

Measuring the Unmeasurable: A Project of High Risk Families Prediction and Management

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Abstract : The prevention of child abuse has aroused serious concerns in Taiwan because of the disparity between the increasing amount of reported child abuse cases that doubled over the past decade and the scarcity of social workers. New Taipei city, with the most population in Taiwan and over 70% of its 4 million citizens are migrant families in which the needs of children can be easily neglected due to insufficient support from relatives and communities, sees urgency for a social support system, by preemptively identifying and outreaching high-risk families of child abuse, so as to offer timely assistance and preventive measure to safeguard the welfare of the children. Big data analysis is the inspiration. As it was clear that high-risk families of child abuse have certain characteristics in common, New Taipei city decides to consolidate detailed background information data from departments of social affairs, education, labor, and health (for example considering status of parents' employment, health, and if they are imprisoned, fugitives or under substance abuse), to cross-reference for accurate and prompt identification of the high-risk families in need. 'The Service Center for High-Risk Families' (SCHF) was established to integrate data cross-departmentally. By utilizing the machine learning 'random forest method' to build a risk prediction model which can early detect families that may very likely to have child abuse occurrence, the SCHF marks high-risk families red, yellow, or green to indicate the urgency for intervention, so as to those families concerned can be provided timely services. The accuracy and recall rates of the above model were 80% and 65%. This prediction model can not only improve the child abuse prevention process by helping social workers differentiate the risk level of newly reported cases, which may further reduce their major workload significantly but also can be referenced for future policy-making.

Keywords : child abuse, high-risk families, big data analysis, risk prediction model

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