Understanding Patterns of Compliance with Child Support Orders in Washington State

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Final Report

Prepared for the

Washington State Division of Child Support

Department of Social and Health Services

July 16, 2015

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Detailed estimates of
models of compliance
and non-compliance   See supplemental files:
Model estimates, compliance to non-compliance.pdf and
Model estimates, non-compliance to compliance.pdf

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Executive Summary

This report provides evidence on how NCP, CP and case characteristics are associated with the likelihood of compliance. The findings help identify the characteristics that predict how long a case is likely to remain compliant, the kinds of cases that are more likely to fall out of compliance, and how long non-compliant cases are likely to remain out of compliance.

Defining and measuring compliance. Because there is no single, compelling definition of compliance, the study adopts five alternatives. "Full compliance" means that an NCP is paying all current obligations. "Partial compliance" recognizes that compliance may be viewed as a matter of degree and specifies the minimum percentage of current obligation that an NCP must pay in a month to be considered in (partial) compliance. The study uses a measure of partial compliance that requires the NCP to pay at least 75% of the current obligation. The study also uses two others – paying at least 50% or 25% of the current obligation. The fifth measure counts any payment as being compliant. It distinguishes "active" NCPs from those paying nothing.

Data, methods and explanatory variables. The data come from DCS administrative data from the Support Enforcement Management System. DCS randomly selected the case records of 40,000 NCPs from among all NCPs who had their first child support order established within Washington between January 2002 and November 2012. Each case (as well as any subsequent cases opened for the same NCP) was followed until it closed or until November 2012, the last month of data. Dropping cases because of missing data and other problems produced a final sample of 34,053 cases for the analyses.

The dependent variable is a **spell** of compliance or non-compliance. To construct spells, we used monthly data in the order and payment files to determine compliance status each month under each definition. We then used the monthly observations of compliance status to construct spells of compliance and non-compliance.

We analyze the determinants of the length of spells in each state using discrete time event history models (also called hazard, survival, and duration models). The statistical models predict the likelihood that a spell of compliance (or of non-compliance) ends each month as a function of the explanatory variables.

The models include age of both the NCP and CP, whether the NCP is female, and whether the CP is a current or former TANF recipient. Case characteristics include the monthly order amount, starting arrears, the number of children on the order, and whether the case is interstate. The models also include a series of year indicators – a dummy variable that takes the value of one for all spells that started in 2003, a second that takes the value of one for all spells that started in 2004, etc. The year indicators help control for changes over time in economic conditions and enforcement operations.

<u>Findings</u>. The proportion of spells that are compliant is surprisingly insensitive to the specific measure. Regardless of measure, 48.3% to 49.2% of all spells are compliant.

When we examine months instead of spells, compliance is higher. NCPs paid 100% of their obligation in 54.3% of months. As the requirement for compliance falls, monthly compliance necessarily rises. It is 59.3% for the 75% measure, 62.4% for the 50% measure, 64.2% for the 25% measure, and 66.1% for the least demanding active measure. The last statistic means that every month, on average, one-third of the CPs and their children who are entitled to support payments receive nothing, despite DCS's efforts to collect and enforce support obligations.

Determinants of the likelihood that a spell of compliance ends. Other things equal:

- The older the NCP, the **less likely** an NCP becomes non-compliant
- NCPs providing support to more children are **less likely** to become non-compliant
- Interstates cases are **more likely** to fall into non-compliance
- The older the CP, the **less likely** an NCP becomes non-compliant
- The larger the monthly order amount, the **more likely** it is that an NCP becomes non-compliant
- The larger the starting arrears, the **more likely** it is that an NCP becomes non-compliant.

The relationship between compliance and being a female NCP is sensitive to the choice of measure. Compliance behavior of NCPs providing support to CPs who are current or former TANF recipients is also sensitive to the choice of measure.

Determinants of the likelihood that a spell of non-compliance ends. Other things equal:

- The older the NCP, the **more likely** an NCP becomes compliant
- Interstates cases are **less likely** to become compliant
- NCPs providing support to CPs who are current or former TANF recipients are **less likely** to become compliant
- The older the CP, the **less likely** an NCP becomes compliant.
- Female NCPs are **less likely** to become compliant.
- The larger the monthly order amount the **more likely** an NCP becomes compliant.
- The larger the starting arrears, the **less likely** an NCP becomes compliant.
- Counterintuitively, NCPs providing support to more children are **less likely** to become compliant.

Limitations and final observations. An important limitation is that the administrative data lack information on NCP characteristics that other studies have found to be significantly associated with compliance behavior. These characteristics include ability to pay, education, health and disability status, and whether the NCP has limited English proficiency, a criminal record, or alcohol/substance abuse problems. If such information had been available, the analysis could have provided a more complete understanding of the factors related to compliance and non-compliance.

Perhaps the most important descriptive finding is that NCPs paid all of their current obligations in just 54% of months. Non-compliance remains highly problematic. In 46% of months, NCPs did not pay the entire obligation. Of those non-compliant months, the NCP paid nothing at all in 74% of them. These statistics show that a small share of non-compliance is because NCPs make an effort to pay their obligations, but fall short. Rather, most non-compliance, whatever the reason, results in the CP's children receiving no financial support at all from the NCP.

The empirical relationships between NCP and case characteristics and the predicted probability that a spell of compliance ends may help DCS target higher-risk compliant cases for monitoring and efforts to forestall non-compliance. Similarly, the findings may help DCS target interventions on non-compliant cases with lower probabilities of becoming compliant.

Understanding Patterns of Compliance with Child Support Orders in Washington State

1. Introduction

In the years since the inception of the Child Support Enforcement Program (Title IV-D), researchers have documented the benefits of child support benefits and enforcement. When paid in full, child support payments account for almost half of the income for CPs below the federal poverty level (Heinrich, Burkhardt, & Shager, 2011). Research suggests that child support payments stabilize incomes, despite payment irregularity (Ha, Cancian, & Meyer, 2011), help women to leave welfare and reduce the likelihood that they return (Huang & Han, 2012). Stronger child support enforcement systems are associated with decreased non-marital teenage fertility (Plotnick et al. 2004; Hao, Astone, & Cherlin, 2007), as well as decreased non-marital fertility generally (Garfinkel, Huang, McLanahan, & Gaylin, 2003; Plotnick et al. 2007) and lower abortion rates (Crowley, Jagannathan, & Falchettore, 2012). Stronger enforcement has also been associated with an increased likelihood that noncustodial parents select partners with higher levels of education (Aizer & McLanahan, 2006). For children, better enforcement is associated with a higher likelihood of living in two-parent families (Jagannathan, 2004), increased school attendance, and improved cognitive outcomes, such as test scores (Knox, 1996; Argys, Peters, Brooks-Gunn, & Smith, 1998).

These benefits have been limited in Washington and nationwide because of the challenges of enforcing child support orders so that all children and their parents receive the portion of the noncustodial parent's (NCP) income to which they are entitled. To combat large-scale non-compliance, the federal government has created national databases for locating noncustodial parents and provided administrative funding and technical support to the states, while states have implemented a variety of enforcement mechanisms, including garnishing wages, imposing liens, revoking licenses, and contempt. Recently, combined federal and state spending on enforcement has been nearly $6 billion per year (Office of Child Support Enforcement, 2014).

While studies show that strict legislation and high spending on enforcement are associated with better child support performance, many noncustodial parents still fail to

comply with support orders (Huang & Han, 2012). In 2011, the latest year for which national data are available, only 43.4% of custodial parents received the full amount of child support they were owed. Roughly three in ten custodial parents (CPs) (30.4%) received partial support. The remaining 25.9% of CPs received no payments at all from NCPs. Despite increased enforcement efforts, these percentages have been fairly stable since 1993 (Grall 2013).

While Washington's child support system performs relatively well in enforcing collections, non-compliance is still quite problematic. In the data analyzed for this report, which cover the period January 2002 to November 2012, NCPs paid their full obligation in 54.3% of the case months we observed, paid less than the full amount but at least 50% in 8.1% of the case months, paid something but less than 50% in 3.7% of the months, and made no payments in 33.9% of the months.[1]

This report presents an analysis of the determinants of compliance with Washington's child support obligations. It was conducted under a University Partnership grant awarded by the federal Office of Child Support Enforcement to the Division of Child Support and a team of academic and applied researchers. The academic researchers led this effort; the applied researchers provided valuable advice, suggestions, and comments on all aspects of the study.

The report provides evidence on how NCP, CP and case characteristics are associated with the likelihood of compliance. The multivariate models examine the length of time that a case remains compliant. They also examine the length of time until a non-compliant case becomes compliant. The findings identify the characteristics that predict the likelihood that a compliant case will fall out of compliance each month and the likelihood that a non-compliant case will become compliant each month. To our knowledge, no prior study of the determinants of compliance with child support orders

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[1] Because the federal figures are based on reported support payments over a calendar year, while those for Washington are based on monthly payments, the statistics are not fully comparable. For example, an NCP who fully paid for 8 months, paid 75% for 1 month and paid nothing for 3 would be counted as paying less than the full obligation in the federal data, while our data would record 8 months of full compliance, 1 of partial and 3 of none. For the same NCPs, monthly data will always show higher proportions at full and zero compliance. While of course the NCPs are not the same in the federal and Washington data, we see the same contrast.

has conducted an empirical analysis that focuses on the duration of compliance or non-compliance.

Section 2 of this report explains how we define and measure compliance. It observes that there may not be one best definition of compliance and, consequently, proposes several definitions that may provide more insight into compliance and non-compliance behavior.

Section 3 describes the caseload sample drawn from DCS administrative records and how we construct periods of compliance and non-compliance. It discusses the statistical model we use to analyze determinants of how long an NCP remains compliant and how long until a non-compliant NCP returns to compliance. It also describes the explanatory variables used to predict compliance and non-compliance.

Section 4 presents descriptive statistics of the characteristics of cases, CPs, and NCPs and the extent of compliance and non-compliance, followed by the findings from the multivariate models. Section 5 concludes by discussing the limitations and implications of the findings.

2. Defining compliance

Compliance with child support obligations can be conceptualized and operationalized in different ways – there is no single, compelling approach. We use three complementary concepts of compliance which in turn generate five alternative definitions. Comparing findings based on different definitions of compliance may yield useful insights about the extent, nature, and determinants of compliance.

A straightforward definition of **full compliance** uses a stringent criterion – an NCP is compliant if he or she is paying all current obligations. This definition leads to a binary measure: an NCP is either fully compliant or not. Full compliance is assessed each month. For example, in months 1-15 an NCP pays all of the obligation and is compliant. During months 16-24 an NCP misses payments or pays less than the full obligation and is non-compliant. In month 25 the full obligation is paid and the NCP returns to compliance. And so on for each month when the case is open.[2]

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[2] This approach ignores arrears that accrued before the order date when determining compliance. Essentially, it is about current compliance with the monthly order. See p. 11 for further discussion.

Non-compliant status is assigned to NCPs with both small and large amounts of unpaid current support. For this reason, the full compliance measure does not capture variation in the degree of non-compliance among NCPs.

Our second definition captures such variation by recognizing that non-compliance may be viewed as a matter of degree. **Partial compliance** uses the percentage of current obligation paid. Thus, it distinguishes between an NCP regularly paying, say, 90% of the current obligation, and one paying only 25%. The former would generally not be regarded as falling into the "hard-to-collect" category or targeted for significant enforcement effort by DCS; the latter is seriously non-compliant.

To operationalize partial compliance one must select a specific minimum percentage payment that is deemed in compliance. To examine the sensitivity of the findings to different percentages, we use cut-offs of 75, 50 and 25 percent. This definition also creates a binary measure: an NCP either pays at least the specified percentage in a month, or not.

We use a third, extremely lenient definition as well – whether the NCP is paying anything. Such a definition captures the notion of an "**active**" NCP – one who is making some effort, regardless of how big or small, to fulfill his or her obligation. It distinguishes active NCPs from those paying nothing – the most hard-to-collect.

With this measure, an NCP with a monthly order of $500 who pays $50 is "active" and would be deemed compliant, as would an NCP with the same order who pays $400 or $500. We think this definition is useful because while NCPs who typically pay 20 or 25 percent of their obligations are significantly failing their support obligations, they may be of less concern to DCS (and the CP) than NCPs who are entirely evading payment.

Figure 1 illustrates how the definitions would be applied to five NCPs, each with a monthly order of $400. The upper left panel shows the actual amount paid. NCP A fully complied and paid $400; the other NCPs made partial payments ranging from $325 to $25. Under the 100% full compliance measure, only A is compliant (upper right). With the 75% measure (middle left), A and B are compliant. With the 50% measure (middle right), C is also considered compliant. With the 25% standard (lower right), NPCs A-D are considered compliant. Last, since E pays something, the "Anything" measure counts that NCP as compliant.

Figure 1: Compliance by NCPs with differing monthly payments under 5 definitions of compliance

Amount paid (monthly order = $400)
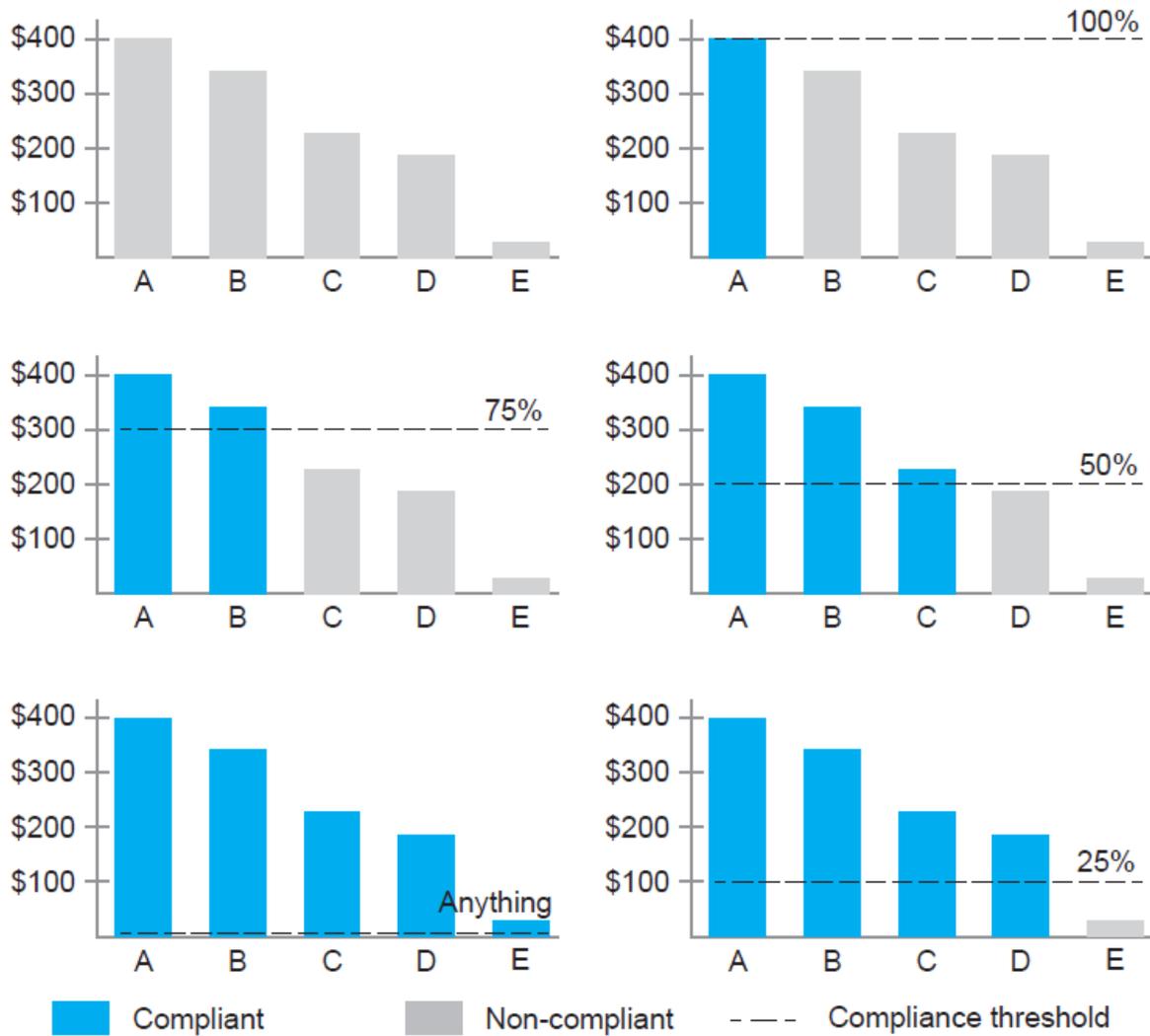
Figure 3 in section 3 provides further examples of cases with different payment behaviors that meet each definition of compliance. It shows that a single case can satisfy different definitions over time.

<u>Treatment of arrears accrued between the date of paternity establishment and the order date.</u>

For many cases there is a lag between the effective order date and the order start date.[3] For such cases, NCPs will already have accumulated arrears on the date the order is issued. **Our analysis ignores arrears that accrued before the order date**. One rationale for doing so is that NCPs who fully pay the monthly obligation, but are unable to pay down initial arrears, are making good faith efforts to comply: current support is not getting converted into arrears after the order date. A second is that compliance with cash support orders paid to the CP has been the main concern with "hard to collect" NCPs. So under the full compliance definition, as long as NCPs pay at least the monthly obligation, they will be considered to be compliant.[4]

3. Data, methods and explanatory variables

<u>Data and analysis sample</u>

The data for the analysis come from DCS administrative data from the Support Enforcement Management System (SEMS). SEMS is utilized by both SEOs and SETs to record case, NCP, and CP characteristics as well as payment activity and to manage casework through event tracking codes.

SEMS data was extracted in three files: base, order, and payment. The base file has a monthly record for each case that includes NCP, CP, case, and monthly payment information. The order file has details on the payment parameters set by the order: current support duration, initial arrears, current support obligation for both cash payment and medical support. This file has roughly one entry per month for most months for each case. The payment file has details about the payment activity that occurs for a case. In a given month a single case can have one or many entries in the payment file.

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[3] This is the lag observed in the case record – it may be tied to paternity establishment, but since the investigators were not permitted access to the paternity establishment date variable, we only observed that the effective start date occurred before the order date. The issue created by the difference between effective order data and order start date is briefly discussed in section 4 and more extensively in the appendix.

[4] With the partial compliance measures, NCPs are paying less than the monthly obligation and so will be accruing arrears. For the activity measure, the issue of how to treat arrears is moot because paying any amount, whatever the level of arrears, counts as "active."

DCS randomly selected a sample of 40,000 NCPs from the set of all NCPs who had their first child support order established within the State of Washington between January 2002 and November 2012. This initial sample includes 2.2 million months of case data.

Some NCPs' cases will have closed by the end of November 2012, while others will have active cases that extend beyond this date period. Though NCPs enter the sample at the time when their first order was established, after that point, additional cases may open for a single NCP. Those additional cases are included in the analysis.

In the sample, 57,253 cases were initiated for 39,977 NCPs.[5] Of those cases, many did not have established orders. This could be for a variety of reasons. For example, a paternity test came back negative, the order establishing process is taking a long time, or the CP decided to stop pursuing support. We excluded these cases from the analysis because order establishment is the critical event. It defines the NCP's financial obligations and the date of establishment marks the first time when the NCP can be either in or out of compliance. Without an established order, we cannot investigate the dynamics of compliance. Excluding these cases reduced the sample to 50,462 with 39,025 NCPs.

We also excluded a large number of cases with orders from the analysis because they never had a single month in which compliance could be determined. This occurred because the case was always in closure, there were many missing case months in the data, or there were no non-zero obligation months (i.e., no money was owed over the life of the case).[6] We also excluded 1,082 "left censored" cases, where the case started before it entered the data set.[7] These exclusions further reduced the sample to 34,053 cases with 28,265 NCPs and 1.39 million months in which compliance was determined.

<u>The dependent variable: Spells of compliance and non-compliance</u>

The analytic framework starts from the observation that when a child support order is established, the case is in compliance.[8] The NCP may remain compliant every month

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[5] Twenty-three of the 40,000 NCP ids were duplicative.

[6] It is not uncommon for a case record to include many months of missing data.

[7] With left censoring, we cannot establish when a spell of compliance or non-compliance began. Including left censored spells may lead to biased estimates.

[8] For simplicity, assume there are no arrears when the case opens.

until the youngest child no longer is entitled to support and the case closes, or until the case closes for other reasons. If after a period of compliance the NCP pays less than the monthly order amount, he becomes non-compliant under at least one measure of compliance. If the NCP returns to compliant status because of enforcement or voluntary actions, the period of non-compliance ends and a second period of compliance starts. The second period of compliance may end in non-compliance, etc.

These observations imply that examining whether a NCP is compliant or non-compliant at a point in time will not identify the reasons that influence how quickly a case lapses into non-compliance or moves back into compliance. To understand these dynamics, we examine **spells** of compliance and non-compliance.

A spell is the duration of time spent in a single state. Spells have three characteristics: a start time, a stop time, and a state attribute, which indicates how the spell ends. In this analysis there are 3 possible attributes. A spell of compliance can end when the NCP becomes non-compliant. A spell of non-compliance can end when the NCP's payment behavior meets the definition of compliance. And both compliant and non-compliant spells may end by the case being closed. Because a spell can end in more than one way, we conduct an analysis of "competing risks".[9]

We cannot observe the endings of all compliant or non-compliant spells that are ongoing at the study end date of November 2012. Spells with endings that occur after the last available monthly data are "right censored." Though we cannot observe how such spells end, they remain in the data because the statistical model properly incorporates the information from such spells.[10]

Figure 2 depicts examples of patterns of spells. These examples are possible under all five definitions of compliance. For simplicity, assume there are no arrears at the time the order is set.

- NCP 1 has three spells of compliance and three spells of non-compliance before the case closes.

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[9] Competing risks were first studied in the context of understanding determinants of multiple causes of death, but are common in analyses of social and economic outcomes. For example, a spell of unemployment can end with employment or dropping out of the labor force; a pregnancy may end with a miscarriage, abortion or birth.

[10] If we were to drop such spells, we would systematically eliminate longer spells from the data and hence obtain biased estimates.

- NCP 2 has a single spell of compliance, then the case closes.
- NCP 3 starts as non-compliant, then becomes compliant and remains in compliance until the case closes.
- NCP 4 starts in compliance, then falls into non-compliance and remains so through the last month of available data (November 2012). NCP 4's spell of non-compliance is "censored" because we cannot observe its end.
- NCP 5 has a single, censored spell of non-compliance.
- NCP 6 starts in a compliant spell, switches to a non-compliant spell, then returns to compliance until case closure.
- NCP 7 has a single censored spell of compliance.

Figure 2: Examples of spells of compliance and non-compliance
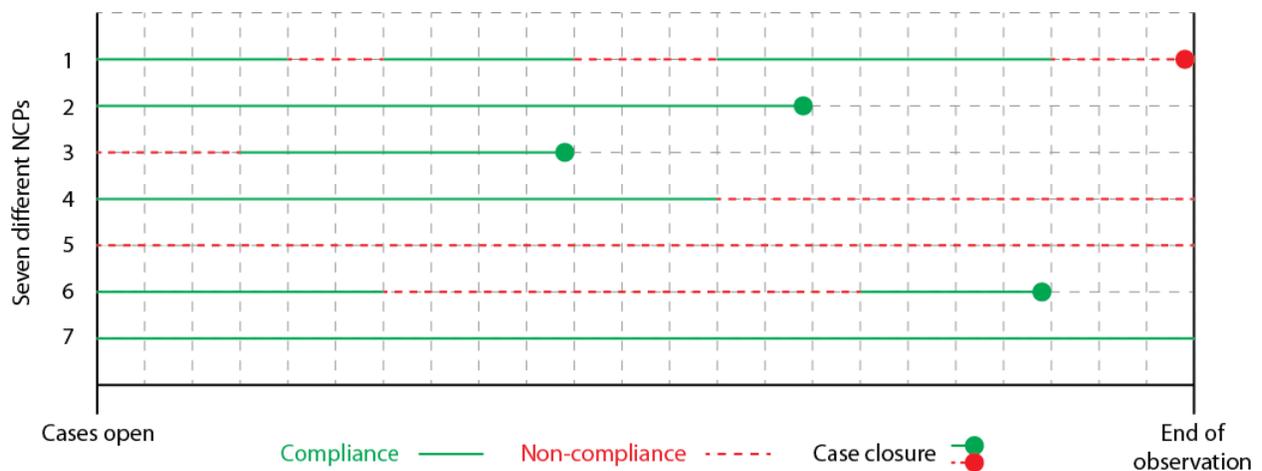
To better see how spells with different payment behaviors are classified by the 5 measures, and how a spell's classification can change as it progresses, consider Figure 3. NCP A always pays the full obligation until case closure and is classified as compliant by all measures. Using the full compliance measure, NCP B initially is compliant, becomes non-compliant, and later returns to compliance. Under the other 4 measures this NCP is always compliant because he always pays at least 75% of the obligation. NCP C starts as compliant by the active and 25% measures. When payment exceeds 50%, she becomes compliant under the 50% partial compliance measure. She later becomes compliant under the 75% partial compliance measure as well. NCP D always pays at least 25% of the obligation and so is deemed compliant

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under the 25% and active measures. He eventually starts to pay more than 50% and then is compliant under that measure as well, but not under the 75% standard. NCP E is compliant only under the active measure as soon as payment starts, eventually becomes compliant under the 25% measure and then the 50% one, before the payment falls below 50% of the obligation. NCP F is non-compliant under all 5 measures. Cases B, C, D and E illustrate that different measures can lead to different numbers and lengths of spells of both compliance and non-compliance.

Figure 3: Examples of spells with different degrees of compliance
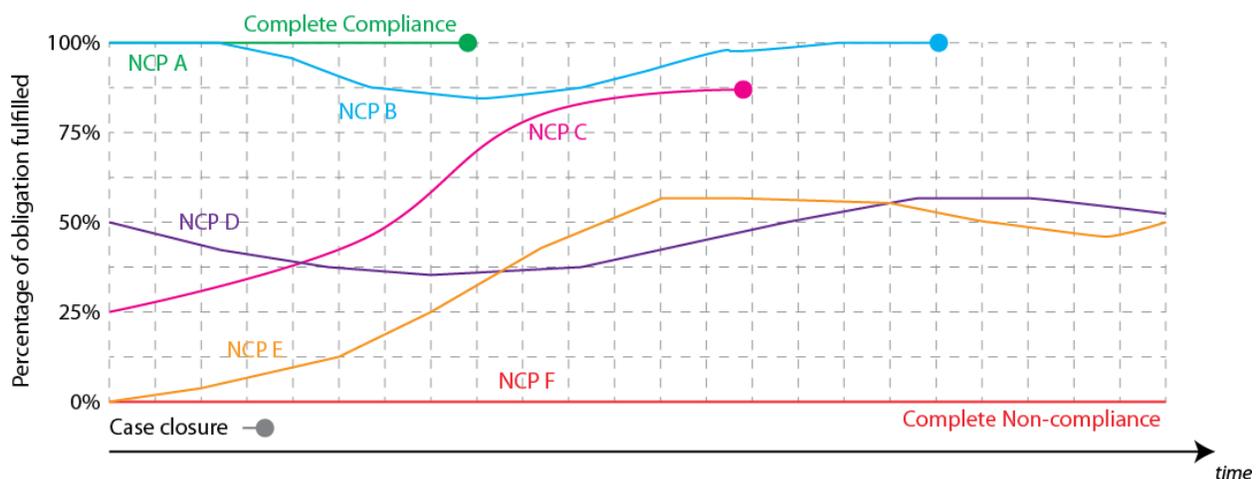
Constructing spells of compliance and non-compliance

We constructed spells by looking at monthly transaction data for each case from the first time the order was established in the IV-D system until the case closed or the observation period ended.[11] From data in the order and payment files we constructed variables that quantify compliance status each month under each definition. We used the monthly observations of a case, in turn, to construct spells of compliance and non-compliance and identify when a case closes. As figure 2 shows, some cases have one spell of compliance or non-compliance that may or may not end with closure while others have multiple spells that alternate between the two states, the last of which may or may not end with closure.

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[11] For further discussion of the start date and other issues in spell construction, see the appendix.

<u>Statistical methods to analyze spells</u>

We analyze the determinants of the length of spells in each state using discrete time event history models (also called hazard, survival, and duration models).[12] Such models properly incorporate the information from censored spells that have not ended before the last available month of case data. Basically, the models predict the likelihood that a spell will end each month as a function of the explanatory variables. This type of empirical analysis has been widely applied to better understand the social, economic and policy determinants of outcomes such as duration of unemployment, poverty or marriage, time on TANF or SNAP, time until a non-marital birth, and time from prison release to recidivism but not, to our knowledge, to duration of compliance with child support obligations.

<u>Explanatory variables</u>

We use the event history framework to estimate the relationships between NCP, CP and case characteristics and the likelihood that a compliant spell ends (hence, the start of non-compliance). We also estimate how the characteristics are related to the likelihood that a non-compliant spell ends (hence, the NCP returns to compliance). The administrative data file to which we had access contains few personal characteristics. The models include age of both the NCP and CP, whether the NCP is female, and whether the CP is a current or former TANF recipient.[13] Case characteristics include the monthly order amount, starting arrears, the number of children on the order, and whether the case is interstate.[14] The means of these characteristics for the final analysis sample are:

- Age of NCP   31.7
- Age of CP   32.9
- Female NCP   .237
- Number of children   1.37

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[12] A discrete time model is appropriate here because child support compliance is determined on a monthly basis. We use the discrete time logistic model.

[13] The models reported here do not include race/ethnicity of the NCP or CP because this characteristic is not reported for more than half the cases. (Results for the included variables were not sensitive to this exclusion.) We exclude gender of the CP since it is, in virtually every case, the opposite of the NCP's gender, so including it would create severe collinearity problems.

[14] Orders and arrears are adjusted to reflect 2012 dollars.

- Monthly order $306
- Starting arrears $1,609
- Inter-state status .114
- CP is current or .505
  former TANF recipient

The models also include a series of year indicators – a dummy variable that takes the value of one for all spells that started in 2003, a second that takes the value of one for all spells that started in 2004, etc.[15] The year indicators help control for changes over time in general economic conditions and enforcement operations.

Expected relationships between the explanatory variables and compliance behavior

As people age, their incomes tend to increase. For this reason, one might expect older NCPs to be more likely to remain in compliance. The expected relationship between a CP's age and compliance is less clear.

If mothers, in general, are more committed to their children than fathers, one might expect female NCPs to be more likely to remain in compliance. On the other hand, since most NCPs are not women (24% of NCPs in the sample are women), NCP status for a woman might indicate some sort of difficult circumstance that might hinder compliance.[16] Hence, the expected relationship is ambiguous.

Other things equal, an NCP supporting more children may feel a stronger obligation to meet his or her obligation. If so, one would expect cases with more children to be more likely to be compliant.

One argument suggests that higher orders would be associated with greater compliance because 1) NCPs who are issued higher orders generally have higher income, 2) higher order amounts may be more accurate and reflective of ability to pay because they more likely are be based on actual earnings as opposed to imputation and

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[15] The omitted category is for 2002. Appendix table A shows the percent of spells that started in each year.

[16] Though women tend to earn less than men, because orders take earnings ability into account, their lower earnings would not necessarily lead to less compliance.

3) orders as a share of income are lower for higher income persons.[17] On the other hand, orders are set based on an expected level of NCP income. When earnings decline because of job loss, job changes, health issues and other circumstances, it will be harder for an NCP to sustain higher payments than lower ones. Hence, the expected relationship between size of order and compliance is ambiguous.

We would expect order enforcement to be more successful for in-state NCPs, who are easier to locate than those living in other states and against whom DCS can more readily enforce penalties such as suspending licenses or seizing physical assets. NCPs who move out of Washington may do so, in part, as an effort to avoid support payment. Thus, inter-state cases are expected to be less likely to remain in compliance.

TANF cases may have a higher probability of non-compliance since the NCP has less incentive to pay. The money does not go to child, but to the state, and the CP will receive the same TANF benefit.

Similar lines of argument suggest that the above characteristics will be associated with the likelihood of remaining **non-compliant** in the opposite direction. The relationship between compliance and starting arrears is less clear and we have no *a priori* expectations about its direction.

4. Findings

Of the 34,053 cases in the final sample, 37% had completed all spells before November 2012, the last month of data. A large majority – 63% – were still continuing (i.e. were right-censored).

Table 1 provides basic statistics on cases and non-left censored spells under the five measures of compliance. Under the 100% compliance measure, cases in the final sample have 233,589 spells of compliance or non-compliance. Consistent with the examples in Figure 3, the four other measures yield different numbers and lengths of spells of both compliance and non-compliance. With those more lenient definitions, the number of spells ranges from 175,808 (25% compliance) to 206,459 (75%

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[17] The Washington State Child Support Schedule shows, for instance, that for an NCP with one child age 11 or under, the order as a percentage of net income falls from 21.4% for an income of $2,000 to 12.4% for an income of $12,000.

Table 1: Summary statistics on spells, spell months and compliance, by 5 measures

		Compliance threshold (Percent of current monthly obligation paid)									
		100%		**75%**		**50%**		**25%**		**Active (Anything)**	
		Count	%	Count	%	Count	%	Count	%	Count	%
Spells	Total	233,589		206,459		181,024		175,808		181,475	
	Compliant	112,836	48.3	99,980	48.4	88,321	48.8	86,232	49.0	89,351	49.2
	Non-compliant	120,753	51.7	106,479	51.6	92,703	51.2	89,576	51.0	92,124	50.8
Spell months	Total	1,389,953		1,389,953		1,389,953		1,389,953		1,389,953	
	Compliant	755,880	54.4	824,457	59.3	867,212	62.4	893,289	64.3	918,631	66.1
	Non-compliant	634,073	45.6	565,496	40.7	522,741	37.6	496,664	35.7	471,322	33.9

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compliance). The mean number of spells per case ranges from 5.1 with the 25% measure to 6.9 with the 100% compliance measure. The substantial degree of cycling between compliance and non-compliance means that SEOs constantly are dealing with changes in case status.

The proportion of spells that are compliant is surprisingly insensitive to the specific measure. Regardless of measure, 48.3% to 49.2% – slightly less than half of all spells (both completed and right censored) — are compliant.

When we examine months instead of spells, compliance is significantly higher.[18] NCPs paid their full obligation in 54.3% of months. As the requirement for compliance falls, monthly compliance necessarily rises. It is 59.3% for the 75% measure, 62.4% for the 50% measure, 64.2% for the 25% measure, and 66.1% for the least demanding active measure. The last statistic means that every month, on average, one-third of the CPs and their children who are entitled to support payments receive nothing, despite DCS's efforts to enforce support obligations.

Determinants of the likelihood that a spell of compliance ends

Table 2 summarizes the event history models' findings on factors associated with the monthly probability that an NCP moves from being compliant to non-compliant. For clarity and simplicity, the table only reports the signs of coefficients that were statistically significant.[19]

All but two characteristics are consistently associated with compliance behavior. The pattern of coefficients is remarkably similar across the five measures. Some findings support the conjectures discussed at the end of section 3. Other things equal:

- The older the NCP, the **less likely** an NCP becomes non-compliant
- NCPs providing support to more children are **less likely** to become non-compliant
- Interstates cases are **more likely** to fall into non-compliance

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[18] This means that compliant spells (including both censored and completed ones), on average, are longer than non-compliant spells (again, including both types of spells).
[19] Because the sample sizes are so large (see the last 2 rows of table 1) we only report signs for coefficients that are statistically significant at the .001 level. The complete set of coefficient estimates for all 5 measures is in the supplemental file, *Model estimates non-compliance to compliance.*

Table 2: Relationship between explanatory variables and the probability of moving from compliant to non-compliant

Explanatory variable	Compliance measure				
	100%	75%	50%	25%	Active (Anything)
Age of NCP	-	-	-	-	-
Age of CP	-	-	-	-	-
Female NCP	**n.s.**	**+**	**+**	**+**	**+**
# Children on case	-	-	-	-	-
Order amount	**+**	**+**	**+**	**+**	**+**
Starting arrears	**+**	**+**	**+**	**+**	**+**
Interstate case	**+**	**+**	**+**	**+**	**+**
CP is TANF or former TANF recipient	-	-	**n.s.**	**+**	**+**
Year	For all measures, year dummies become more strongly associated with compliance from 2002 to 2011, but not in 2012.				

For all entries with a + or – sign, the coefficient is significant at the .001 level.

Table 2 shows strong associations between compliance and three other variables without *a priori* expectations about the relationship:

- The older the CP, the **less likely** an NCP becomes non-compliant.
- The larger the monthly order amount, the **more likely** it is that an NCP becomes non-compliant.
- The larger the starting arrears, the **more likely** it is that an NCP becomes non-compliant.

The relationship between compliance and being a female NCP is sensitive to the choice of measure. With the 100% measure there is no relationship between gender and non-compliance. The four less stringent measures show that female NCPs are

more likely to fall into non-compliance. Compliance behavior of NCPs providing support to CPs who are current or former TANF recipients is also sensitive to the choice of measure. With the two most stringent measures, such NCPs are less likely to become non-compliant. The two least stringent measures show the opposite relationship. With the 50% measure, there is no significant relationship.

<u>Determinants of the likelihood that a spell of non-compliance ends</u>

Table 3 summarizes the findings on factors associated with the monthly probability that an NCP moves from being non-compliant to compliant. Like table 2, the table only reports the signs of coefficients that were statistically significant.[20] Each characteristic is consistently associated with non-compliance behavior. Without exception, the pattern of coefficients is identical across the five measures.

Three findings support the conjectures discussed at the end of section 3. Other things equal:

- The older the NCP, the **more likely** an NCP becomes compliant.
- Interstates cases are **less likely** to become compliant.
- NCPs providing support to CPs who are current or former TANF recipients are **less likely** to become compliant.

Table 3 shows strong associations between compliance and the four variables without *a priori* expectations about the relationship:

- The older the CP, the **less likely** an NCP becomes compliant.
- Female NCPs are **less likely** to become compliant.
- The larger the monthly order amount the **more likely** an NCP becomes compliant.
- The larger the starting arrears, the **less likely** an NCP becomes compliant.

The counterintuitive finding in table 3 is that NCPs providing support to more children are **less likely** to become compliant.

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[20] Again, because the sample sizes are so large (see the last 2 rows of table 1) we only report signs for coefficients significant at the .001 level. The complete set of coefficient estimates for all 5 measures is in the supplemental file, *Model estimates compliance to non-compliance.*

Table 3: Relationship between explanatory variables and the probability of moving from non-compliant to compliant

| Explanatory variable	Compliance measure				
	100%	75%	50%	25%	Active (Anything)
Age of NCP	+	+	+	+	+
Age of CP	-	-	-	-	-
Female NCP	-	-	-	-	-
# Children on case	-	-	-	-	-
Order amount	+	+	+	+	+
Starting arrears	-	-	-	-	-
Interstate case	-	-	-	-	-
CP is TANF or former TANF recipient	-	-	-	-	-
Year	For all measures, year dummies become more strongly associated with compliance from 2002 to 2011, but not in 2012				

For all entries with a + or – sign, the coefficient is significant at the .001 level.

How strongly is the predicted probability of becoming non-compliant related to NCP and case characteristics?

Figure 4A offers information on the quantitative inmportance of the relationships between the explanatory variables and compliance behavior. We use the event history estimates to compute the probability that a compliant NCP will become non-compliant in the next month. We present predicted probabilities for different combinations of NCP, CP and case characteristics to illustrate how sensitive the predictions are to changes in each characteristic. The figure displays predictions for the 100% measure.[21]

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[21] Appendix table B presents the exact probabilities.

Figure 4A: Predicted probability that a spell of compliance ends in a month for varying characteristics of NCPs and cases, Using the 100% Measure
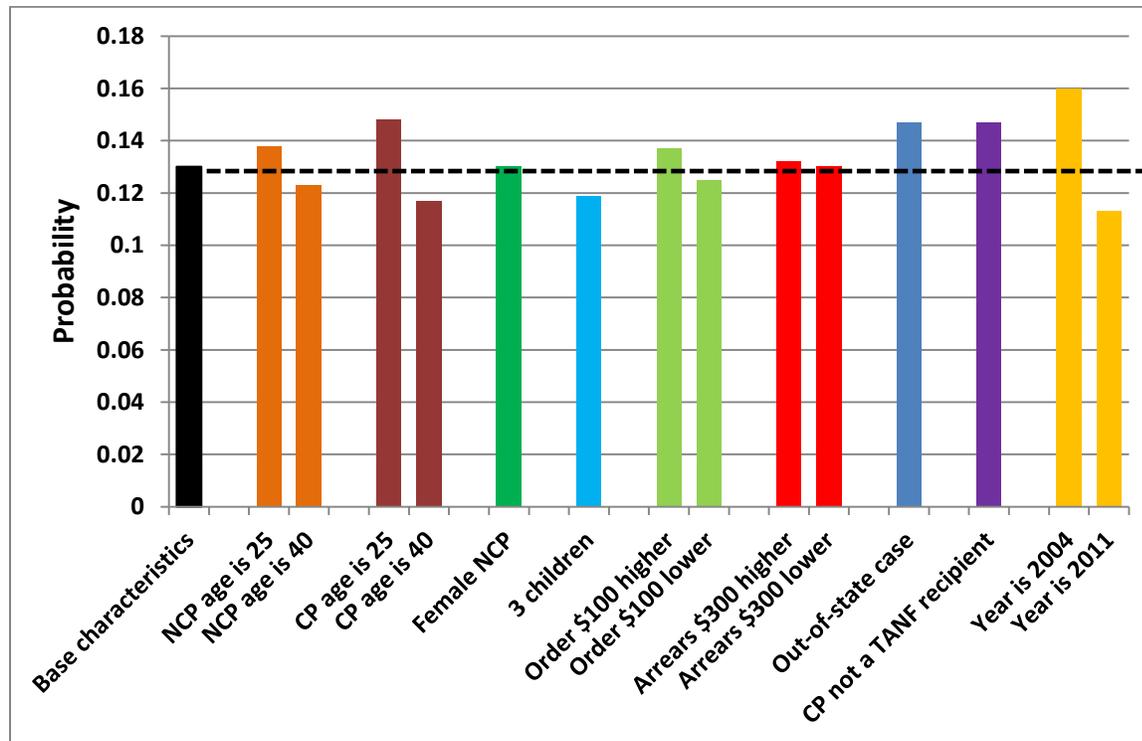
The base characteristics are: NCP is male, age 32; CP is age 33 and a TANF recipient; case has 1 child, is in-state, monthly order is $306 (the mean), arrears are $1,609 (the mean), year is 2007.

The first bar 1 shows the probability derived by assigning the mean value of the age and financial explanatory variables and the most common value for the dichotomous ones.[22] The base case's characteristics are: NCP is male, age 32; CP is age 33 and a TANF recipient; case has one child, is in-state, monthly order is $306 (the mean), and arrears are $1,609 (the mean). We set the year indicator at 2007.

Using on the 100% measure, the predicted probability that a compliant NCP falls out of compliance during the month (i.e. that spell of compliance ends) is .130. Setting NCP age at 25 raises the probability very little to .138; setting it to 40 similarly lowers it slightly to .123. CP age, surprisingly, is more strongly associated with compliance. Female NCPs are no more likely than male NCPs to become non-compliant.

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[22] For example, since 24% of NCPs are female, the female dummy variable is set to zero.

Cases with three children instead of one are marginally less likely to become non-compliant (.119 versus .130). Raising or lowering the order amount by $100, which is a 33% change from the mean of $306, changes the probability by only .007. Changing arrears $300 from the mean of $1,609 has an even smaller impact on the prediction. While a case's financial characteristics are not strongly related to the probability of becoming non-compliant, its interstate status is. Compared to the base's in-state case, the interstate one is more likely to stop complying. The increase in probability to .147 is a 13 percent change. Contrary to expectation, cases with CPs who are not TANF or former TANF recipients are more likely to stop complying.

The last two bars show that the likelihood of staying compliant has significantly improved over time. The probability of becoming non-compliant in a month fell from .160 in 2004 to .113 in 2011 – a decline of 30 percent.

Figure 4B shows corresponding predictions for the Active measure.[23] (Predictions for the other three measures fall in-between those for the 100% and Active measures). The predictions exhibit two main differences from the 100% measure's predictions. Most important, with this less stringent measure of compliance, it is not surprising that the probability of becoming non-compliant is much lower. For example, the base case probability of becoming non-compliant is .083, or 36 percent lower than the 100% measure.

Second is that female NCPs are now predicted to be **more** likely to become non-compliant. The other changes in predictions show patterns similar to the 100% measure, but since the base probability is smaller, the changes in probabilities are usually smaller as well.

The probability that a spell of compliance ends can vary widely among cases with different characteristics. To illustrate this, consider a case with characteristics that all tend to increase non-compliance under the 100% measure as shown in figure 4A: age of 25 for both the NCP and CP, one child, an above average order and starting arrears, out-of-state, CP not a TANF recipient, and year of 2004. This case's predicted probability of becoming non-compliant is fully .25. For a case with the reverse set of

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[23] Appendix table B presents the exact probabilities as well as results for the 50% measure.

characteristics in figure 4A, which all tend to reduce non-compliance, the predicted probability is only .08, or 68% smaller.

Figure 4B: Predicted probability that a spell of compliance ends in a month for varying characteristics of NCPs and cases, Using the Active Measure
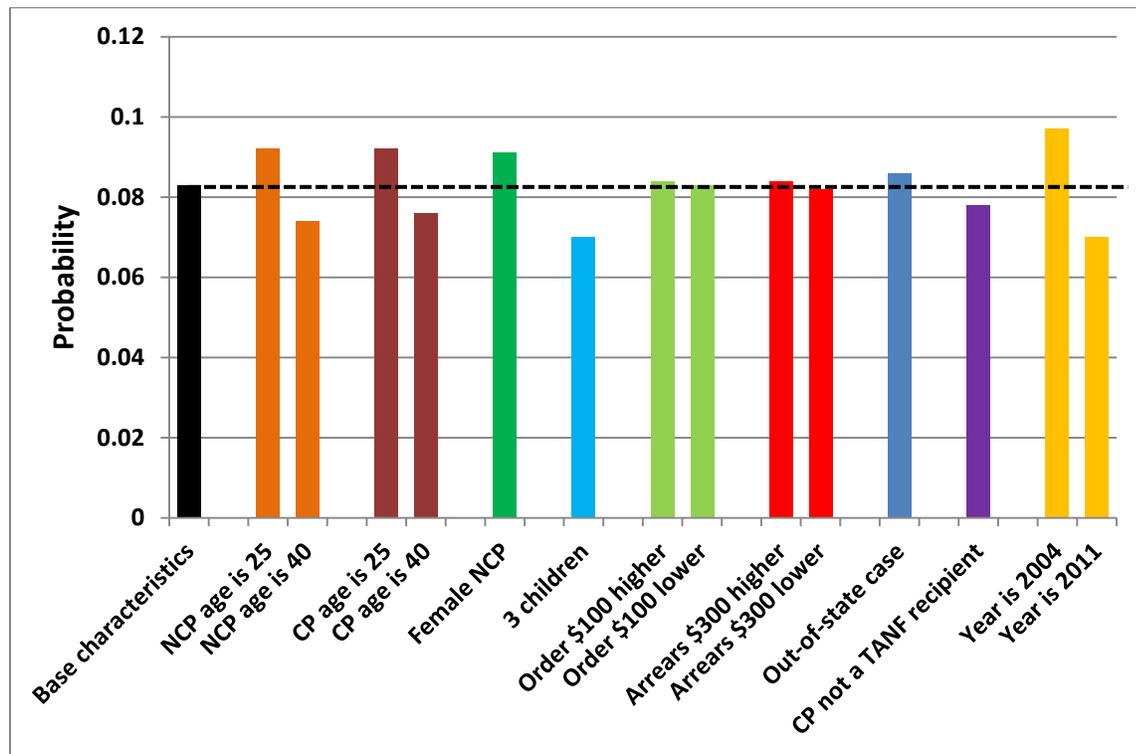
The base characteristics are: NCP is male, age 32; CP is age 33 and a TANF recipient; case has 1 child, is in-state, monthly order is $306 (the mean), arrears are $1,609 (the mean), year is 2007.

How strongly is the predicted probability of becoming compliant related to NCP and case characteristics?

Figure 5 contains predictions similar to those in table 4, but for the probability that a **non-compliant NCP becomes compliant**. The base case's characteristics are the same as in figure 4.[24]

Under the 100% measure, the predicted probability that a non-compliant NCP becomes compliant during the month (i.e. that spell of non-compliance ends) is .204.

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[24] Appendix table C presents the exact probabilities as well as results for the 50% measure.

For the 50% and Active measures, the probabilities are .197 and .221 (see appendix). Returning to compliance is more likely than falling out of compliance.

Figure 5: Predicted probability that a spell of non-compliance ends in a month for varying characteristics of NCPs and cases, Using the <mark>100%</mark> Measure
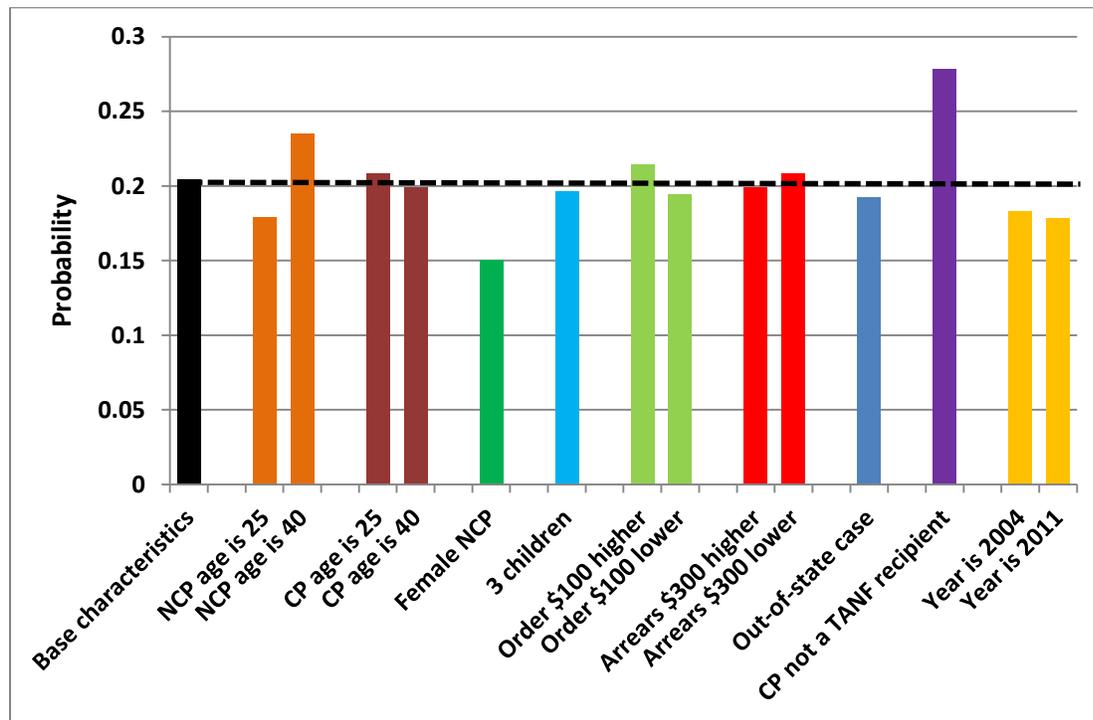
Like figure 4, NCP age has a modest effect on the prediction – a 25 year old NCP's probability of becoming compliant is about 11 percent lower than a 32 year old's. CP age has little effect on the prediction. NCP gender is strongly predictive. A female NCP's probability of becoming compliant is 26 percent lower than an otherwise similar male. Changes in number of children, order size, starting arrears, and interstate status have modest effects on the predicted probabilities. Whether the CP is a TANF or former TANF recipient has a large effect on predicted compliance – the probability that a non-recipient returns to compliance is 36 percent larger than that for current or former recipients. From 2004 to 2007 the probability that a spell of non-compliance ended rose from .183 to .204. After 2007 it fell. We lack a ready explanation for this finding.

As in the analysis of becoming non-compliant, the probability that a spell of non-compliance ends varies widely among cases with different characteristics. Consider a non-compliant case with characteristics that all tend to increase the likelihood that a spell of non-compliance ends as shown in figure 5: an age of 40 for the NCP, male NCP, one child, below average order, in-state, CP not a TANF recipient, and year of 2011. This case's predicted probability of becoming compliant is .29. For a case with the reverse set of characteristics in figure 5 (and year set to 2007), the predicted probability of becoming compliant is only to .11 or 62% smaller.

5. Limitations and final observations

Limitations. An important limitation of this study is that the administrative data lack information on NCP characteristics that other studies have found to be significantly associated with compliance behavior. These characteristics include earnings and other sources of income (i.e. ability to pay), education, health and disability status, and whether the NCP has limited English proficiency, a criminal record, or alcohol/substance abuse problems.[25] If such information had been available, the analysis could have provided a more complete understanding of the factors related to compliance and non-compliance.[26]

Some of these "omitted variables" are likely to be correlated with the ones included in the event history models. It is well known, for example, that age is positively correlated with earnings, while that being female is negatively correlated with earnings. In this situation "omitted variable bias" may arise – the coefficients on the observed variables partly reflect the impact of the omitted ones because the estimator gives them "credit" for the effect of the unobserved ones. For instance, because the models do not include earnings, the coefficient on age may be overstated.

Final observations. Perhaps the most important descriptive finding is that NCPs paid all of their current obligations in just 54% of months –slightly more than half. Non-

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[25] See Eldred and Takayesu (2013) and the studies it cites.
[26] It is worth observing, however, that obtaining such information would require a costly survey. Yet a modest size survey of 2-3,000 cases would not provide rich enough data on spells of compliance and non-compliance. While such a survey would be useful for research, SEOs would still be limited to the basic demographic information in the administrative records and would not have information on a more complete set of personal characteristics that might be useful in enforcement.

compliance remains highly problematic. In 46% of months, NCPs did not pay the entire obligation. Of those non-compliant months, the NCP paid nothing at all in 74% of them. These statistics show that a small share of non-compliance is because NCPs make an effort to pay their obligations, but fall short. Rather, most non-compliance, whether because of inability to pay or willful avoidance, results in the CP's children receiving no financial support at all from the NCP.

The empirical relationships between NCP and case characteristics and the predicted probability that a spell of compliance ends may help DCS target higher-risk cases for monitoring and interventions to forestall non-compliance. Characteristics of compliant cases at greater risk of becoming non-compliant include having a female or relatively young NCP, being Interstate, have one child on the order, and having a relatively high order.

Similarly, the findings may help DCS target interventions on non-compliant cases with lower probabilities of becoming compliant. Among non-compliant cases, characteristics predictive of a lower probability of becoming compliant include having a female or relatively young NCP, being Interstate and having a CP who is a former or current TANF recipient, but not having a relatively high order or the number of children.

To the extent that such targeting is effective, the well-being of custodial parents and their children will improve as they receive larger and more regular child support payments.

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Appendix on Methods for Constructing Spells

<u>Establishing the start date of a spell</u>

We considered three methods for identifying the initial spell start: through the effective order date, through the date when the order started in the IV-D system, or through examining the event tracking status on the base file. We have chosen the second as the method of selecting the start of the first spell. That decision is explained below.

The **effective order date** is the date when obligations officially began. The order effective time period represents the span of time during which the NCP is obliged to provide support. For example, an NCP and CP who divorce in January of 2003 when their child just turned four years old have an order effective start date of January 2003.

The **order start date** represents when the order is "turned on" in the IV-D system. At this point, NCPs can begin to submit formal payments. DCS employees can now take enforcement actions if necessary. Turning back to our example, the order effective date for the case was January 2003, but suppose it took a long time for the couple to arrive at a settlement and orders were not established until October 2003. The order start date for this case would be October 2003.

For many cases, as in the example above, there is a lag between the effective date of the order and the order start date. For such cases, the NCP will already have accumulated arrears on the date the order is issued. If we use the effective date to set the beginning of the spell, there would be a few months where there was no possible activity in the payment file[27], yet arrears would accumulate. The NCP only has the opportunity to pay once his order has been established. For that reason, we decided to use the order start date as the start of the first spell.[28] We then reduced the data file so it contained only entries for a case that occur on or after the earliest order start date.

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[27] In 171 cases, payment activity was present prior to the order start date. These case months were excluded from the analysis.
[28] Choosing to start spells based on the content of the event tracking variable would lead to similar end results. Using the order start date is simpler to implement.

<u>Detecting spells</u>

Spells are a set of consecutive case months that are characterized by the same compliance status. Each spell has a start date, end date, and compliance type (compliant or non-compliant). A single case typically has more than one spell.

As discussed in the text, this study examines compliance status based on current payment behavior. Assessing monthly compliance requires examining the payment file activity within the context of the order amounts represented in the base file. For current support, the monthly sum of current support paid is evaluated against the amount of current support due for that month indicated on the base file. If the paid amount is greater than or equal to the order amount, the case is fully compliant for that month. Otherwise, it is out of compliance. We assess the extent of partial compliance and whether there is any activity in similar fashion.

Case activity cannot always be characterized in terms of compliance. This occurs when the case is closed or when the order file indicates that the order is active, yet the base file does not contain a monthly record — in other words, there is missing data. Case activity due to closure or missing data can play a role in determining compliance spell start and stop points.

Spells end for four reasons: change in compliance status, censoring, closure, or missing data. If there is no change in compliance between two adjacent months, the spell remains active. If there is a change in compliance status between two adjacent months, a spell will end and a new spell will begin. If the case transitions from a compliance status to closure, the spell ends in the closure state. Cases with missing data were excluded from this analysis.

Spells that are cut off by the study end date of November 2012 are right censored. Any compliant or non-compliant spells during November 2012 are considered censored. Using the strict definition of compliance, almost 62% of cases are censored.

Appendix Table A: Percent of spells starting in each year

Year of initial spell	Percent
2002	3.1%
2003	6.2%
2004	7.6%
2005	9.0%
2006	9.6%
2007	9.4%
2008	10.6%
2009	11.7%
2010	12.6%
2011	13.2%
2012	7.0%
All	100.0%

Appendix Table B: Predicted probability that a spell of compliance ends in a month for varying characteristics of NCPs and cases

Case and NCP Characteristics	Compliance threshold		
	100%	50%	Active (Anything)
Base characteristics [a]	.130	.086	.083
Base except:			
NCP age is 25	.138	.094	.092
NCP age is 40	.123	.078	.074
CP age is 25	.148	.097	.092
CP age is 40	.117	.078	.076
Female NCP	.130	.093	.091
3 children	.119	.077	.070
Order $100 higher	.137	.088	.084
Order $100 lower	.125	.085	.083
Arrears $300 higher	.132	.087	.084
Arrears $300 lower	.130	.085	.082
Out-of-state case	.147	.093	.086
CP not a TANF recipient	.147	.085	.078
Year is 2004	.160	.100	.097
Year is 2011	.113	.071	.070

a. The base case characteristics are: NCP is male, age 32; CP is age 33 and a TANF recipient; case has 1 child, is in-state, monthly order is $306 (the mean), arrears are $1,609 (the mean), year is 2007.

Appendix Table C: Predicted probability that a spell of non-compliance ends in a month for varying characteristics of NCPs and cases

Case and NCP Characteristics	Compliance threshold		
	100%	50%	Active (Anything)
Base characteristics [a]	.204	.197	.221
Base except:			
NCP age is 25	.179	.176	.200
NCP age is 40	.235	.224	.247
CP age is 25	.208	.201	.225
CP age is 40	.199	.194	.218
Female NCP	.150	.148	.162
3 children	.196	.189	.207
Order $100 higher	.214	.213	.237
Order $100 lower	.194	.183	.206
Arrears $300 higher	.199	.194	.219
Arrears $300 lower	.208	.201	.224
Out-of-state case	.192	.188	.200
CP not a TANF recipient	.278	.272	.293
Year is 2004	.183	.174	.192
Year is 2011	.178	.164	.185

a. The base case characteristics are: NCP is male, age 32; CP is age 33 and a TANF recipient; case has 1 child, is in-state, monthly order is $306 (the mean), arrears are $1,609 (the mean), year is 2007.