

Decision-Making in the Age of the Algorithm

**HOW FRONTLINE PRACTITIONERS INTERACT
WITH PREDICTIVE ANALYTICS**

Background

Conditions of uncertainty
(satisficing) +

Budget cuts +

Increasing demand +

= New tools to support
practitioner decision-making

What is
predictive
analytics?

“Predictive analytics refers to the application of machine learning algorithms to mine data, create models, and analyse existing data to discover patterns and make predictions”

Cuccaro-Alamin, S. et al. (2017) Risk assessment and decision making in child protective services: Predictive risk modeling in context. *Children and Youth Services Review*. 7 (9), 291-298.



Example 1: Predictive Analytics in Healthcare

Patient Admission Prediction Tool (Australia)



Example 2: Predictive Risk Modelling in Children's Services

Allegheny Family Screening Tool

Research
Question

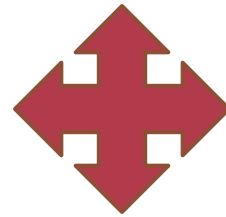
“How are practitioners in the field of children’s services using algorithmic tools to support their decision-making?”

Tools should be “employed
in combination with
careful clinical practice”

(CUCCARO-ALAMIN ET AL., 2017, P296)

Algorithm
aversion

Automation
bias



Biased
artificing

Expert
artificing

Findings



1. More than 1/3 practitioners were ignoring the tool



2. Deference to the tool (automation bias) very uncommon



3. Bias persists

Revised
Research
Question

**“What needs to happen to
support more frontline
practitioners to artifice?”**

(Noting small study!)

Three key
principles

1. Context

2. Understanding

3. Agency

1. Context

Introducing the tool with awareness and sensitivity to the broader context in which practitioners are operating increases the chances that the tool will be embraced by practitioners

2. Understanding

Building understanding of the tool means practitioners are more likely to incorporate its advice into their decision-making

3. Agency

Introducing the tool in a way that respects and preserves practitioners' agency encourages artficing

How to use the
guide



“In the age of the
algorithm,
humans have
never been more
important”

HANNAH FRY,
HELLO WORLD