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Final Copy of Case Study

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STATUS:
Laureate

Organization name:
Commonwealth of Pennsylvania Department of Public Welfare - Bureau of Child Support Enforcement

Organization URL:
http://www.dpw.state.pa.us/

Project Name:
Pennsylvania Child Support Enforcement System (PACSES) Payment Score Calculator

What social/humanitarian issue was the project designed to address? What specific metrics did you use to measure the project's success?

The mission of Pennsylvania's Title IV-D Child Support Enforcement (CSE) Program is to enhance the well-being of children by assuring that assistance is available to obtain support for both financial and medical insurance needs through custodial and non-custodial parents. This is handled procedurally by locating parents, establishing paternity, establishing support obligations, and monitoring and enforcing those obligations, all of which are federal metrics. Pennsylvania's CSE Program maintains a high level of quality and consistency in the delivery of child support establishment and enforcement services. This service excellence has led to Pennsylvania being the only state in the nation to meet or exceed the 80% standard on all five of the above federal child support enforcement performance metrics. The Pennsylvania CSE Program has continued to seek innovative ways to maintain and improve this level of service delivery. The Payment Score Calculator enables a worker to calculate a child support payment score for a new or modified child support case based on a predictive algorithm developed through the analysis of 15 years of Pennsylvania child support historical data. The algorithm estimates the likelihood that the payor will pay 80% of the amount owed in the next 3 months. At the time of calculation, the system displays the score to the case worker. Based on the score, the case worker can follow a prescribed series of recommended steps or actions to help prevent a case from becoming delinquent, such as immediately scheduling a follow-up conference, providing a phone call reminder to the payor, or other early intervention strategies. To measure the project's success, the team focused on our primary goal of maximizing support to Pennsylvania's children by

increasing money collected, decreasing overdue child support, and decreasing the required number of collection activities.

Please describe the technologies used and how those technologies were deployed in an innovative way. Also, please include any technical or other challenges that were overcome for the successful implementation of the project.

The Predictive Modeling analysis process and the Payment Score Calculator Application used the following technologies: MS .NET Framework 3.5 R and SAS to create the predictive model; rich client application and presentation logic using Microsoft WPF and Telerik UI controls; a modular architecture based on PRISM LOB application framework; Web services for business logic; real-time interface to a legacy Unisys 2200 mainframe database using JCA adapter; an Oracle 10g database as the primary repository supporting the core data logic; ClickOnce for application deployment; Windows integrated security for users as single sign-on. This combination of technologies enabled a fluid user interface and animation for the Payment Score Calculator at no additional processing cost to servers. This was due to the nature of the web-deployed rich client application. The WCF NetTCP protocol was used to save approximately 70% on the network traffic as compared to SOAP. By using a rich client, data is only transferred from the server to the client once but still allows the user to complete calculations for multiple cases, representing an overall decrease in network traffic. Successful implementation of this project required obstacles to be overcome. This was the first use of predictive analytics for the Pennsylvania Bureau of Child Support Enforcement, so significant outreach and training was required for the user community to embrace and understand the application of this new technology. This was also the first time the NetTCP protocol was used within the Pennsylvania Department of Public Welfare (DPW) network infrastructure, so infrastructure configuration changes were required to make it work. Additionally, some DPW child support business partner users that require access to the Payment Score Calculator are not authorized for the PACSES internal network. This was overcome by deploying the application using ClickOnce on a Citrix server for those users.

Please list the specific humanitarian benefits the project has yielded so far.

The child support enforcement process has traditionally been reactive in the sense that contact with child support payors occurs mostly after they fail to pay. The PACSES Payment Score Calculator project was designed to enable a proactive case management strategy. Specifically, predictive analytics is used to determine which cases are less likely to remain current with their child support payments using information available at the time a support order is created or modified. The use of predictive analytics has assisted the Pennsylvania Bureau of Child Support Enforcement and the County Domestic Relations Section offices and case workers in identifying new and modified cases with potential payment issues so that appropriate actions can be taken to ward off problems before they surface. This proactive case management strategy has helped the Commonwealth achieve: increased quantity and frequency of collections against child support orders; improved relationships with defendants through more effective meetings and new methods of outreach; new opportunities for proactive enforcement of child support orders; improved operational efficiency and process improvement through more strategic case assignment based on payment model scores and provision of the right services at the right time to encourage compliance; improved performance metrics and reduced cost for support order enforcement activities. Payment scores have been calculated for approximately 17,000 cases within the first three months of implementation. Comparison of these scores to the corresponding initial case payment history has validated the accuracy of the algorithm. For example, a member with a payment score indicating they are a "likely payor" are 4 times more likely to be above 50% of current support paid in comparison to a member with a score indicating they are a "very unlikely payor."

Please provide the best example of how the project has benefited a specific individual, enterprise or organization. Feel free to include personal quotes from individuals who have directly benefited from the work.

The Payment Score Calculator project has benefitted the Commonwealth across many child support cases. In one example, proactive early intervention actions on a new case for a member with a payment score of 1 (very unlikely to pay) allowed the Commonwealth to realize $9,606 dollars of support payments on behalf of the child in 3 months. As described by Mr. Dan Richard, the Director of Pennsylvania's Bureau of Child Support Enforcement: "The primary challenge of the child support enforcement program is to ensure that child support is a consistent, reliable source of income for families that depend on child support to meet daily living expenses. The use of predictive analysis contributes to that goal in ways that have been difficult to achieve until now. This new ability to be able to predict the outcomes of a specific case over time enables managers, supervisors, and workers to take affirmative, strategic actions up-front that materially increase the likelihood of the intended outcomes that the family expects and depends on. In turn, it provides an active proving ground" for identifying and disseminating known, proven practices that work by producing child support payments for families on time."