders set high relative to the NCP's income produce high arrears balances NCPs cannot pay (Sorensen and Oliver 2002).

Sorensen et al. (2007) addressed arrears growth in nine large states and noted the majority of arrears owed belonged to a small number of NCPs with little or no reported income. In nine states, only 11 percent of the obligors with an obligation owed 54 percent of the total arrears balance with each owing large amounts of arrears (i.e. \$30,000 per obligor). Three quarters of these obligors, referred to as high debtors, had no reported income or had reported income less than \$10,000 per year. These obligors were identified as primarily non-payers and referred to as a group from which it is most difficult to collect child support.

Setting appropriate orders increases payment consistency and compliance if orders are set primarily based on actual income rather than presumed income. Takayesu and Eldred (2011) examined 102,232 child support cases extracted from California's child support enforcement automation system (CSE) and analyzed the guideline data used to establish the order. This data includes a variety of factors for its income-shares-model guideline calculation, such as each party's income (gross and net), state and federal income tax impacts, and the number of children supported. Typically, income in the guideline calculation is part of the formula to determine child support order amounts.

Research findings from this study indicate compliance and payment consistency decline if monthly child support order amounts are set above 19 percent of the NCPs gross monthly income. This finding was true regardless of differences in NCP income, type of government assistance, county size, custodial parent's income, number of children and other factors. In addition, a sizeable percentage of these cases (19.5 percent) had orders based on presumed or "fictional income." Under California law, if there is no known income history, courts set support as if the NCP was working full-time (40 hours/week) at the state minimum wage (\$8.00), for a monthly income of \$1,387 per month. The research found these "fictional income" cases had lower compliance levels, higher rates of inconsistent payments and lower payments per child when compared to cases with actual reported income.

In other research, Formoso (2003) identified in the state of Washington, arrearage growth occurs when a NCPs child support order is more than 20 percent of a NCPs gross monthly earnings. As a result of his findings, the state of Washington recommended the use of a data-driven casework arrears stratification protocol to reduce arrears growth (Formoso and Liu, 2010). Specifically, the 20 percent threshold provides useful baseline information for setting appropriate orders.



Research on Child Support Barriers

For more than a decade, researchers explored many factors for nonpayment of child support, and used their findings to address policy to improve performance in the child support program. Attempts to understand factors for nonpayment include understanding the characteristics of NCPs (Smock and Manning 1997) and employment instability (Ha, Cancian, Meyer, and Han, 2008). Other factors studied include child support orders set at a high percentage of the NCP's income (Primus and Daugirdas, 2000; Cancian and Meyer, 2004; Sorensen and Oliver, 2002; Takayesu and Eldred, 2011), the use of minimum wage orders for NCPs with no reported income (Sorensen, 2010; Takayesu and Eldred, 2011), and differences between discretionary and nondiscretionary obligors (Bartfeld and Meyer, 2003).

The child support program in the United States is a critical public program and represents an important source of income for poor families, lifting a million people from poverty. Child support represents substantial income for both poor and deeply poor families. For instance, for families that receive child support, child support represents 40 percent of income for poor custodial families, and 63 percent of income for families that are deeply poor. Child support income is instrumental in alleviating poverty (Sorensen, 2010).

Knowing that child support income provides critically needed income for poor families, it is important to understand the barriers preventing NCPs from paying child support. Previous research noted barriers such as fatherhood at an early age, low education, incarceration, and lack of health insurance as characteristic of NCPs who pay little or no child support (Sorensen and Oliver, 2002; Lippold and Sorensen, 2011). Formoso (2003) found significant barriers to collections as reasons for arrears growth and non-payment of child support. These barriers include the prevalence of multiple cases, parents on public assistance, intermittent employment, mental illness, substance abuse problems, and incarceration. Primus and Daugirdas (2000) identified relationship barriers such as conflict over visitation and NCPs concern the CP is spending money unwisely as obstacles to child support payments.

Prior studies addressed barriers to paying child support in the context of understanding the reasons for nonpayment of child support, and for the most part, point to the need to examine the reasons for unemployment or inconsistent employment. Barriers that prevent consistent employment include health limitations, limited education, limited work experience, and lack of English skills. Generally, policy reforms have expressed the need to increase child support for poor NCPs with these barriers by addressing the need for income support programs, employment services and job training programs (Sorensen and Oliver, 2002; Lippold and Sorensen, 2011).

With regards to setting appropriate orders, previous research shows NCPs that are poor pay a higher percentage of their income towards child support compared to non-poor NCPs. For example, Sorensen and Oliver (2002) found one quarter of the poor NCPs paying child support spent 50 percent of their income on child support while only two percent of non-poor NCPs spent the same percentage. Often the requirement to pay a high percentage leads to high arrears debt that never gets paid and is primarily responsible for the substantial amount of arrears owed and its growth (Sorensen, Sousa, and Schaner 2007). Formoso (2003) noted NCPs with more barriers are expected to pay a larger portion of their income towards child support. For example, at 20 percent ROTW, the number of barriers has little effect on arrearage growth. When ROTW is higher than 40 percent, the number of barriers increases to four or more per NCP.



Appropriate Orders and Child Support Barriers

In his study, Formoso (2003) identified eight barriers associated with payment difficulties:

- Welfare Use
- Multiple NCP Cases
- Cases as CP
- Limited English
- Alcohol/Substance Abuse
- Disability
- Food Stamps
- Public Service

He concluded NCPs with the most problematic lives (indicated by the number of barriers and having low income) are expected to pay a large portion of their income towards child support. Further analysis indicates the threshold ROTW where barriers begin to become important as far as demonstrating arrears growth begins about 20 percent ROTW. The average ROTW increases as the number of barriers increases. For example, the average ROTW for NCPs with no barriers is about 20%. For NCPs with two or more barriers, the average ROTW increases from 30% to over 60% for cases with 6 or more barriers.

Previous research describes NCPs with a significant amount of barriers are associated with low-income (Bartfield and Meyer, 2003), remit a large proportion of their income towards paying child support (Cancian and Meyer, 2004; Sorensen and Oliver, 2002) and are responsible for the large amount of arrears debt in the nation.

Given these previous findings, how important is it for caseworkers and policy makers to understand the type and number of barriers to set appropriate orders and achieve maximum compliance?

Policy Implications

Although previous research identified many causes of nonpayment of child support such as payment barriers, unrealistically high order amounts and issuing presumed income orders, unemployment especially among the poor remains the most common reason for nonpayment. Current discussions in policy is geared towards considering funding of employment-oriented programs for low-income fathers in the child support program (Sorensen, 2010). Multiple employment barriers such as having a high school education or less, no work experience and criminal records reduce future employment prospects.



Empirical data demonstrating the positive benefits of employment programs was demonstrated in New York's Strengthening Families Through Stronger Fathers initiative (Lippold and Sorensen , 2011). This project used two innovative approaches: employment and support programs for low-income noncustodial parents and a state refundable earned income tax credit (EITC) for noncustodial parents who pay the full amount of their child support obligations for the full year.

In New York during the study period, a high proportion of noncustodial parents reported little or no earnings and faced multiple employment barriers limiting their ability to pay child support. These barriers include inconsistent employment, low education, and criminal records.

This program used a case management model to deliver services. A case manager worked with each participant to identify their needs, develop a service plan and deliver the service plan. Primary services focused on employment such as job readiness training, job search, job assistance, and job skills training. Other services include fatherhood skills workshops, assistance obtaining visitation and legal assistance. Financial planning services, tax assistances, monetary stipends, education assistance which includes assistance in obtaining GEDs and enrolling in vocational training programs, mental health counseling and housing assistance were also provided.

To assess the impact of the intervention, the outcomes for participants in this program were compared to a control population. The participants reported increased earnings from the first quarter of enrollment to the fourth quarter of enrollment.

Regarding child support payments, participants witnessed a higher increase in child support payments compared to the control group. For example, during the year post intervention, participants paid an average of \$504 more in child support than the comparison group (38 percent increase).

Success in this program has demonstrated how the family-centered services approach to service delivery increases income and child support payments, and how important it is to provide NCPs with access to family-centered services to improve the financial well-being of children.

Given the success of the family-centered services approach, how important is it to understand the number and type of employment barriers that limit child support payments? Will this knowledge be valuable in setting appropriate orders, and referring NCPs to family-centered services for child support agencies nationwide?



Current Study

The goal of this study was to develop a method to identify the most salient barriers NCPs face in paying child support, and use this information to predict future compliance. Having the ability to predict future compliance and understand payment barriers at order establishment can be used to establish appropriate orders, and refer the NCP to family-centered services. Furthermore, having predictive information is instrumental to setting future policy about the importance of setting appropriate orders, and support family-centered services.

The research questions addressed in this study are as follows:

- What barriers will lead to low compliance?
- Do NCPs with many barriers pay greater amounts of their income towards child support compared to NCPs with fewer or no barriers?
- Can you predict future compliance knowing the barriers of an NCP?
- Will setting an order no greater than 19% of NCPs income lead to higher compliance for NCPs with barriers?
- What is the role of family-centered services to improve child support payments for NCPs with barriers?



METHODOLOGY

I. DATA SOURCE

CSS identified barriers that lead to low compliance through a survey study which assessed NCP barriers to paying child support. This survey instrument asked the NCP questions related to his/her education level, employment, criminal history, etc. Questions were also asked regarding his/her reasons for not making consistent child support payments. These questions include dealing with the relationship of the other parent (i.e. other parent decides how to spend money), perception orders are too high, visitation and motivation.

CSS randomly surveyed 4,923 NCPs out of a caseload of approximately 79,000 cases in Orange County as of Federal Fiscal Year 2011. The sample population included open cases billing current support for six months or longer. Approximately 82 percent of NCPs contained an address in California with 64 percent of those residing in Orange County. The remaining 18 percent had addresses in other states or missing data. The NCP population contained 50 percent Never Assisted, 36 percent Formerly Assisted and 14 percent Currently Assisted cases. The surveys were designed in English, Spanish and Vietnamese addressing the language needs within the population. Survey responses were collected by email, phone contact or postal mail to 6% female and 94% male NCPs. 772 NCPs responded to the survey for a response rate of 15.7 percent. The completed survey responses were matched with California's Child Support Enforcement System (CSE) to extract child support due and paid amounts and other demographic information from October 2010 to September 2011.

II. INDEPENDENT/DEPENDENT VARIABLES

Independent Variables

Independent variables include barriers assessed based on questionnaire assessment. With the exception of NCP Monthly Income, ROTW and age of the NCP when first becoming a parent (NCP Age at First Born), the values described in Table 1 represent the answers from the questionnaire. ROTW, NCP Monthly Income and the NCP Age At First Born were derived from CSE. ROTW was calculated as the monthly child support order amount divided by the monthly gross wages. For example, if a NCP is obligated to pay \$100 per month for one child, but has a gross monthly income of \$1,387, then the ROTW is calculated as \$100 divided by \$1,387 or 7.2 percent. High ROTW indicates a heavy financial burden for the NCP, and as a result may have lower compliance in payment of current support resulting in arrears growth. The list of independent variables along with their values to assess their impact on compliance are listed in Table 1.



Variable Name	Values
Income and Barriers	
Income of NCP	Income per month ranging from \$0 to \$90,000 per month
Education Level	College Degree, Some College, High School Diploma/GED, Did Not
	Complete High School
Currently Employed	Yes or No
Currently on Public Assistance	Yes or No
History of Substance Abuse	Yes or No
Criminal History	Never Convicted, Misdemeanor, Felony
Currently On Probation/Parole	Yes or No
Relationship Variables	
Other Parent Limits Visitation	Yes or No
Child Support Order is Too High	Yes or No
Support Child(ren) From Other Relationships	Yes or No
Visitation Variables	
Visitation Days Per Month	0, 1-5, 6-10, 11-15-16-20, 21-25, 26-30
Conflict With Other Parent Limits Visitation	Yes or No
Physical Disability Limits Visitation	Yes or No
Distance Limits Visitation	Yes or No
Child Support Order	
Ratio of Order Amount To Wage	Ratio Ranging From 0-100%
Demographic Variables	
NCP Age At First Becoming A Parent	Numeric Value with Range from 14 to 55 years of age
Language of NCP	English, Spanish, Vietnamese, Other
Number of Children	Numeric value ranging from 1 to 7 children

Table 1: Independent Variables

Dependent Variable

Compliance is the dependent measure defined as the percentage of current support collections distributed each month divided by the current support due per month for up to 12 months. This measure evaluates the financial well-being of children regarding basic living and medical needs. Generally, high percentage of compliance means the NCP is compliant with the existing child support obligation ordered and pays as ordered. Low percentage means the NCP is not in compliance with an existing order and pays less than ordered. Compliance for each case was determined for a full 12-month period. For example, if a NCP was ordered to pay \$100 per month in child support for 12 months, and paid the full \$100 each month, the compliance equals 100 percent (\$1,200 current support paid divided by \$1,200 current support due).



III. METHOD OF ANALYSIS

The study utilized four methods of analysis:

- 1) Calculated frequency rates of responses for the independent variables
- 2) Identifying the most influential barriers that predict compliance
- 3) Analyzing case characteristics
- 4) Analyzing education level and criminal history of the NCP

Frequency of Independent Variables

The frequency and proportion of responses per question were calculated to evaluate the incidence of barriers in the population. For example, in the question asking "What is your level of education?" the percent of respondents who answered "College Degree" compared to those answering "Some College," "HS Diploma or GED," or "Did Not Complete HS" were tabulated.

Identifiying the Most Influential Barriers Predicting Compliance

CSS used a multivariate data mining method (Gradient Boosting) to identify the most influential barriers that predict compliance in the order of most to least influential. Most influential barriers are variables with the strongest relationship to compliance. Ten barriers were identified as having the most influence to compliance. For each of the top 10 barriers, actual compliance rates were reported to understand how each barrier influenced compliance.

Analyzing Case Characteristics

The strength in using Gradient Boosting as a method for predicting compliance lies in its strength to predict future compliance and how well NCPs will pay. By inputting the barriers of an NCP at case initiation and receiving a predicted compliance score, operational decisions can be made to improve future compliance if the case has a predicted low compliance score.

In addition, analyzing predicted compliance scores can provide insight into different characteristics which make up low vs. high compliance. Predicted compliance scores were analyzed and case characteristics were profiled. The questions answered include: What combination of characteristics make up low compliance?; How many barriers are associated with low compliance?



Analyzing Education Level and Criminal History

Actual compliance was measured by education level of the NCP and whether the NCP had criminal history to determine whether higher compliance values can be achieved if the order was set below 19% ROTW. Questions answered include whether NCPs with low education or with criminal history can achieve higher compliance values if their orders were set appropriately.

Data Mining

Data mining was used to determine the most influential barriers to compliance and to analyze case characteristics attributed to predicted compliance.

Data mining is an iterative process with four stages:

- 1) Data preparation and transformation
- 2) Initial data exploration
- 3) Model building and pattern identification
- 4) Deployment predict outcomes of new cases

Although data mining was used to predict payment delinquency in the past, (Blomberg & Long, 2006) to our knowledge, there are no documented research papers which attempt to predict compliance based on NCP barriers, demographic factors and ROTW.

The Orange County Research Unit incorporated the use of SAS[®] Enterprise Miner 7.1 to score cases by predicting compliance (target variable) from the set of independent variables (inputs). This data mining process is called supervised learning, which uses a training data set to develop the model to predict a target variable. Once the model is developed, it can be applied to new cases without a target variable. For this study, a predicted compliance value was produced based on the independent variables.

For CSS modeling efforts, four models were evaluated: 1) Neural Network; 2) Regression; 3) Decision Trees; and 4) Gradient Boosting. The Averaged Squared Error was used as the assessment criteria for choosing the best model. The Average Squared Error is a statistical measure of model performance, and is the squared difference between a target variable and its estimate. In comparison to the other models, Gradient Boosting model had the lowest Average Squared Error in the training data set (.085833) and was selected as the model of choice on predicting compliance.

Gradient Boosting

Gradient Boosting is a fairly new technique of data mining developed by Jerome H. Friedman (2001) and was used to predict churn rates in the wireless telecommunication industry (Lemmens & Croux, 2006) and in auto insurance loss cost modeling (Guelman, 2012).



Gradient Boosting uses a partitioning algorithm to develop a predictive model. A partitioning algorithm searches for the optimal partition of the data based on the values of a single variable. In statistics, the optimality criterion which provides a measure of fit of the data to a given hypothesis depends on how the target is distributed in the partition segments. The more similar the target values are within the segments, the greater the worth of the partition. To obtain predicted values, Gradient Boosting resamples the data to find the optimal fit of the data through partitioning.

This method is highly robust to less than "clean" data where there are missing values, and can be applied to regression problems from a variety of response distributions (i.e. Gaussian, Bernoulli, Poisson, and Laplace) (Guelman, 2012). Gradient Boosting makes no assumptions about the distribution of data, and for this reason it is a viable analytic method for analyzing child support data.

CSS has no knowledge of Gradient Boosting being applied to the prediction of child support compliance in prior studies. For this study, Gradient Boosting was applied to predict compliance of child support cases attributed to the list of predictors, and assess the relative importance of each predictor to produce the most influential predictors to compliance.

The independent variables in Table 1 were used as input variables to predict compliance. Of these variables the Gradient Boosting Model produced the most influential predictors based on their relative importance. The top 10 of these predictors are the primary focus of this study. Based on predicted compliance for each case, case characteristics were analyzed to understand barriers associated with low to high predicted compliance.



RESULTS AND DISCUSSION

Questionnaire Results

Number and percent of respondents are profiled for each of the questions asked below:

Question	Count	%
Q1. What is your primary language?		
English	564	73.1%
Spanish	175	22.7%
Vietnamese	1	0.1%
Other	32	4.1%
Grand Total	772	100%
Q2. What state do you currently live in?		
California	674	87.3%
All Other	98	12.7%
Grand Total	772	100%
Q3. Please indicate your level of education.	-	
College Degree	86	11.1%
Some College	199	25.8%
HS diploma or GED	262	33.9%
Did not complete HS	225	29.1%
Grand Total	772	100%
Q4. Currently employed?	-	
Employed	391	50.6%
Unemployed	362	46.9%
No Response	19	2.5%
Grand Total	772	100%

Table 2: Number and Percent Answered By Question

- English was the dominant language (73.1 percent) followed by Spanish (22.7 percent). Vietnamese and other languages were below 4.2 percent. Most respondents live in California. For the education level of the NCP, the majority had a HS diploma or GED (33.9 percent) and did not have a HS education (29.1 percent).
- A high number of respondents reported being unemployed (46.9 percent).



Questionnaire Results

Question	Count	%
Q4a. If YES, what is your current field of work?		
No Response	426	55.2%
Labor Service	141	18.3%
Professional and Business Services	98	12.7%
Food Services and Hospitality	34	4.4%
Transportation	31	4.0%
Education Healthcare or Social Services	19	2.5%
Government	18	2.3%
Assistant	1	0.1%
Self Employed	1	0.1%
Other	3	0.4%
Grand Total	772	100%
Q5. Please indicate the reason(s) for unemployment.		
No Response	436	56.5%
Laid Off	141	18.3%
Disability	48	6.2%
Education Level	0	0.0%
Skills and experience do not match job openings	31	4.0%
Language barrier	0	0.0%
Transportation Limitations	17	2.2%
Other (Describe below)	99	12.8%
Grand Total	772	100%

Table 2 (continued): Number and Percent Answered By Question

- For respondents who answered they were employed, most did not respond to the question of current field of work (55.2 percent). For NCPs out of work, most reported no response for the reason for unemployment (56.5 percent).
- NCPs with employment reported their current field of work was labor services (18.3 percent). For unemployment, the second most prevalent response was laid off from work (18.3 percent).



Questionnaire Results

Question	Count	%	
Q6. Are you currently receiving public assistance?			
Not on public assistance	612	79.3%	
On public assistance	160	20.7%	
Grand Total	772	100%	
Q7. Do any of the following limit you from paying child sup	pport? (Mult	iple Select)	
Other parent decides how child support money is spent			
Yes	272	35.2%	
Other parent limits visitation of the child(ren)			
Yes	246	31.9%	
Child support is too high			
Yes	403	52.2%	
Conflict or lack of communication with other parent			
Yes	335	43.4%	
Support Child(ren) from other relationships			
Yes	228	29.5%	
Q8. Do you have a history of substance abuse?			
No	596	77.2%	
Yes	176	22.8%	
Grand Total	772	100%	

Table 2 (continued): Number and Percent Answered By Question

- Most respondents reported not being on public assistance (79.3 percent) while 20.7% of respondents reported being on public assistance.
- For questions that ask limitations on paying child support where a "no" or "yes" answer was required, over 29 percent of the respondents answered "yes" to each of the questions. The questions producing the most affirmative responses asked if child support is too high (52.2 percent).
- 22.8 percent of respondents reported having a history of substance abuse.



Questionnaire Results

Question	Count	%	
Q9. Ever convicted of a crime?			
Never Convicted	423	54.8%	
Misdemeanor	175	22.7%	
Felony	174	22.5%	
Grand Total	772	100%	
Q9a. Are you currently on probation or parole?			
No	681	88.2%	
Yes	91	11.8%	
Grand Total	772	100%	

Table 2 (continued): Number and Percent Answered By Question

- 45.2 percent of respondents reported having some sort of criminal history. 22.5 percent reported having a felony, and 22.7 percent reported having a misdemeanor.
- 11.8 percent of the respondents reported being on probation/parole.



Questionnaire Results

Question	Count	%							
Q10. How many days per month do you see your child(ren)?									
0	377	48.8%							
1 to 5	182	23.6%							
6 to 10	101	13.1%							
11 to 15	63	8.2%							
16 to 20	17	2.2%							
21 to 25	9	1.2%							
26 to 30	23	3.0%							
Grand Total	772	100%							
what factors prevent you from doing so: (You may choose more than 1 answer)									
Unable to get time off of work									
Yes	74	9.6%							
Conflict or lack of communication with other parent									
Yes	340	44.0%							
Physical disability									
Yes	21	2.7%							
Live far from child(ren)									
Yes	223	28.9%							
Q12. Please rate your motivation to pay child support on a									
scale of 1-3 (1=No Motivation, 2=Moderate Motivation,									
3=Highest Motivation)									
High Motivation	377	48.8%							
Moderate Motivation	206	26.7%							
No Motivation	135	17.5%							
No Response	54	7.0%							
Grand Total	772	100%							

Table 2 (continued): Number and Percent Answered By Question

- Majority of respondents reported visiting children zero days (48.8 percent) and the predominant reason for lack of visitation was conflict or lack of communication with the other parent.
- 48.8 percent of respondents reported having high motivation to paying child support and 26.7 percent reported moderate motivation. The desire and willingness to pay child support is fairly high, but there are many reported barriers to paying it.



What Are The Best Compliance Predictors?

Statistical output of the Gradient Boosting model displays the relative importance of the most influential predictors. Since these measures are relative, a value of 1.0 was assigned to the most influential predictor and the others were scaled accordingly. This model was used to assess the overall influence of predictors from all of the independent variables used.





*The Average Squared Error for this model was .085833

- Based on the Gradient Boosting algorithmic model in predicting compliance, the most influential predictor is NCPs monthly gross income (1.0). Relative to income, the next most influential predictor was Education Level of the NCP (.66) and closely followed by the NCP Age At First Born (.65) and ROTW (.64). Education Level of the NCP (.66), NCP Age At First Born (.65) and ROTW (.64) are clustered close together. The next most influential variable is Criminal History (.46) which is highly influential in comparison to Visits Per Month (.29) and all the other variables that follow.
- It is important to note the top 10 predictors (from NCP Income to Language) represent primarily social economic barriers of the NCP. With the exception of being on public assistance, the other predictors can represent a perceived opinion. For example, the NCP may perceive the child support order is too high, but based on the data, may not be the best predictor to compliance. These types of predictors have less of an influence compared to social economic barriers.



What Are The Best Compliance Predictors?

Understanding the relative importance of these barriers is important in developing child support policy to address reasons for non-payment and to arrive at solutions to improve payments. For example, by knowing education is a major barrier in comparison to other barriers, do social programs encourage education by providing incentives to new NCPs to complete high school? In knowing ROTW is about as influential as Education Level, will setting appropriate orders for NCPs without a high school education help encourage NCPs to obtain an education, which can eventually lead to long-term, consistent payments?

The future application of this model from an operational or policy perspective is to predict future compliance based on an assessment of their barriers. For example, when assessing a new order amount for an NCP, knowing the barriers of the NCP and inserting them into the model produces a predicted compliance score. If the predicted compliance is very low (i.e. between 0-25 percent) setting an appropriate order amount and early intervention efforts can be implemented to maximize future compliance and reduce future arrears growth.

The top 10 Barriers reflect social economic factors and are in order of importance:

- 1. NCP Monthly Gross Income
- 2. Education Level of the NCP
- 3. NCP Age At First Born
- 4. ROTW (Ratio of Order To Wage)
- 5. Criminal History
- 6. Visits Per Month
- 7. Number of Children
- 8. Substance Abuse History
- 9. Currently on Probation/Parole
- 10. Language

Child support programs nationwide can use these top 10 Barriers to link NCPs with family-centered services. Discussed later in the paper are the operational policy implications of having child support programs equipped with this predictive information to improve the long term financial well-being of families.

Each of these barriers and its relationship to improved compliance will be explored in the following pages. Some of the questions addressed are:

- What are the compliance levels in the study sample based on differing levels of education, criminal status and substance abuse history?
- How many cases have an ROTW of 0-19% compared to cases with an ROTW of 19-100%? Are cases with an ROTW between 0-19% reflective of NCPs with high or low income?
- What are barrier characteristics of NCPs with very low to high compliance levels? Are NCPs with a high number of barriers expected to pay a higher proportion of income towards child support compared to NCPs with fewer barriers?
- From the policy perspective, is the strategy of setting appropriate orders combined with referring NCPs to family-centered services an effective strategy to improve the long term financial well-being of children and families?



NCP Monthy Gross Income

NCPs monthly gross income is the best predictor of compliance. Figure 2 below reports the actual compliance values by the first, second, third, and fourth quartile of the distribution of income.



Figure 2: Compliance by NCP Gross Income (N=772)

As NCP gross income increases, compliance increases. Each of the four income categories reflect quartiles of similar size of cases (N=193 for \$0-\$653; N=201 for \$653-\$1,387; N=185 for \$1,387-\$2,771; N=193 for \$2,771 plus).

Table 3 descriptive statistics below regarding monthly NCP income describes the wide distribution of income in the population.

Ν	Mean	Std. Dev.	Median	Minimum	Maximum
772	\$2,363	\$4,952	\$1,387	0	\$90,426

Table 3: Descriptive Statistics for NCP Gross Income

There is basically a wide distribution of monthly NCP gross income in the population studied that ranges from \$0 to \$90,426 per month. The mean is \$2,363 and the standard deviation is \$4,952. Approximately one-half of the cases have an income below the median of \$1,387



The following chart displays the number of cases by income along with the number of cases representing orders between 0-19 percent ROTW and 19-100 percent ROTW.



Figure 3: Number of Cases by NCP Gross Income and ROTW 0-19% vs. 19-100% (N=714*)

*Excludes 58 cases with missing values for NCP Gross Income.

• Distribution is skewed primarily towards the left where the majority of cases have monthly gross income below \$1,500 per month. For cases with low income, the majority of them have an ROTW greater than 19 percent indicating a high level of financial burden of these NCPs towards paying child support. Later discussion in this report will examine policy implications for setting appropriate orders for low income NCPs.



Compliance By NCP Education Level

Education level of the NCP is the second best predictor of compliance relative to NCP monthly gross income. The following charts describe the frequency and actual compliance levels by NCP education level.



Figure 4: Percent of Cases by NCP Education Level (N=772)

About one-third of the population sampled reported they did not complete high school, and another third had a high school diploma or GED. Having some college represents a smaller proportion (26 percent) and having a college degree represents the lowest proportion (11 percent).



Figure 5: Compliance by NCP Education Level (N=772)

Actual compliance levels clearly display the relationship between NCP Education Level and Compliance. NCPs who did not complete high school have the lowest compliance (34.4 percent). As education level increases, compliance also increases with the highest level of compliance witnessed for NCPs with a college degree (67.0 percent).



Compliance By NCP Age At First Born

Age of NCP when becoming a parent for the first time (NCP Age At First Born) in the CSS caseload is the third best predictor to compliance. The following charts describe the frequency and actual compliance levels by NCP Age At First Born.

Figure 6: Percent of Cases by NCP Age At First Born (N=772)



50 percent of NCPs had an age ranging from 21 to 28 years when they became parents for the first time in the CSS caseload. 21 percent of NCPs became parents for the first time at an early age (14-20 years of age) while 29 percent of them became parents past the age of 30.

Figure 7: Compliance by NCP Age At First Born (N=772)



Examination of the actual compliance levels based on these age groupings reveal the pattern where compliance level increases as the age of the NCP At First Born increases. Figure 7 shows becoming a parent at an early age is a barrier to providing consistent support payments.



Compliance By Ratio Of Order To Wage (ROTW)

ROTW is the fourth best predictor to compliance. Figure 8 displays actual compliance levels by ROTW.





*Excludes 58 cases with missing values for NCP Gross Income.

• Compliance declines as ROTW increase. Highest compliance occurs when the ROTW is between 0-10 percent, and is the lowest when ROTW is between 50-60 percent. The number and percent of total cases by ROTW range is described below:

	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%
N	186	166	124	69	38	29	16	20	9	57
% of Cases	26.1%	23.2%	17.4%	9.7%	5.3%	4.1%	2.2%	2.8%	1.3%	8.0%

Table 4: Number and Percent of Cases by ROTW Range

• Majority of cases have an ROTW between 10 to 20 percent. In total, 82 percent of cases have an ROTW between 0-50 percent. Cases with an ROTW value above 50 percent have large variances as a characteristic of these groups with low sample sizes.



Compliance By Criminal History

Criminal History of the NCP in the CSS caseload is the fifth best predictor to compliance. The following charts describe the frequency and actual compliance levels by Criminal History.



Figure 9: Percent of Cases by Criminal History (N=772)

A sizeable number of cases in the population studied reported criminal history (45 percent). 22 percent had a felony conviction and 23 percent had a misdemeanor. 55 percent of NCPs reported no previous conviction.

Figure 10: Compliance by NCP Criminal History (N=772)



NCPs with a felony reported the lowest actual compliance level of 28.9 percent while NCPs with a misdemeanor report 40.6 percent and those never convicted report 55.2 percent.

Later in the paper operation and policy implications will be discussed for NCPs with criminal history and what type of initiatives can be proposed to improve payment compliance.



Compliance By Visitation (Parenting Time)

Visitation of the NCP in the CSS caseload, defined as the number of days visited per month, is the sixth best predictor to compliance. Figure 11 and Figure 12 describe both the frequency and actual compliance levels by number of days visited by month respectively.



Figure 11: Percent of Cases by Visitation Days Per Month (N=772)

Approximately half of the population sampled had zero visits per month, and the remaining population had between 1-31 visits per month. Having 1-10 visits per month represents a medium proportion (37 percent) and having 11-31 visits represents the lowest proportion (14 percent).

Figure 12: Compliance by Visitation Days Per Month (N=772)



Compliance level increases as the number of visitation days per month increases. NCPs with zero monthly visits reported the lowest actual compliance level (43 percent), while 11-31 visits per month reported the highest (54.7 percent).



Number Of Children

Number of Children where the NCP owes child support in the CSS caseload is the seventh best predictor to compliance. The following charts describe the frequency and actual compliance levels by Number of Children.



Figure 13: Percent of Cases by Number of Children (N=772)

Majority of the cases represent one child families (66 percent) followed by two children families (25 percent) and families with three children or higher (9 percent).

Figure 14: Compliance by Number of Children (N=772)



NCPs with one child reported the highest actual compliance level (50.6 percent) followed by NCPs with two children (47.4 percent). The lowest compliance level of 30.7 percent represent NCPs with 3+ children.



Compliance By Substance Abuse History

Possessing a history of substance abuse by the NCP is the eight best predictor to compliance. The following figures describe the frequency and actual compliance levels by Substance Abuse History.





From the survey sample, a substantial amount of NCPs (77 percent) answered having no substance abuse history, while 23 percent answered having substance abuse history.

Figure 16: Compliance by Substance Abuse History (N=772)



Compliance level differences display the impact of having a substance abuse history showing a much lower compliance rate for respondents reporting having substance abuse history (30 percent) vs. NCPs without substance abuse history (50.7 percent).



Compliance By Probation/Parole

Currently being on Probation/Parole is the ninth best predictor to compliance. The following charts describe the frequency and actual compliance levels by Probation/Parole.



Figure 17: Percent of Cases by Probation/Parole (N=772)

From the population sampled, 12 percent of NCPs responded they are on probation/parole. The majority of the respondents (88 percent) answered they were not on probation/parole.

Figure 18: Compliance by Probation/Parole (N=772)



NCPs not on probation/parole reported a higher compliance level (51.1 percent) compared to NCPs who reported being on parole/probation (12 percent).



Compliance By Language

Primary Language is the tenth best predictor to compliance. The following charts describe the frequency and actual compliance levels by Primary Language.



Figure 19: Percent of Cases by Language (N=772)

About three-fourths of the respondents stated English as the primary language (73 percent). Spanish accounted for 23 percent of the respondents. Only a small population (4 percent) reported the primary language other than English or Spanish.

Figure 20: Compliance by Language (N=772)



NCPs reporting English as the primary language had a higher compliance level (48.9 percent) vs. those reporting Spanish as the primary language (38.8 percent). NCPs with "other" as a language reported an actual compliance level of 57.3 percent.



Predicted Compliance Characteristics

In this study, the Gradient Boosting algorithmic model was used to determine the top 10 variables that predict compliance based on the list of independent variables in Table 1. Based on the variables in Table 1, each case received a predicted compliance value based on the independent variables associated with the case. Analyzing predicted compliance values can lead to insight on what characteristics make up low vs. high compliance. In figure 21 below, the number of cases are reported along with the predicted compliance by quartile The number of cases are further categorized as to whether they had an ROTW between 0-19 percent vs. 19-100 percent.



Figure 21: Predicted Compliance and ROTW

- A large portion of the caseload studied (41 percent or 317 cases out of 772 cases) is expected to pay at a very low rate of compliance (0-25 percent) and 68 percent of cases are predicted to pay at a rate of 50 percent or below in compliance.
- For NCPs predicted to pay very low compliance (0-25%), 63 percent or 199 of these cases out of a total of 317 cases have a ROTW of 19 percent or greater. For NCPs predicted to pay between 25-50 percent compliance, 59.7 percent of these cases have an ROTW that is 19 percent or greater. When predicted compliance is between 50-75 percent, the percent of cases with orders 19 percent or greater diminishes to 27 percent. NCPs with the highest level of predicted compliance consist of almost all cases with an ROTW between 0-19 percent.

These results support the strong relationship existing between ROTW and compliance. Orders set above the ability of an NCP to pay (19% or greater) will predict low compliance.

Other characteristics and barriers associated with very low to high predicted compliance is discussed on the next page.



Predicted Compliance Characteristics

	Very Low (n=317) (0-25%)	Low (n=206) (25-50%)	Medium (n=172) (50-75%)	High (n=77) (75-100%)
Average Predicted Compliance	16.0%	34.5%	66.4%	78.2%
Average Actual Compliance	14.2%	35.0%	66.3%	82.6%
Monthly Income (Median)	\$631	\$1,433	\$3,502	\$4,619
Did Not Complete High School	35.0%	31.1%	22.7%	14.3%
Average NCP Age At First Born	25.4	25.9	27.7	27.8
ROTW (Ratio of Order To Wage)	45.2%	27.3%	15.1%	9.3%
Criminal History	72.6%	25.7%	34.3%	9.1%
Average Visits Per Month	4.6	3.7	6.6	2.4
Cases With 2+ Children	43.9%	25.7%	35.5%	14.3%
History of Substance Abuse	31.9%	23.8%	12.8%	5.2%
On Probation/Parole	21.8%	8.7%	2.3%	0%
Language (English Is Not Primary Language)	24.9%	32.5%	27.3%	19.5%
On Public Assistance	25.9%	25.2%	9.9%	11.7%
Unemployed	64.0%	48.5%	26.7%	16.9%
Average Number of Barriers	3.3	2.5	1.9	1.5

Table 5: Predicted Compliance Characteristics

Table 5 identifies NCP characteristics of predicted compliance ranging from very low to high. The variations in compliance in this table are strikingly clear. In examining each predicted compliance category, those with very low to low predicted compliance have significant barriers. NCPs predicted to have very low (n=317) to low predicted compliance (n=206) make up 68 percent of the 772 respondents, which is a substantial percentage of the study sample.

- Characteristics of NCPs with predicted very low to low compliance are: NCPs with lower income; primarily did not complete high school; are first time parents at a young age; have criminal history; low visitation; two or more children; have a history of substance abuse; are on probation/parole; have English as a second language; are on public assistance; are unemployed; and have a greater number of barriers.
- Characteristics of NCPs with predicted medium to high compliance include, but not limited to, cases with higher income, higher education and less criminal history.
- Although NCPs with predicted very low to low compliance have significant barriers and low median gross income, these NCPs are expected to pay a large percentage of their monthly gross income (ROTW) towards child support (27 percent and above) compared to NCPs with medium to high compliance (15.1 percent or less).



Number Of Barriers

In this section, the number of cases are displayed by the number of barriers. To count barriers, the following characteristics were defined as possessing a barrier (Table 6). For example, if all the characteristics below were true of an NCP then that NCP would have 10 barriers. These barriers have influence in making future policy decisions. Being on public assistance is included as a barrier in this part of the analysis. Later analysis will also examine the policy of setting appropriate orders, and how having an appropriate order can improve compliance for cases with barriers.

Table 6: Number of Barriers

Name of Barrier
Monthly Gross Income of \$1,387 or less
Parenthood at age 14-20
Criminal History (Felony or Misdemeanor)
On Public Assistance
Zero Visitation
Substance Abuse History
Did Not Complete High School
On Probation/Parole
Have two or more children
English is not a primary language

Number of Cases by Number of Barriers is reported below. 85 percent of cases out of the 772 total cases have between 1 to 5 barriers. Six percent of the cases report having no barriers, and eight percent of the cases have six or more barriers.



Figure 22: Number of Cases by Number of Barriers



Number Of Barriers

Compliance and ROTW are displayed below based on the number of barriers. Is there a relationship between how many barriers an NCP has and ROTW? More importantly, do NCPs with more barriers have less compliance? For NCPs with multiple barriers what is their ROTW?





- From this chart, there is a clear relationship between ROTW, compliance and the number of barriers. NCPs with the greatest number of barriers are expected to pay a higher portion of their income towards child support compared to NCPs with fewer barriers.
- NCPs with no barriers pay only 15.6 percent on average of their income towards child support resulting in high compliance (67.9%). As the number of barriers increase, NCPs with up to 8 barriers pay on average 4.6 percent compliance and are expected to pay a higher proportion of their monthly gross wages towards child support (61.1%).



Barrier Characteristics

NCPs with a greater number of barriers are expected to pay a higher proportion of their monthly gross wages towards child support resulting in low compliance. Table 7 below summarizes characteristics associated with NCPs with zero up to eight barriers:

Barrier Characteristics										
# of Barr	iers	0	1	2	3	4	5	6	7	8
Case Counts	(N=772)	49	117	130	153	144	117	42	16	4
BOTW (Batio of Order to Wage)	Mean	15.6%	18.2%	27.7%	29.0%	34.6%	40.0%	34.5%	43.3%	62.3%
	Stan.Dev.	0.14	0.17	0.26	0.28	0.31	0.32	0.34	0.26	0.53
Monthly Income (Median)	Median	\$3,931	\$3,104	\$1,775	\$1,387	\$998	\$859	\$790	\$521	\$166
wontiny meetine (weating)	Stan.Dev.	\$2,644	\$11,416	\$2,446	\$1,517	\$1,547	\$956	\$824	\$531	\$657
Average NCP Age At First Born	Mean	31yrs	28yrs	26.5yrs	26yrs	26yrs	25yrs	23yrs	23yrs	20yrs
Avenue de Age Activit bonn	Stan.Dev.	7.3	6.9	7.4	6.5	6.7	6.7	6.3	4.5	0.5
Average Visits Per Month	Mean	11	6.5	4.3	4	4.1	3.6	1.2	0.5	0.25
Stan.Dev.		8.2	7.7	6.8	6.9	8	7.3	3.1	1.4	0.5
Did Not Complete High School		0%	1.70%	11%	29%	42%	54%	64%	69%	100%
Criminal History		0%	12%	24%	44%	60%	80%	88%	100%	100%
% of Cases with 2+ Childre	n	0%	24%	25%	29%	40%	51%	64%	75%	50%
History of Substance Abus	e	0%	1%	8%	18%	33%	46%	52%	69%	75%
On Probation/Parole		0%	0%	0%	5%	14%	26%	38%	81%	100%
Language (English Is Not Primary Language)		0%	8%	19%	31%	43%	36%	38%	25%	50%
On Public Assistance		0%	3%	12%	17%	29%	35%	45%	69%	50%
% Unemployment*		18%	30%	38%	50%	56%	59%	67%	88%	50%

Table 7: Barriers Characteristics By Number of Barriers

- Compared to NCPs with a lower number of barriers, characteristics of NCPs with a greater number of barriers include having lower median income, are younger when first becoming a parent (based on average age) and have a lower visitation.
- Compared to NCPs with a lower number of barriers, NCPs with a greater number of barriers have a high proportion of individuals that did not complete high school, have criminal history, support two or more children, have a history of substance abuse, are on probation, speak a language other than English as a primary language, are on public assistance, and a great many of them are unemployed.
- NCPs with the most barriers are expected to pay a higher proportion of their monthly gross income towards child support. The median monthly gross income for cases with eight barriers, had a median of \$166 and NCPs are expected to pay 62.3 percent of their income towards child support.

*Unemployment is displayed here for comparison purposes only.



Setting Appropriate Orders Based On ROTW And Barriers - Education

This study demonstrates how ROTW and the NCP barriers are good predictors of future compliance. The question is: can higher compliance be achieved with an appropriate order even though the NCP has low education?

Figure 24 below reports the actual compliance level based on the NCPs education level, and whether the order was set between 0-19 percent of the NCPs gross income or 19 percent or greater. Table 8 describes the number of cases. For all education levels including those who did not complete high school, orders between 0-19 percent report higher compliance levels compared to orders 19 percent or greater.



Figure 24: Compliance by ROTW and Education (N=714*)

*Excludes 58 cases with missing values for NCP Gross Income.

Table 8: Number of Cases By ROTW and Education

ROTW	Did Not Complete	High School Diploma	Some College	College Degree
	High School	or GED		
0-19%	90	118	88	47
19-100%	111	125	98	37



The importance of setting appropriate orders based on Education Level becomes important to increase the total dollars received by the family over the child's life. NCPs with less than a high school diploma or equivalency certificate earn significantly less than a person with a diploma. Based on expected compliance rates and earnings for both groups, data suggests that steering the parent into completion of a diploma or certificate could result in the family receiving up to 43 percent more support over the child's minority. Data also shows that a lower arrearage balance is built, and the parent can pay off the arrears in a much shorter time.

The following is a recent example of how awareness of barriers can impact a case as applied by an Orange County Commissioner. In one particular hearing, the court learned a 20 year old NCP did not complete high school and the NCP was in the process of attaining a General Education Diploma. The court ordered a \$50 order per month for one year. At the end of the year, the order would increase to \$200 per month. The court set the \$50 order to begin the following month rather than when the motion was filed to prevent the case starting arrears. In addition, the NCP was ordered to visit a One-Stop Center, which is a program to assist the NCP in locating a place of employment.

On a broad scale, reliable compliance predictors based on Education Levels can assist family-centered services programs to make decisions about how much ancillary support is needed for a parent to be successful. Does the social program encourage education by providing incentives to new NCPs to complete high school? Each jurisdiction must make its own choices regarding these questions; however, with predictive research-supported data, programs can make educated decisions about how social program resources are deployed.

In addition to education, CSS examined the other top barriers including NCP Age at First Born and Criminal History. For each of these barriers, orders set between 0-19 percent yielded higher compliance values compared to orders set 19 percent or higher. There are social policy implications related to setting appropriate orders for NCPs with criminal history. This is to be addressed in future research.



Setting Appropriate Orders Based On ROTW And Barriers – Criminal History

Similar to education, NCPs with criminal history were found to have higher compliance if the orders were set within 0-19 percent compared to orders set from 19-100 percent. Figure 25 below reports the actual compliance level based on the NCPs criminal history, and whether the order was set between 0-19 percent of the NCPs gross income or 19 percent or greater. Table 7 describes the number of cases. For all NCPs with a felony and misdemeanor, orders between 0-19 percent report higher compliance levels compared to orders 19 percent or greater.



Figure 25: Compliance by ROTW and Criminal History (N=714*)

*Excludes 58 cases with missing values for NCP Gross Income.

Table 9: Number of Cases By ROTW and Criminal History

ROTW	Felony	Misdemeanor	Never Convicted
0-19%	67	75	201
19-100%	79	90	202

Similar to education as a barrier, setting appropriate orders increases payment compliance for NCPs with a felony or misdemeanor. Knowing the number of NCPs in a caseload with criminal history may open the door to developing creative methods to increase child support compliance, such as working with the courts to set appropriate orders. In addition, is it possible to provide community resources to assist these NCPs in a rehabilitative process through partnerships with probation departments? What types of other social safety net programs can assist these individuals in improving their income so consistent child support payment can be provided for the children of these NCPs?



Conclusions

This study surveyed a random sample of NCPs which revealed a sizeable number have major barriers preventing them from paying their full child support obligation. Results from the survey show a sizeable percentage of these NCPs are unemployed, are struggling with barriers such as low education, criminal history, substance abuse problems, being on probation, and are young parents for the first time.

Results from the Gradient Boosting Model reveal that relative to NCP gross income, education level of the NCP and their age at first becoming a parent are the next highly influential predictors to compliance. NCPs with no high school diploma report the lowest compliance level (34.4 percent) compared with NCPs with a high school diploma (41.5 percent), NCPs with some college (51.7 percent) and NCPs with a college degree (67.0 percent). The Gradient Boosting Model reports the age of the NCP at first becoming a parent is the next most influential predictor to compliance, and is nearly as influential as education level of the NCP. NCPs between 14 to 20 years of age when first becoming a parent are associated with low education levels.

ROTW is about equally important to education level and the age of the NCP at first becoming a parent as predictors to compliance. For NCPs with barriers, setting appropriate orders no higher than 19 percent of the NCPs monthly gross income leads to higher compliance. NCPs with low education and criminal history report higher compliance levels when their orders are set no higher than 19 percent ROTW.

NCPs reporting compliance between 0-50 percent are characterized as having multiple barriers. NCPs without barriers or have at least one barrier report compliance rates at 67.9 percent and 75.2 percent respectively. As the number of barriers increase, compliance drops substantially. NCPs with up to eight barriers report a compliance level of only 4.6 percent.

NCPs predicted to pay 0-50 percent compliance are expected to pay a larger portion of their income towards child support compared to NCPs predicted to pay higher than 50 percent compliance. Similar findings have been reported by Formoso (2003). His paper describes the situation: "The conclusion is inescapable that those with the most problematic lives as indicated by the barriers and the lowest incomes, are expected to pay an impossibly large portion of their income towards child support."

Overall, the use of predictive analytics to predict compliance can open the door to its applicable use in implementing policy to improve compliance. Will knowing future compliance of the NCP based on what type of barriers he/she has when opening up a case be used to set up early intervention programs to improve future outcomes? Can the use of this type of predictive analytics be used by child support agencies nationwide to implement such strategies? Two areas to consider are setting appropriate orders and the role of family-centered services.

Setting Appropriate Orders The findings and implications of this study emphasize the importance of setting appropriate orders to improve compliance. ROTW along with Education Level of the NCP and NCP Age At First Born are relatively equally important predictors of future compliance. Furthermore, setting appropriate orders for cases with barriers such as low education or having a criminal history leads towards higher compliance. This study and prior research supports OCSE's three tier strategy, and encourages other states to examine their policies on setting appropriate orders for NCPs with significant barriers. The practice of setting orders based on presumed income should be discouraged as it yields negative outcomes for children and families. Policy should be aimed at setting orders based on actual income. Knowing the NCPs actual income and the barriers encompassing their lives can be instrumental in promoting long term and consistent child support payments.



The Role Of Family Centered Services The child support program works well when parents have steady income through regular employment. In the child support caseload in the United States, 75 percent of parents have steady income. However, for the 25 percent of parents without steady income with no or low reported earnings, collecting child support income can be difficult. Uncollected child support from this population constitutes 70 percent of the unpaid child support debt with low or no reported earnings (Office of Child Support Enforcement [OCSE], 2011b).

OCSE is currently undertaking a family-centered services approach to improve child support outcomes for increased collections for parents without steady income (Office of Child Support Enforcement [OCSE], 2011b). Today, child support programs are involved with a wide range of organizations to strategize and develop joint projects to assist NCPs beyond just improving their payments. These efforts include outreach, referral and case management activities that engage with organizations such as fatherhood, workforce and reentry programs.

The child support program is in regular contact with low-income NCPs, and is uniquely positioned to link NCPs to family-centered services. Through engagement with the NCP and through the use of analytics, child support programs have the ability to identify the underlying reasons for non-payment of child support. Child support–led programs engaging with other organizations have demonstrated success in improving child support collections for low-income NCPs (Office of Child Support Enforcement [OCSE], 2012).

For example, child support programs are actively involved in 28 states and the District of Columbia in 38 workoriented programs for NCPs (Office of Child Support Enforcement [OCSE], 2012). Court-ordered programs, voluntary programs and transitional job programs have all shown success in improving child support collections. These programs served NCPs with low-income who are primarily unemployed with major barriers preventing them from paying child support. New York's Strengthening Families Through Stronger Fathers initiative has proven to be highly successful in increasing income and child support payments for low-income NCPs with multiple employment barriers such as limited education and criminal records (Lippold and Sorensen, 2011).

This study used predictive analytics to identify the type and number of payment barriers, and has predicted compliance for these NCPs with one or a combination of these barriers. Child support programs armed with this knowledge can provide early intervention opportunities to establish appropriate orders, and refer these NCPs to other organizations that assist them in overcoming these barriers.

In November 2012, the Orange County Department of Child Support Services opened the Community Resource Center (CRC) designed to carry out OCSE's Family-Centered Services Initiative of 2011. The CRC is a one-stop center where customer interviews, family law facilitation, genetic testing, forms workshops, orientation workshops and modification workshops are held. CRC provides customers with access to community resources throughout the county. Customers using the CRC can access information regarding a variety of services such as food banks, clothing, health services, child care, employment, domestic violence, legal services, tax preparation resources, shelters, educational resources, and veteran's services. Since opening, the CRC served over 4,700 customers in its first eight months and the number of customers receiving services is expected to increase going forward.



Future objectives of analyzing child support payment barriers to predict compliance are to use predictive analytics to increase the effectiveness of the CRC and in setting appropriate orders. Knowing the number and type of payment barriers of each NCP can assist staff in setting appropriate orders, increasing the probability of payment and better servicing NCPs with barriers. Orange County Research Unit plans to evaluate the effectiveness of the CRC in improving child support collections in the future. It is anticipated NCPs using the CRC will demonstrate higher payment compliance and payment consistency after being serviced in the program.

In conclusion, this study demonstrates how the use of predictive analytics to predict compliance can identify the type and number of major barriers preventing NCPs from making consistent child support payments. NCPs with barriers are associated with lower compliance compared to NCPs with little or no barriers. NCPs with major barriers have the least ability to pay and have the most problematic lives. These NCPs are expected to pay a high portion of their income towards child support. Knowing these facts can guide policy and child support agencies to: 1) set appropriate orders to assure consistency of payments for NCPs with barriers, and 2) use this knowledge to properly refer these NCPs to receive appropriate assistance through family-centered services. The combination of these efforts can lead to higher incomes and consistent child support payments.



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