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***Helping Juvenile Treatment Court Improve Efficiency and
Outcomes with IBM's Watson Health Solution***

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Helping Juvenile Treatment Court Improve Efficiency and Outcomes with IBM's Watson Health Solution

Located in Dayton, Ohio, our Juvenile Court is a division of the Montgomery County, Ohio Court of Common Pleas. Montgomery County is one of 88 counties in the State of Ohio, USA. There are approximately 124,000 juveniles in Montgomery County, and a total population of 534,700 which is 74% Caucasian and 21% Persons of Color. In addition to two judges and nine magistrates, the court employs psychologists, educators, therapists, social workers, judicial attorneys, bailiffs, court reporters, judicial technicians, and a large administrative staff of more than 480 employees. The court also oversees a probation services department that supervises more than 750 youth and three schools that manage the educational needs for approximately 950 youth each year. The Montgomery County Juvenile Court handled 11,010 cases in 2019 which included delinquency and unruly cases, abuse/neglect/dependency cases, custody cases, and support cases.

	2019	2018	2017	2016	2015	2014
Delinquency and unruly	6,081	6,774	7,893	8,504	8,864	8,920
Sex offenses	215	299	175	177	194	151
Abuse, neglect, or dependent	735	796	890	872	820	854
Custody or visitation	3,805	3,922	3,853	3,184	3,797	3,663
Permanent custody	174	216	132	153	172	159

neglected, or become dependent because of family issues, including physical or mental trauma, parental drug addiction, or mental health challenges.

Overseeing the treatment and rehabilitation of these children is complicated and it is very easy to become overwhelmed with data. I receive information from prosecutors, defense attorneys, probation officers, educators, behavioral health experts and physical health experts. I also need up-to-date information regarding a child's employment, family history, mental health history, and drug test results. The reality is that I need, and receive, a lot of information.

Gathering all of the requisite information can be difficult, particularly because things change quickly. I will often spend the entire day before each treatment court, preparing for the docket only for the information to change in little more than 24 hours. As an example, in at least 50% of my juvenile treatment court cases, something happens between Tuesday afternoon, when the clerks and probation officers put together files for me, and Thursday morning when juvenile treatment court begins. Sadly, in reality, I only have six to ten minutes per case, and we might waste four of those minutes discussing a recent update. This was a frustrating, yet inevitable, problem simply because of the nature of family dynamics.

A Real-Time Dashboard

I have led our treatment teams for over 15 years and teach extensively throughout the country on treatment court best practices. I chaired the National Council of Juvenile and Family Court Judges (NCJFCJ) Juvenile Drug Court Project Advisory Committee which supports and ensures that NCJFCJ training of juvenile drug courts remains grounded in evidenced-based practice. Our Committee develops training and targeted on-site technical assistance to juvenile drug treatment courts (JDTC) and juvenile justice professionals. Furthermore, my court had been selected to be one of only 12 juvenile treatment courts in the county in a multi-year project for JDTC's to build capacity, assess needs, initiate strategic planning, implement appropriate program improvements, evaluate program performance and help sustain programs. I still felt there must be better ways to evaluate and use data to help justice professionals as we try to protect and save lives of children and families that we serve.

Fortunately, I also served on several national organizations and industry groups which gave me an opportunity to interact with like-minded individuals who are interested in using technology to advance the delivery of human services and improve the lives of children and families everywhere. Microsoft, Google, Amazon, DJI, SAS Advanced Analytics, Apache Mahout, and IBM are leading artificial intelligence companies that are transforming the relationship between humans and technology, challenging our creativity and skills. Watson is one of the most broadly implemented AI platforms in the world, across multiple industries, and in businesses of all sizes. Watson commands 27.99% of the market share for machine learning and is in use in the United States, the United Kingdom, India, Canada, Germany, Australia, France, and the Netherlands

In 2016, at the Stewards of Change National Summit, I learned about a program in which a team was using the IBM Watson Care Manager® platform to help facilitate planning of foster care placement possibilities for children in California, USA. I immediately wanted to learn more about Watson technology to see if we could use the same principles in my specialty court dockets.

After several meetings with the IBM team, we determined that our court could be a great design partner for the Watson Health group. Montgomery County Juvenile Court is a progressive court that understands the public health connections to the justice system as a result of our involvement with Reclaiming Futures which is a national public health-orientated juvenile justice reform organization dedicated to improving behavioral health outcomes for youth and families. In Montgomery County, we do not shy away from being creative or pushing the limits in finding ways to help our families. IBM agreed and we began designing a program that we hoped would work for specialty courts all over the country. We spent approximately 18 months designing, redesigning, and modifying the dashboard, which is the first screen a judge sees on the bench. The dashboard we created highlights what I think are the key information points treatment court judges need to see. Watson Care Manager synthesizes all of the information I need and provides me the information in real time.

One aspect that I and the IBM team worked on is allowing interested parties to directly input information into the system. Before we implemented the IBM Watson Care Manager® platform,

most of the relevant information was being sent by various the treatment team members to the probation officer who were then tasked with tediously inputting the information into Watson Care Manager themselves. This was, honestly, a challenge to the overall morale. Today we have behavioral health providers dropping their data directly into Watson and have the capability of allowing other providers, such as educators, police agencies, and treatment providers to do the same. My vision not only has treatment team members and other interested parties putting information directly into the system, but it also makes it possible for them to have limited access to information that is pertinent as they work with the children and families. Finally, we are allowing the youth and families access to Watson Health so they can review their goals, update their accomplishments, and have real time knowledge of how well they are progressing.

What is AI?

„Artificial Intelligence“ is an umbrella term applied to a number of different technologies. Just like human cognition, AI isn't one thing; AI is a constellation of capabilities and each underlying capability varies in its level of sophistication. Ultimately, we can say that AI carries out tasks with “human like” logic.

When most people think of AI, they think “artificial intelligence”. This admittedly can be a scary term and many judges and other justice professionals quickly adopt a “my court does not need a computer to tell me what to do” defensive position. I prefer to describe AI as “augmented intelligence.” As judges, we receive an abundance of information and data daily from many sources. AI can help us organize, understand, and apply the information and data in a meaningful way which, ultimately, supports a critical new prospective as we try to manage it.

History has proven that humans develop tools that simplify the demands of daily life. Humans have relied on tools to expand their cognitive capabilities for thousands of years. Think back to the grain wheel, the abacus, and calculators. For the past 50 or 60 years, our most powerful tools have been programmable computers. And while traditional computers have aided us in amazing ways, 88% of all data remains invisible to traditional computers.

Most data, including almost all legal data, is what we call “unstructured data”. Unstructured data is human-generated data that’s based largely on language: for example, pleadings, laws, professional journals, deposition transcripts, and emails; all of these formats are considered unstructured data. In other words, legal data is based in narrative text as opposed to data embedded in fields and relational databases that use the SQL query language.

Consider this... human language is full of ambiguity. We express ourselves with concepts. We can communicate the same idea hundreds of different ways. We are rarely literal, and have learned from childhood how to infer meaning based on situational context. Historically, computers could not make sense of unstructured data because they were not capable of understanding language in the ways that we, as human beings, can.

I want to share with you the news that cognitive systems, like “Watson”, can now understand and read unstructured information. Computers can speak “legalese.” A computer that is capable of *learning* from data, rather than following only explicitly programmed instructions, is considered to be capable of machine learning. Through repeated use, Watson literally gets smarter by taking in feedback from its users and learning from both successes and failures.

But why do we need AI in the first place?

Faster, Deeper Understanding

I have been using the Watson Care Manager solution in my court for a few years, and I am extremely pleased with how much more quickly I can learn about each child I see from the bench. I can look at my computer screen and see all of the most recent and important points of information about each child. I am not digging through records, shuffling papers, or listening to updates from Probation Officers. Having concise and organized information at my fingertips gives me more time to personally engage with the children and families I am serving.

I believe the Watson Care Manager can, and does, help the families that I serve; I witness parents and children recover from their addictions more quickly and children address their mental health issues more effectively through its use. Additionally, the Watson Care Manager furthers the democratic process by providing

objective, evidence-based solutions. As humans, we cannot escape our implicit biases that, for better or worse, sometimes guide our decision-making. The Watson Care Manager, however, provides evidenced-based solutions free of these implicit biases, which ultimately provides the children and families with better, more impartial outcomes. Although the ultimate decision always resides with me, having these unbiased and evidence-based solutions available is always beneficial when I make my decisions on the bench.

Although having AI by my side is always a powerful tool, I do not anticipate serving additional children on a day-to-day basis as a result of the more efficient flow of information that this AI provides. In the long run, I may treat more children, and that is wonderful. But the primary focus must be on making sure I am doing the absolute best job I can for the children and families before me; not increasing the caseload of my specialty courts.

I also believe that the Watson Care Manager software is already improving my understanding of the children in my court. One example: for an individual child, I want to know the youth's most recent drug usage when they are before the court. To achieve this, Watson Care Manager, in real time, shows me the results of the child's last five drug tests on my dashboard. If I want to dig deeper into that particular issue, I can select and see all of the child's drug tests since Day 1 which enables me to quickly understand if there is a pattern to the youth's drug usage. That information helps me understand the bigger picture, so I'm better able to help the child.

One of the most important aspects of the Watson Care Manager is how its evidence-based solutions help make prevention more effective. As I stated previously, the Watson Care Manager is an ever-evolving tool that is constantly learning and improving based on past outcomes. This cognitive computation helps the system prevent negative outcomes because it is always learning from its mistakes. This benefits our children and families because prevention is one of the key goals in the juvenile justice system.

One of the many ways that the Watson Care Manager helps me on a daily basis is by taking past information and not only learning from it, but organizing it in an easily accessible way. I interact with so many families over extended periods of time that I, as a human, sometimes struggle to recall what happened in a particular case five months ago and whether or not the previous recommenda-

tions successfully helped that child and family. The Watson Care Manager system ensures that this information is readily available to me, at any time. This availability helps eliminate human error, which ultimately provides better outcomes for the children and families that we serve. Plus, as the system matures through its machine learning capabilities, I can refer back to past actions and results, using that information to make new, better informed decisions.

Further, the Watson Care Manager also helps the children and families remain actively engaged in their treatment. Through Watson, children and their parents can receive text messages about their cases. This direct stream of communication helps alleviate “no shows” to court proceedings and simply provides the families with information to help them better understand how they are meeting the challenges of the program.

Eventually, I expect AI solutions to automate some low-impact analyses and simplify correlations. The regular use of AI technology will enable courts to analyze scenarios based on location, personal demographics, and availability of treatment to provide evidence-based probabilities that correspond to the most appropriate matches and solutions for each individual child and family.

Though the ultimate decision resides with me, I anticipate that having recommendations backed by analytical data and evidence-based practices will help change the way that I manage my specialty courts. I believe that using these tools is critical to the future success and growth of the judicial system. The judicial system must become more progressive on how it adapts to technology in the courtroom. Watson is a prime example of how technology can help court systems do a better job for the community and citizens that they serve.

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