

AUTOMATED DECISION SYSTEMS

Examples of Government Use Cases

Prepared in advance of NYC Automation Decision Systems Task Force Public Forums

Automated Decision Systems generally refer to technical systems that aim to aid or replace human decision making. Automated Decision Systems are increasingly becoming a common feature in local, state, and federal agencies, yet their use remains opaque to the public. Local Law 49 of 2018 created the Automated Decision Systems Task Force to develop recommendations regarding government use of automated decision systems in New York City, and the following charts (though not exhaustive) are intended to help New Yorkers understand the scope of issues and use cases, as well as engage in the ongoing Task Force process.



KNOWN NEW YORK CITY USE CASES

Issue	Description of Decision System	Links for Examples
Child Welfare	<p>Child Risk and Safety Assessments are used by child welfare agencies to evaluate potential child neglect and abuse cases for risk of child death/injury. Data often comes from multiple sources, including a jurisdiction’s department of human services and the police. They are often not designed to give ultimate decisions on child placement, but to advise on whether a reported case of potential child abuse/neglect should be further investigated or reviewed.</p>	<p>Chicago failed example</p> <p>Alleghany County example</p> <p>NYC example</p>
Criminal Justice	<p>DNA Analysis, also known as probabilistic genotyping, these systems interpret forensic DNA samples by performing statistical analysis on a mixture of DNA from different people to determine the probability that a sample is from a potential suspect.</p>	<p>TrueAllele</p> <p>NYC example</p>
	<p>Inmate Housing Classification is a system that analyzes a variety of criminal justice data and outcomes to determine the conditions of confinement, eligibility for programming, and overall housing arrangements of inmates in a jail or prison.</p>	<p>NYC example</p> <p>California study</p> <p>Study of Pennsylvania system</p>

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Criminal Justice (Continued)	Risk assessment tools are algorithmic systems that use existing criminal justice data to produce a “risk score” to inform decisions made pre-trial, during incarceration, sentencing, and parole/probation.	Example of a tool used to assess risk to reoffend Pre-trial Risk Assessment Primer
Education	School Assignment Algorithm is used to assign students to schools for k-12. NYC uses this type of system to match eighth-graders to high schools based on preference, test scores, portfolios, and other requirements. Some schools districts with racial and socioeconomic segregation issues use a “controlled choice” model, which is designed to meet a school districts diversity goals.	Controlled choice school assignment algorithm Boston failed example NYC example DC example NYC failed example
	Teacher Evaluation Algorithm is used to measure a teacher’s impact on student achievement based on standardized test scores rather than factors that affect achievement, such as individual ability, family environment, past schooling, and school resources.	Houston Teachers lawsuit RAND report on the system NYC example
Fire	Fire Department Funding Algorithms analyze existing data on fire occurrences, response times, and other variables to inform decisions on funding allocation and closures of neighborhood fire departments within a given jurisdiction.	NYC example Book on NYC example
	Fire Risk Assessments use data mining to predict which buildings are at highest risk of catching fire. NYC uses a system developed by Oracle.	NYC example
Healthcare	Healthcare Delivery and Workflow Decision Systems are software and IT infrastructure intended to provide predictive analytics for care providers and hospital systems to ascertain how best to distribute healthcare resources.	University of Chicago Medicine system to curb costs in the operating room

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Housing	<p>Building Inspection Predictive Analytics use public data to identify buildings at the greatest risk for physical deteriorating conditions that endanger the health and safety of residents. Buildings identified are prioritized for inspections.</p>	<u>NYC example</u>
	<p>Source of Income Discrimination Analytics analyzes public data to identify landlords most likely to discriminate against housing applicants based on income or the use of housing vouchers.</p>	<u>NYC example</u>
	<p>Tenant Harassment Predictive Analytics analyzes public data to identify landlords with a high likelihood to harass tenants to help prioritize inspections for tenant harassment.</p>	<u>NYC example</u>
	<p>Homelessness Prioritization Algorithms are automated systems (known as coordinated entry systems) that use information from different government agencies and sometimes third-parties to assess prioritize allocation of existing housing based on need. There are alternate systems that identify which individuals use the most amount of public services (such as health services, enter ER rooms, or use of jails) by analyzing data from public agencies to recommend which homeless individuals should be given housing in order to save public expenditures on homelessness.</p>	<p><u>Los Angeles example</u></p> <p><u>Richmond example</u></p> <p><u>Santa Clara example</u></p>
	<p>Residential Face Authentication is a biometric scanning technology that is used in some residential buildings for entry of residents and guests. Its use may be limited to private residences, and where used it is replacing key fobs.</p>	<p><u>StoneLock System</u></p> <p><u>NYC example</u></p>
Immigration	<p>Investigative Decision System is a software suite that allows for government officials to access an individual's personal and private information such as biometrics, criminal records, work/home addresses and personal connections, to identify new targets for deportation and aid in removal proceedings.</p>	<u>ICE example</u>
	<p>Immigration Detention Risk Assessment is a computerized system that evaluates an individual's criminal history, work status, likelihood of fleeing and other information to produce recommendation about whether the person should be detained or released prior to a removal hearing.</p>	<p><u>ICE example</u></p> <p><u>Study on the detention risk assessment</u></p>

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Policing	A Gang Database was developed by the NYPD and includes more than 42,334 people that may have gang affiliation and it may be used to perform social network analysis.	<u>NYC example</u>
	Predictive Policing is algorithmic software that attempts to identify where a crime may occur in a given window of time in small geographic areas or identify individuals who may be a perpetrator or victim of a crime.	<u>NYC lawsuit</u> <u>Law review on data used in predictive policing</u>
	Automated License Plate Readers are high speed, computer-controlled camera systems that automatically capture all license plate numbers that come into view, along with the location, date, and time, and sometimes photographs of the vehicle and its drivers and passengers. Algorithms can be combined with this data to predict where a driver may be in the future.	<u>NYC example</u>
	Facial Recognition is a computer vision system used to detect faces of individuals and for surveillance purposes, which includes building a database of face images to that these decision systems can identify people they are targeting.	<u>Florida example</u> <u>NYC example</u>
	Social Media Monitoring is a tool used by law enforcement in many contexts. It analyzes social media messages to identify individuals as part of a gang/crew, find evidence to support an arrest, identify potential crimes, workplace surveillance to identify a potential employee who may commit violence or another adverse outcome, and campuses (with geo-location capacity) to identify students who may commit violent acts. It allows law enforcement to target certain terms, phrases, or behavior.	<u>NYC and other cities example</u> <u>Chicago school example</u>
Public Benefits	Public Benefits Fraud Detection Systems are pattern recognition systems used to detect fraud or abuse of public benefits.	<u>Michigan failed example</u> <u>NYC example</u>
Public Health	Disease Surveillance and Treatment Systems are used to identify individuals with or at risk of contracting chronic or infectious diseases for treatment. The systems use health surveillance data to monitor treatment and cure rates within a municipality to assess progress towards treatment goals.	<u>Study of a system used for Hepatitis in NYC</u>



OTHER UNITED STATES USE CASES

(Unknown if these examples are currently, previously or prospectively used in New York City)

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Child Welfare	Genogram and Ecomap Software is an assessment tool that allows child welfare caseworkers to map family trees, identify gaps in family history, organize information amassed from family, and assess interventions.	
Criminal Justice + Public Benefits	Fugitive Felony Compliance Systems use an automated program to discontinue an individual's public assistance benefits if they showed up on both the list of individuals receiving assistance from the federal Supplemental Nutrition Assistance Program (SNAP) and the list of outstanding felony warrants maintained by the law enforcement agency network.	<u>Michigan example</u>
Criminal Justice	Job Training Management Algorithms are systems used by the Department of Corrections to determine the amount of compensation that a job training provider should receive as well as who is eligible for enrollment in these programs.	<u>Federal law that will expand the use of this type of algorithm</u>
Education	School Violence Risk Assessment is a tool designed to identify students who are at a high risk for school related violence (e.g. homicide, suicide).	<u>Study using the BRACHA (Brief Rating of Aggression by Children and Adolescents) scale to predict likelihood of violence</u>
	Student Risk Prevention Algorithm is used to predict students at risk of being arrested or in crisis by creating a model that uses a families' "zip codes, incomes, truancy numbers, race, and other indicators." The data used in these systems is often shared with law enforcement and other government agencies.	<u>Example of a program used in several jurisdictions</u> <u>Twin Cities example</u>
	School Bus Times Algorithms are used to help determine the most efficient school bus routes based on a school district's objectives.	<u>Boston bus example</u> <u>Response to Boston bus example</u>

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Healthcare	<p>Healthcare Deliverability and Workflow Decision Systems are software and IT infrastructure intended to provide predictive analytics for care providers and hospital systems to ascertain how best to distribute healthcare resources.</p>	<p><u>University of Chicago Medicine system to curb costs in the operating room</u></p>
Housing	<p>Homelessness Prioritization Algorithms are automated systems (also known as coordinated entry systems) that use information from different government agencies and sometimes third-parties to assess and prioritize allocation of existing housing based on need. There are alternate systems that identify which individuals use the most amount of public services (such as health services, enter ER rooms, or use of jails) by analyzing data from public agencies to recommend which homeless individuals should be given housing in order to save public expenditures on homelessness.</p>	<p><u>Los Angeles example</u></p> <p><u>Richmond example</u></p> <p><u>Santa Clara example</u></p>
Policing	<p>Police Mental Health Screening Tools are aimed to help police officers de-escalate interactions with people with mental illness. The tool can be used to identify a person with a serious mental health issue for triage or it can assist police officers in assessing whether to divert someone to suffering from mental health issues to treatment and care rather than jail. They typically include guided questions accessible via an officer's phone or tablet, but experts are concerned about untrained officers using a clinical tool as well as the limits of training for such sensitive issues.</p>	<p><u>Indiana example</u></p>
Public Benefits	<p>Medicaid benefits algorithms are used to determine an individual's eligibility for Medicaid, the amount of benefits, compliance, and/or termination. Similar algorithms are also used to allocate other public benefits.</p>	<p><u>Arkansas example</u></p> <p><u>Idaho example</u></p>
Public Health	<p>Prescription Drug Monitoring Programs mine state prescription drug databases for irregularities that indicate doctor shopping, doctors overprescribing, and other practices that lead to abuse and overdoses. There have also been incidents of health departments alerting law enforcement to possible unscrupulous doctors for investigation.</p>	<p><u>Examples from several states</u></p>