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##### **THE COUNCIL**

##### **COMMITTEE REPORT OF THE INFRASTRUCTURE DIVISION**

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**COMMITTEE ON TECHNOLOGY**

*Hon. Robert Holden, Chairperson*

**December 14, 2021**

**Proposed Int. No. 1806-A:** by Council Members Koo, Lander, Ayala and Kallos

**Title:** A Local Law to amend the administrative code of the city of New York, in relation to automated employment decision tools

**Administrative Code:** Adds a new section 3-119.5 to subchapter 1 of chapter 1 of title 3

**Proposed Int. No. 2158-A:** Council Members Levin, Holden, Kallos, Cornegy, Gjonaj, Rosenthal, Menchaca, Ampry-Samuel and Ulrich (by request of the Manhattan Borough President)

**Title:** A Local Law to amend the New York city charter, in relation to designating a geospatial information officer

**Charter:** Amends subdivision g and h of section 1072

1. **Introduction**

On December 14, 2021 the Committee on Technology, chaired by Council Member Robert Holden, will hold a hearing to consider Proposed Int. No. 1806-A, to amend the administrative code of the city of New York, in relation to automated employment decision tools, and Proposed Int. No. 2158-A, by Council Members Levin at the request of the Manhattan Borough President, to amend the New York city charter, in relation to designating a geospatial information officer. More information on Proposed Int. No. 1806-A and materials from the previous hearing, held on January 22, 2020 on the original version of the legislation, may be accessed online at <https://go.usa.gov/xeANP>. More information on Proposed Int. No. 2158-A and materials from the previous hearing, held on September 24, 2021 on the original version of the legislation, may be accessed online at <https://go.usa.gov/xeARP>.

**II. Automated Decision System** (**ADS) Background**

The Oxford English Dictionary defines an algorithm as “a procedure or set of rules used in calculation and problem-solving.”[[1]](#footnote-1) The term originally meant nothing more than basic arithmetic. Now, with the advent of more advanced computers and the ability to collect, compute, and compare ever-increasing amounts of data, algorithms have become more complex and powerful. Significantly, algorithms represent the promise and peril of social engineering on a scale larger, yet more precise, than ever before.[[2]](#footnote-2)

Some examples of entities that use algorithms include: the United States (U.S.) Social Security Administration which uses algorithms to aid its agents in evaluating benefits claims; the Internal Revenue Service which uses them to help select taxpayers for audit; the U.S. Food and Drug Administration which uses algorithms to study patterns of foodborne illness; the U.S. Securities and Exchange Commission which uses algorithms to detect trading misconduct; local police departments which employ algorithms to help predict the emergence of crime surges; courts which use various algorithms to help determine the sentence of defendants; and parole boards which use algorithms to predict who is least likely to reoffend.[[3]](#footnote-3) Currently, New York City uses algorithms to assist officials in predicting where crimes may occur, placing students in public schools and scheduling building inspections, among other things.[[4]](#footnote-4) For example, the New York City Administration of Children’s Services (“ACS”) has been using a “software that help[s] strengthen investigations of possible child abuse and neglect, [by] automatically identify[ing] and flag[ing] high-risk cases that need additional review by managerial staff.”[[5]](#footnote-5) The New York City Department of Education (“DOE”) has been using a School Assignment Algorithmto assign students to schools.[[6]](#footnote-6) The New York City Fire Department (“FDNY”) has been using the Risk-Based Inspection System, an Oracle-based program with data-mining capabilities, to better anticipate where fires may spark. This algorithm organizes data from five city agencies into approximately 60 risk factors, which are then used to create lists of buildings that are most vulnerable to fire.[[7]](#footnote-7) The New York City Department of Housing Preservation and Development (“HPD”)has an initiative to use certain predictive analyticsto identify buildings at the greatest risk for physically deteriorating conditions that endanger the health and safety of residents.[[8]](#footnote-8)

1. **Benefits of Algorithms**

Algorithms hold tremendous value. Their ability to process data promises significant benefits to the economy, such as allowing consumers to find and sort products more quickly, which in turn lowers search costs. Artificial Intelligence (“AI”), among other things, can use algorithms to aid the detection of financial mismanagement, identity theft and credit card fraud.[[9]](#footnote-9)

Algorithmically informed decision-making promises increased efficacy and fairness in the delivery of government services. As demonstrated in the medical profession, actuarial prediction is sometimes measurably better than clinical prediction: formalized analysis of datasets can result in better assessments of risk than less formal professional determinations developed over years of experience in practice.[[10]](#footnote-10) An algorithm’s data analysis can reveal patterns not previously noticed, recognized or precisely quantified. For example, systematic tracking of restaurant reviews, such as those contained on services like Yelp,[[11]](#footnote-11) can inform city health inspectors about food-borne illnesses emerging from the restaurants in their jurisdictions.[[12]](#footnote-12) In addition, integrating data across siloed administrative domains, such as education and general welfare, and then using that data to prioritize families in need of government help, can improve social service delivery.[[13]](#footnote-13)

1. **Risks Associated with Algorithms**

Although some of the benefits that can be offered by algorithmic decision-making include speed, efficiency and fairness, there is a common misunderstanding that algorithms automatically result in unbiased decisions.[[14]](#footnote-14) While the effects of algorithms' predictions can be concerning in themselves, they become even more problematic when government agencies use them to distribute resources or impose retributions. For example, an individual can be denied parole or credit, fired, or not hired for reasons they will never know and which cannot be articulated.[[15]](#footnote-15)

Most developers neither disclose their predictive models or algorithms[[16]](#footnote-16) nor publish the source code for their software, making it impossible for the consumer to inspect the system. Many criticize this “black box,” as the result of those systems may be discriminatory, erroneous, or otherwise problematic.[[17]](#footnote-17)

Generally, a limited disclosure of an algorithm tells you very little, because its effects cannot be interpreted by a simple reading of the code. A source code disclosure is just a partial solution to the problem of algorithmic accountability.It is hard to know, as a general matter, whether the coding of an algorithmic tool is potentially harmful or unlawful, particularly given the grey areas of legal interpretation around this subject.[[18]](#footnote-18) The Arnold Foundation, developer of the Public Safety Assessment (“PSA”),[[19]](#footnote-19) has disclosed its relatively simple algorithms to the public. The PSA can be implemented without a computer by tallying up points for various factors, and then applying a conversion formula to obtain the final risk assessment. However, the Arnold Foundation provided next to nothing about its development process,[[20]](#footnote-20) and did not reveal how it generated the algorithms. It also did not communicate whether it performed pre-or post-implementation validation tests and, if so, what the outcomes were. Nor has it disclosed, in quantitative or percentage terms, what “low risk” and “high risk” mean.[[21]](#footnote-21)

Bias can generally result from at least one of two factors during the development of an algorithm. The first is largely internal to the process of data collection—when errors in data collection, like inaccurate methodologies, lead to inaccurate depictions of reality.[[22]](#footnote-22) The second type, however, comes from an external source. It happens when the underlying subject matter draws on information that reflects or internalizes some forms of structural discrimination and thus influences the resulting data.[[23]](#footnote-23) To reduce the influence of bias in ADSs used by New York City (NYC) agencies, the ADS Task Force was created.

**III. Geographical Information Systems**

Geographical Information Systems (“GIS”) are becoming useful tools for both the private and public sector, especially in the areas of land use, environment, social services, public services, education, health, and public safety.[[24]](#footnote-24) GIS is a system that assembles, stores, manipulates, and analyzes geographically referenced information. The system incorporates statistical data, or tabular information, and cross-references it with physical boundaries, or spatial information.[[25]](#footnote-25) Thus, the information can be specifically identified with a particular location and vice-versa. GIS could be used in emergency response planning, business development, real property tax valuation, disease studies, and school aid distribution.[[26]](#footnote-26) For example, the system might be able to identify exact areas of natural emergency risk, and enable emergency personnel to calculate the quickest and easiest access routes in the event of a natural disaster.

However, despite the popularity of GIS as clearly evidenced by its growing use, there are some major legal issues beginning to emerge as well as others that might arise, including liability, access, and privacy.[[27]](#footnote-27) New York City does not currently have a designated office to coordinate the use of GIS by all city agencies.

**IV. Legislative Analysis**

**A. Legislative Analysis of Proposed Int. No. 1806-A**

Proposed Int. No. 1806-A would amend the administrative code of the city of New York, in relation to reporting on algorithmic tools used by city agencies. The bill would require NYC agencies to provide information regarding every automated decision system used by the agency during the prior calendar year to the Mayor’s Office of Operations except when such a disclosure would violate local, state, or federal law, or endanger the safety of the public, or interfere with an active agency investigation. Such disclosure would include, among other things, the commercial name and a brief description of such algorithmic tool, the purpose of the tool, and the type of data collected and analyzed by the tool. The Mayor's Office of Operations would be required to compile the information disclosed by city agencies and submit a report to the Mayor and the Speaker of the Council every year.

The bill would take effect immediately.

1. **Legislative Analysis of Proposed Int. No. 2158-A**

The proposed legislation would create a Chief Geospatial Information Officer (“CGIO”).

The proposed legislation would require the Commissioner of the Department of Information Technology & Telecommunications (“DoITT”) to designate an employee to serve as the

Chief Geospatial Information Officer.

The proposed legislation would also require DoITT to maintain and implement a special data interoperability strategy, including the development and maintenance of a plan for the use of geospatial information systems (“GIS”) by New York City agencies.

The bill would take effect immediately.

Proposed Int. No. 1806-A

By Council Members Koo, Lander, Ayala and Kallos

..Title

A Local Law to amend the administrative code of the city of New York, in relation to reporting on algorithmic tools used by city agencies

..Body

Be it enacted by the Council as follows:

Section 1. Subchapter 1 of chapter 1 of title 3 of the administrative code of the city of New York is amended by adding a new section 3-119.5 to read as follows:

§ 3-119.5 Annual reporting on algorithmic tools. a. For purposes of this section, the term “algorithmic tool” means any technology or computerized process that is derived from machine learning, artificial intelligence, predictive analytics, or other similar methods of data analysis, that is used to make or assist in making decisions about and implementing policies that materially impact the rights, liberties, benefits, safety or interests of the public, including their access to available city services and resources for which they may be eligible. Such term includes, but is not limited to tools that analyze datasets to generate risk scores, make predictions about behavior, or develop classifications or categories that determine what resources are allocated to particular groups or individuals, but does not include tools used for basic computerized processes, such as calculators, spellcheck tools, autocorrect functions, spreadsheets, electronic communications, or any tool that relates only to internal management affairs such as ordering office supplies or processing payments, and does not materially affect the rights, liberties, benefits, safety or interests of the public.

b. Each agency shall report to the mayor’s office of operations, or any other office or agency designated by the mayor, no later than December 31 of every year, every algorithmic tool that the agency has used one or more times during the prior calendar year.

c. Each agency shall provide the following information about each algorithmic tool reported pursuant to subdivision b of this section:

1. The name or commercial name, and a brief description of such algorithmic tool;

2. The purpose for which the agency is using such an algorithmic tool;

3. The type of data collected or analyzed by the algorithmic tool and the source of such data;

4. A description of how the information received from such algorithmic tool is used;

5. Whether a vendor or contractor was involved in the development or ongoing use of the algorithmic tool, a description of such involvement, and the name of such vendor or contractor when feasible; and

6. The month and year in which such algorithmic tool began to be used, if known.

d. The mayor’s office of operations, or any other office or agency designated by the mayor, shall compile the information received pursuant to subdivisions b and c of this section and report it to the mayor and the speaker of the council, disaggregated by agency, no later than March 31 of every year.

e. No agency shall disclose any information pursuant to this section where such disclosure would violate local, state, or federal law, or endanger the safety of the public, or interfere with an active agency investigation.

§ 2. This local law takes effect immediately.

SJ/IB

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Proposed Int. No. 2158-A

By Council Members Levin, Holden, Kallos, Cornegy, Gjonaj, Rosenthal, Menchaca, Ampry-Samuel and Ulrich (by request of the Manhattan Borough President)

..Title

A Local Law to amend the New York city charter, in relation to designating a geospatial information officer

..Body

Be it enacted by the Council as follows:

Section 1. Subdivisions g and h of section 1072 of the New York city charter are amended to read as follows:

g. to participate in developing, maintaining and implementing a long-range computer systems strategy, [and] data communications strategy, spatial data interoperability strategy for the city of New York and plan for the use of geospatial information systems by city agencies;

h. to assist in providing interagency coordination on matters related to data communications activities and interfacing of computers, including convening, under the direction of the chief geospatial information officer, annual interagency meetings of agency personnel responsible for supervising the collection, management or use of geospatial data and, when appropriate, other geospatial experts, to enable citywide coordination and collaboration in areas including application development, data sharing and data interoperability;

§ 2. Chapter 48 of the New York city charter is amended by adding a new section 1076 to read as follows:

§ 1076. Chief geospatial information officer. The commissioner shall designate an employee to serve as the chief geospatial information officer.

§ 3. This local law takes effect 90 days after it becomes law.

JSA/NKA

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12/7/21 6:28PM

1. Algorithm, OXFORD ENGLISH DICTIONARY (3d ed. 2012), <http://www.oed.com/view/Entry/4959?redirectedFrom=algorithms>. [↑](#footnote-ref-1)
2. *See* Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. Rev. 54, 62, 63 (2019). [↑](#footnote-ref-2)
3. Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. Rev. 54, 64–65 (2019). [↑](#footnote-ref-3)
4. Benjamin Freed, *New York City’s Algorithm Task Force to Hold First Public Meetings Nearly a Year After Creation*, StateScoop, March 29, 2019, <https://statescoop.com/new-york-citys-algorithm-task-force-to-hold-first-public-meetings-nearly-a-year-after-creation/>. [↑](#footnote-ref-4)
5. ACS DEPLOYS NEW TECHNOLOGY TO HELP FRONTLINE STAFF PROTECT NYC CHILDREN FROM ABUSE AND NEGLECT, New York City Administration of Children’s Services press release, October 30, 2018, <https://www1.nyc.gov/assets/acs/pdf/PressReleases/2018/ACSMobileTechnology.pdf>. [↑](#footnote-ref-5)
6. #  Tracy Tullis, *How Game Theory Helped Improve New York City’s High School Application Process, December 5, 2014,* New York Times*,* <https://www.nytimes.com/2014/12/07/nyregion/how-game-theory-helped-improve-new-york-city-high-school-application-process.html>.

 [↑](#footnote-ref-6)
7. Brian Heaton, New York City Fights Fire with Data, Government Technology, May 15, 2015, <https://www.govtech.com/public-safety/New-York-City-Fights-Fire-with-Data.html>. [↑](#footnote-ref-7)
8. Sohaib Hasan, Using Analytics to Make Bad Buildings Better in New York City, Data look, <http://blog.datalook.io/using-data-analytics-to-make-bad-buildings-better-in-new-york-city/>. [↑](#footnote-ref-8)
9. Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. Rev. 54, 65 (2019). [↑](#footnote-ref-9)
10. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 115–16 (2018). [↑](#footnote-ref-10)
11. https://www.yelp.com/ [↑](#footnote-ref-11)
12. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 115–16 (2018) (citing See Edward L. Glaeser et al., Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life (Harv. Bus. Sch. NOM Unit, Working Paper No. 16-065, 2015), <https://dash.harvard.edu/bitstream/handle/1/24009688/16-065.pdf>). [↑](#footnote-ref-12)
13. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 115–16 (2018). [↑](#footnote-ref-13)
14. Simson Garfinkel, Jeanna Matthews, Stuart S. Shapiro, Jonathan M. Smith, “Toward Algorithmic Transparency and Accountability,” Communications of the ACM, Vol. 60 No. 9, Page 5, <https://cacm.acm.org/magazines/2017/9/220423-toward-algorithmic-transparency-and-accountability/fulltext>. [↑](#footnote-ref-14)
15. *See* Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103 (2018). [↑](#footnote-ref-15)
16. An algorithmic process will typically involve (1) the construction of a model to achieve some goal, based on analysis of collected historical data; (2) the coding of an algorithm that implements this model; (3) collection of data about subjects to provide inputs for the algorithm; (4) application of the prescribed algorithmic operations on the input data; and (5) outputs in the form of predictions or recommendations based on the chain of data analysis. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 107–08 (2018). [↑](#footnote-ref-16)
17. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 107–08 (2018). [↑](#footnote-ref-17)
18. Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. Rev. 54, 137 (2019). [↑](#footnote-ref-18)
19. Public Safety Assessment (PSA) is a pretrial risk assessment tool developed by the Laura and John Arnold Foundation, designed to assist judges in deciding whether to detain or release a defendant before trial.  PSA includes three different risk assessment algorithms, which are intended to assess the risks that a released defendant will, respectively, fail to appear for trial; commit a crime while on release; or commit a violent crime while on release.

The three algorithms operate by assigning points based on nine facts about the defendant's criminal history; some facts are used for only one or two of the algorithms, while others are used for all three. For the failure-to-appear and commission-of-crime assessments, the raw point scores are converted to a six-point scale, in which one signifies lowest risk and six signifies highest risk. For the commission-of-violent-crime assessment, the raw score is converted into a binary yes/no answer; a crime committed is either likely to be violent, or likely not to be violent. [↑](#footnote-ref-19)
20. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 137 (2018). [↑](#footnote-ref-20)
21. Robert Brauneis, Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J. L. & Tech. 103, 138 (2018). [↑](#footnote-ref-21)
22. Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. Rev. 54, 141 (2019) (citing Kate Crawford et al., *The AI Now Report: The Social and Economic Implications of Artificial Intelligence Technologies in the Near-term*, 6-7 (2016), <https://ainowinstitute.org/AI_Now_2016_Report.pdf>. [↑](#footnote-ref-22)
23. *See* Joanna Bryson, *Three Very Different Sources of Bias in AI, and How to Fix Them*, Adventures NI (July 13, 2017), <http://joanna-bryson.blogspot.com/2017/07/three-very-different-sources-of-bias-in.html>. [https://perma.cc/B77S-46DY] (demonstrating that bias is introduced to artificial intelligence when there is poor quality data that is tainted with human biases and/or when the formal models behind AI are not well reasoned);Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. Rev. 54, 141 (2019). [↑](#footnote-ref-23)
24. *See* N.Y. Zoning Law & Prac. § 36A:01. [↑](#footnote-ref-24)
25. *What Is GIS*, 3 N.Y. Zoning Law & Prac. § 36A:02. [↑](#footnote-ref-25)
26. *Id.* [↑](#footnote-ref-26)
27. *Id.* [↑](#footnote-ref-27)