

# Predictive Modeling for Improved Child Protection



# The Challenge

- **Child Protection Organizations need to be able to:**
  - Assess which children are in need of immediate emergency services
  - Determine which children need to be removed from the home
  - Identify which children need ongoing services
  - Decide what kinds of services are needed
  - Determine if services should be voluntary or court-ordered



# To complicate matters

- Most social services organizations are currently relying on inexperienced and/or overworked staff, using outdated technology, to accomplish this important work
  - The way in which a report is assessed by Intake staff impacts on the safety and well being of the child and can change the lives of every member of the family.
  - The decisions of Intake staff to accept or reject reports of alleged abuse and neglect impacts the caseload of investigative staff.
  - Inappropriately high caseloads draws scarce resources away from the children and families who need them the most.
  - Making the wrong response decision at Intake can cost your organization valuable resources.



## Many, including IBM, have suggested advanced analytics as a potential tool to deal with the challenge

- In a past APHSA conference some IBM colleagues discussed a pilot project called the Child Protective Safety Screening tool
  - This tool used fuzzy logic and neural network technology to correctly classify tools correctly nearly 90% of the time
- While change is difficult, many Social Services agencies are seeing the value of analytics and are embracing these tools
  - As a potential strategy to overcome the resistance to change we discuss an actual implemented example of Text Analytics in a Social Service Setting



## The Quick Disability Determination Challenge at SSA

- The challenge was similar in many respects to the challenge of correctly classifying child protection cases
  - Adjudication is accomplished manually by highly dedicated and talented staff and SSA was not willing to “take the man out of the adjudication process”
  - The agency had “massive” amounts of data, but it was not always in a form that was not in a form that could speed the process along
  - So the analytics focused on providing better information to automatically route workload to the most appropriate adjudicators (i.e., triage)
  - While there was some structured data, most of the application data was unstructured text (analogous to notes in the case reports)



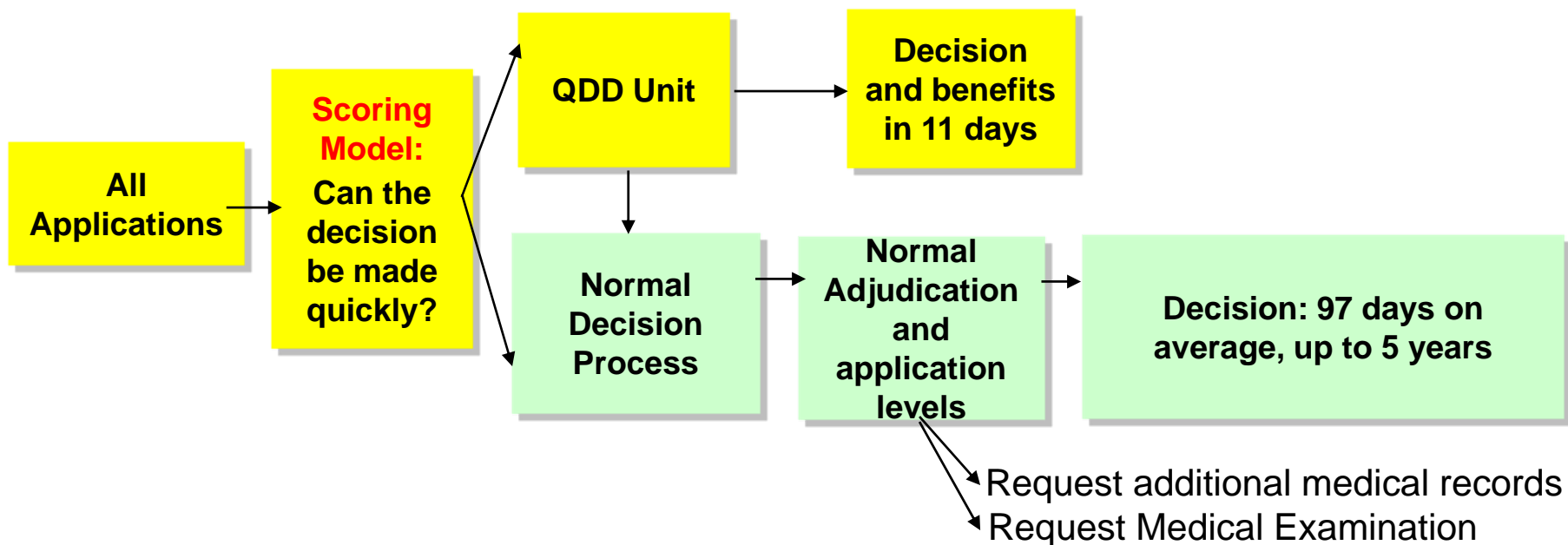
# What we did at SSA

- Developed a text mining tool that
  - Determines the likelihood that an application for disability would be a quick decision (i.e., not requiring additional evidence or time)
  - Supported SSA in the implementation of NEW processes leveraging the new and accurate classification tool (REQUIRED STRONG MANAGEMENT LEADERSHIP AT SSA)
  - IBM implemented this complex algorithm in SSA's real time operational environment, without disturbing the existing data systems, and without impacting ongoing operations





# How Quick Disability Determination (QDD) Works



# Adoption of QDD at SSA

- The process was deliberative and required collaboration across many players at SSA
- What was the issue
  - There was much concern about a model “taking over what others were doing”
  - To put people’s concerns to rest we went through a very step by step process
- The steps were:
  - Started at New England Region
  - Involved many staff there
  - Initially had 100% review of all “scores” – though quickly this was abandoned
  - Word spread quickly
  - Soon the problem was getting the tool to the other regions quickly enough



# Results for SSA

- Substantially improved adjudication times for the most critically ill applicants
- Eliminated the “bad press” relating to deaths prior to being adjudicated
- Commissioner of SSA has provided testimony to Congress on the QDD process on a number of occasions
- There has been a change in the level of trust that analytics, and text analytics in particular, can be a GAME CHANGER in their business



## There are many different ways to use data analytics in the child welfare space

### **The use of data analytics in child protection is not limited to intake**

- Administrators – identify the most difficult / serious cases in a current caseload.
  - When was the last time that child was seen by a caseworker?
  - Do I have the right staff person assigned to the case?
  - Is the family receiving the correct types of service?
  
- Differential Response – which families require traditional child protective services and which families could benefit from preventive services?
  
- Recidivism – which children on my current caseload are most like to have repeat instances of abuse and neglect? Preventive services could help avoid those repeat cases.
  
- Foster Care – is it advisable to return a child to their home from a foster care placement?



# OPTIONAL MATERIAL





# QDD Architecture

