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PITTSBURGH: (724) 260-0198 (TEL:7242600198)

LOS ANGELES: (323) 999-5201 (TEL:3239995201)

NEW ENGLAND: (603) 756-4111 (TEL:6037564111)

INFO@DICKJONES.COM (MAILTO:INFO@DICKJONES.COM)

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USING PREDICTIVE ANALYTICS TO PREVENT CHILD ABUSE



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In 2014, Texas' Tarrant County reported over 6,000 cases of child abuse or neglect³ more than in any other county in the Lone Star state. And those are just the known cases.

"Data suggests that the underreporting rates of crimes against children is exceedingly high," says Dyann Daley, executive director of Cook Children's Center for Prevention of Child Maltreatment in Fort Worth. "For example, the majority of child maltreatment fatalities occur in families not known to the child welfare system."

Because of the difficulty in identifying vulnerable children before they are harmed, effective measure to prevent child maltreatment has been elusive. New research by Daley and colleagues at Texas Christian University suggests 'big data' technology could help predict neighborhoods where children are most at risk.

"Predictive analytics has been used successfully to predict shootings and other violent crime," says Michael Bachmann, associate professor of criminal justice at TCU. "We applied it for the first time to child mistreatment."

The researchers collected data from more than a dozen known risk factors for child maltreatment ⁴from poverty and violence to alcohol sales³and used "Risk Terrain Modeling" to predict likely locations of child abuse in Fort Worth.

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"When we compared our 2013 model with the actual cases of child maltreatment in 2014, we found we correctly identified 98 percent of all substantiated future cases," says Bachmann. "Only two percent of future instances were outside our predicted areas."

The researchers say the highly accurate model will make it easier to align prevention and treatment resources with the neighborhoods $\frac{3}{4}$ down to the city block $\frac{3}{4}$ had need it most. They are expanding the research to investigate other cities in Texas, including Austin, Houston, Dallas and El Paso.

"This offers a new approach to finding the most vulnerable children and preventing their maltreatment," Daley says. "Once high-risk areas are identified, limited resources can be used where they are most needed. The ability to help children before they're abused can't be overstated."

The study, "Risk Terrain Modeling Predicts Child Maltreatment," will appear in the December issue of the journal Child Abuse & Neglect.

Contact: Daley at dyann.daley@cookchildrens.org (mailto:dyann.daley@cookchildrens.org) and Bachmann at m.bachmann@tcu.edu (mailto:m.bachmann@tcu.edu)



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