



## Florida Department of Juvenile Justice gains deeper insight

*Analyzing the effectiveness of services and programs with IBM Business Analytics software*

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### Smart is...

***Using sophisticated analytics to assess and predict delinquency patterns and allocate resources to prevent reoffending.***

The Florida Department of Juvenile Justice (FDJJ) strives to increase public safety through effective prevention, intervention and treatment services that strengthen families and turn around the lives of troubled youth. The Department continually strives to find new ways to maximize the impact of its services and programs while operating within tight budgetary restrictions.

FDJJ's Research and Planning team uses IBM SPSS Statistics and SPSS Modeler to analyze delinquency at every level, from state-wide overviews down to the level of individual programs and even children. The SPSS solutions are capable of processing enormous amounts of current and historical data, covering every case of delinquency in the state of Florida from 2000 up to the present day.

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The Florida Department of Juvenile Justice (FDJJ) is the state agency responsible for managing juvenile delinquency and administering the juvenile justice system throughout Florida. It deals with delinquency at every level from local ordinance violations up to serious crimes, and works with providers to operate a wide range of services, programs and facilities aimed at the prevention of delinquency and the treatment and rehabilitation of troubled youth. Last year its 4,200 employees handled approximately 121,000 delinquency referrals, helping 75,000 children start to turn their lives around.

“Like most government organizations, we are operating in an environment where funding is very tightly controlled, so we need to ensure that the programs we run and the services we provide have the greatest possible positive impact on the lives of the kids who are referred to us,” comments Mark Greenwald, Chief of Research and Planning at FDJJ. “We can’t afford to throw money at the problem, so we have to be a lot smarter about the way we run our justice system – and we have been very successful; we have seen a steady year-on-year decline in referrals per thousand population since 1994. One of the keys to our success is IBM SPSS software.”

FDJJ has been using software from the IBM SPSS family for more than 15 years. Currently, its six-person Research and Planning team works with IBM SPSS Statistics Base and IBM SPSS Modeler to perform a wide range of modeling and analysis tasks – including regular monthly reports and forecasts, and more complex one-off projects that investigate specific areas of the juvenile justice system.

“The analyses we create are used at all levels of the justice system, from junior probation officers through law enforcement and the judiciary, up to the State Governor, the House of Representatives and the Senate,” explains Mark Greenwald. “It would take forever to explain all the different reports we create, but they highlight the value that our department and SPSS provide for the State of Florida.”



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## Business Benefits

- Measures the effectiveness of individual programs by analyzing patterns of subsequent reoffending. This helps the FDJJ prioritize program funding and deliver better value.
  - Supports decision-making with hard facts instead of gut feelings: for example, the discovery that delinquency rates actually fall during school vacations enables better resource deployment at other times of year.
  - Analyzes the effects of legislation and guides law-making: for example, one influential FDJJ study contributed to policy and legal changes that have reduced delinquency in schools by 34 percent since 2004.
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## Program performance management

One of the most important aspects of FDJJ's role is to design and oversee programs that aim to rehabilitate children who are referred to the justice system, and to minimize their risk of reoffending. Since each case and each child is unique, it is difficult to establish hard-and-fast rules about which types of programs will provide the greatest benefit, and it is necessary to experiment with innovative approaches to find out what works best. At the same time, with limited funding available, it is critical to assess each program carefully and prioritize programs that deliver the greatest impact.

“We have a central database that contains complete records of every child that has been referred to us since 2000, and every intervention, program or placement that we have provided for them,” explains Mark Greenwald. “It is an enormous data-set: it contains information on more than a million children, each of whom might have several hundred rows of data devoted to them. With IBM SPSS Statistics, we can extract the relevant data automatically and use it to run complex analyses, such as looking at the success rates of individual programs or types of programs. We can measure this by looking at key metrics such as the rate of subsequent adjudication or conviction within 12 months after the end of the program: if this is high, then the program might not be working effectively.”

Armed with this insight into the effectiveness of its programs, FDJJ can make informed decisions about which types of intervention are most effective for which types of children, and can prioritize funding for the programs which perform best.

“We’re looking to build on this in the future by performing more sophisticated cost-benefit analyses,” says Mark Greenwald. “If we can gain greater insight into which programs have the most success for the least cost, we can streamline our operations and make sure we’re using our resources for the greatest benefit of the greatest number of children.”

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## Smarter Government

## Dealing with delinquency through predictive analytics



### Instrumented

Data on every aspect of every case that has been referred to FDJJ since 2000 is collected from source systems into a central database for analysis.



### Interconnected

Sophisticated statistical models apply time-series analysis to the data, providing accurate forecasts of likely delinquency rates across the state.



### Intelligent

The results of the analysis enable FDJJ to allocate interventions and treatment programs where the need is greatest – delivering the maximum impact on delinquency rates while keeping within tight budgetary constraints.

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## Solution Components

### Software

- IBM® SPSS® Statistics
- IBM SPSS Modeler

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*“The robust statistical support we were able to provide in our report helped guide some important changes in the law, and as a result we have seen a 34 percent reduction in school-based delinquency since 2004.”*

— Mark Greenwald, Chief of Research and Planning, Florida Department of Juvenile Justice

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## Accurate forecasting

The Research and Planning team also generates monthly forecasts of delinquency across the state, helping law enforcement and correction facilities plan for likely demand patterns and optimize the deployment of staff and resources.

“We use IBM SPSS Modeler to perform time-series analyses that really give us an accurate idea of what is likely to happen in the coming months,” says Mark Greenwald. “Delinquency really follows an annual cycle, and with 11 years of data in the bank, our models are becoming ever more accurate and sophisticated.”

This type of analysis has revealed some surprising insights about delinquency rates at different times of year.

“It’s a common assumption that delinquency rates will rise during school vacations, but we’ve found that actually the opposite is true,” comments Greenwald. “During the summer, and particularly around Christmas, the rate drops off considerably. This kind of insight enables us to plan more effectively and save resources for times when the rate spikes – like on Halloween, for example!”

## Special reports

The Department also uses IBM SPSS software to create special reports, often as a support for legislators and policy-makers at state and national level. One notable example was a report commissioned in 2004 to investigate an apparent increase in delinquency in schools.

“There was a kind of moral panic in the media about crime in schools, and we took a hard look at the facts to see if it was justified,” explains Mark Greenwald. “What we found was that due to a zero-tolerance policy, large numbers of children were being arrested for very minor offences – disorderly conduct, for example – that would really have been better dealt with outside of the justice system. The robust statistical support we were able to provide in our report helped guide some important changes in the law, and as a result we have seen a 34 percent reduction in school-based delinquency since 2004.”

## Technical advantages

From a technical perspective, Mark Greenwald finds much to praise in the latest versions of the IBM SPSS software.

“Each time a new version is released, we are seeing improvements in terms of usability,” he comments. “For example, it’s now much easier to share syntax among different team members, so if someone comes up with a good way to perform an analysis or automate a process, everyone can use it. Equally, it’s easier to reuse code in different projects, so we don’t need to reinvent the wheel each time.”

“Another advantage is the flexibility of the IBM SPSS software. We share our data with other organizations that use products like SAS and Stata, and in my experience, we can almost always just import their data directly into SPSS without any problems.”

## Future plans

FDJJ sees IBM Business Analytics software as a strategic tool for running a more intelligent, effective and cost-efficient justice system, and is looking to expand its use of SPSS technology.

“Cost-cutting is high on the FDJJ’s agenda, but our office is actually growing,” concludes Mark Greenwald. “We’re taking on three new people to extend our capabilities in terms of fiscal impact and inferential analyses, and this investment shows how highly we value analytics and how important SPSS is in our future strategy.”

## About IBM Business Analytics

IBM Business Analytics software delivers actionable insights decision-makers need to achieve better business performance. IBM offers a comprehensive, unified portfolio of business intelligence, predictive and advanced analytics, financial performance and strategy management, governance, risk and compliance and analytic applications.

With IBM software, companies can spot trends, patterns and anomalies, compare “what if” scenarios, predict potential threats and opportunities, identify and manage key business risks and plan, budget and forecast resources. With these deep analytic capabilities our customers around the world can better understand, anticipate and shape business outcomes.

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