

Redesigning NYC's Pretrial Release Assessment



Using behavioral science to reduce pretrial detention and create a more equitable arraignment process

Through a collaborative effort with the New York City Mayor's Office of Criminal Justice and other partners, ideas42 helped design an improved pretrial release assessment for New York City judges that aims to maintain high court appearance rates, minimize pretrial detention, and reduce racial disparities in pretrial settings. We applied a behavioral lens to ensure judges will effectively adopt the new assessment to support their arraignment decisions.

Diving into Pretrial Risk Assessment

Within 24 hours of being arrested and held in custody in New York City, defendants are brought before a judge for arraignment. At the arraignment, a judge determines the likelihood that the individual will return for their subsequent court appearances and, accordingly, whether they should be released on their own recognizance (ROR), released with non-monetary conditions, required to post bail in order to be released, or remanded (detained until trial).¹ Many factors contribute to a judge's determination, and the consequences of this early decision can be severe. Cash bail contributes to harmful pretrial incarceration that disproportionately impacts lower-income individuals, as many defendants are unable to pay the required sum.² Restrictive non-monetary conditions (e.g. electronic monitoring) can also be harmful if overused, as they contribute to the "net-widening" problem—the unnecessary expansion of social control over people and communities.

One of the key functions of the New York City Criminal Justice Agency (CJA) is to provide judges and the court with evidence-based information to improve decision-making and increase the likelihood that individuals return for all their court dates. From 2003 to 2019, the previous CJA pretrial release assessment aided judges, prosecutors, and defense attorneys in their arraignment arguments and decisions. The assessment combined information about a defendant's community ties (gathered from pretrial interviews with each defendant) and information about the defendant's criminal history (drawn from court databases) to generate a recommendation for or against ROR. At arraignment, the CJA assessment was included as a physical sheet of paper in the lawyers' and judges' packets of case materials.

Between 2017 and 2019, ideas42 participated in a collaborative effort to redesign the CJA assessment. We partnered with the NYC CJA, NYC Mayor's Office of Criminal Justice (MOCJ), Crime Lab New York, and the research firm Luminosity to create a new release assessment based on three goals:

Highlights

- ▶ Pretrial assessments can be useful in aiding judges on release decisions and reducing racial disparities.
- ▶ Behavioral barriers can impede effective use of the assessment in court.
- ▶ Redesigning the assessment report can increase use of its recommendation and thereby decrease pretrial detention.

¹ NYC statute does not currently allow judges to consider the potential for future crime or violence, and therefore focuses solely on a defendant's likelihood of returning to court. Also, as of January 2020, NYC Bail Reform significantly reduces the types of cases for which judges are allowed to set bail.

² Dobbie, W., Goldin, J., & Yang, C. S. (2018). The effects of pretrial detention on conviction, future crime, and employment: Evidence from randomly assigned judges. *American Economic Review*, 108(2), 201-05.

1. Maintain the current high court appearance rates in NYC for people released pretrial.
2. Reduce the use of pretrial detention when possible.
3. Reduce racial and other disparities in pretrial settings.

Under the 2003 version of the release assessment, the difference in “Recommended for ROR” rates between White and Black individuals was 9.4 percentage points (White individuals received an ROR recommendation at a rate of 41.1%, Latino individuals at a rate of 35.6%, and Black individuals at a rate of 31.7%). Reducing these disparities was a fundamental aim of this work, and since there are many ways to measure algorithmic fairness, it is important to specify the way in which the research collaborative defined “success” for this goal. When evaluating the new release assessment, the team compared the rate of ROR recommendations between racial/ethnic groups—and the way in which those rates changed between the old and new assessments—as well as “false positive rates” (the fraction of people who were categorized as high risk but ended up returning for all court appointments).³

Crime Lab New York and Luminosity analyzed over 1.6 million cases in NYC to find the best predictors of court appearance, and then incorporated the most predictive factors into a new release assessment algorithm. We applied a behavioral lens to ensure that judges would adopt the new assessment in practice and use it effectively to support their arraignment decisions.

Identifying Behavioral Barriers

We identified a two-fold behavioral challenge with the existing CJA assessment:

1. Judges may ignore the assessment.
2. Judges may disregard the assessment’s recommendation, even when they do review it.

In order to understand what drove these behavioral challenges, we interviewed five defense attorneys, nine assistant district attorneys (ADAs), and 21 judges across the five NYC boroughs, and asked them to:

- ▶ Explain their decision-making process at arraignments
- ▶ Identify challenges with the original CJA assessment, and
- ▶ Indicate which features they would like to see in the updated version.

Our conversations revealed many behavioral barriers to judges properly utilizing the assessment.

The assessment does not have a specifically scheduled role in arraignments, nor does it have a live representative advocating for its representation before a judge’s final determination.

Behavioral science research suggests that people tend to overweight interpersonal information, which could cause them to set aside written information.⁴

³ To learn more about ideas42’s approach to ethical machine learning and algorithmic fairness, read our statement [here](#).

⁴ Kleinberg, J., Lakkaraju, H., Leskovec, J., Ludwig, J., & Mullainathan, S. (2017). Human decisions and machine predictions. *National Bureau of Economic Research*. Retrieved from <http://www.nber.org/papers/w23180>

Judges don't think about a defendant's likelihood of reappearance as a statistic; rather, they assess reasons for and against ROR.⁵ Third party observers of arraignments may falsely believe that judges acquire information about a number of factors, weigh those factors, calculate a dispassionate assessment of flight risk described by a percentage, and then make their determination based on that percentage. In reality, judges have dozens of factors to consider, a number of other stakeholders to satisfy, and only a very short time to reach these determinations. When asked what the likelihood of reappearance should be in order for a defendant to be released on their own recognizance, one judge candidly replied, "I have never thought about it that way." Alternatively, we learned that judges often follow a two-stage decision process. Before the arraignment begins, a judge forms an impression of the case based upon the court documents, a visual interpretation of the defendant, and other observations around the courtroom (for example, whether a family member of the defendant is present). Once the arraignment begins, the judge uses any new information presented to them in the courtroom to construct reasons for or against their initial impression.

Because of its position in the arraignment, the prosecutor's recommendation is more likely to be retained in memory by the judge during their determination.⁶ The primacy of the prosecutor's recommendation also likely sets an "anchor" for judicial decision-making, and any arguments judges hear that conflict with that anchor are likely to be evaluated against it, rather than independently.⁷ Judges may feel the need to construct sufficient reasons to depart from the prosecutor's recommendation but not to align with it, inadvertently creating a higher threshold of justification for those determinations that depart from the prosecutor's.⁸ Judges may even unconsciously ask questions that help them confirm that their determination should align with the recommendation.⁹

Designing an Improved Assessment

The insights above, along with an extensive literature review, informed our solutions for the new assessment. We also user-tested early prototypes with judges and iterated to ensure our designs would both address behavioral barriers and be amenable to judges' needs. The courtroom's constraints also guided our suggestions; for example, the new assessment needed to be presented on a black and white piece of paper. The graphic below illustrates several of our design suggestions.

⁵ This phenomenon is known as "reason-based choice" and is explained in: Shafir, E., Simonson, I., & Tversky, A. (1993). Reason-based choice. *Cognition*, 49 (1), 11-36.

⁶ Hogarth, R. M., & Einhorn, H. J. (1992). Order effects in belief updating: The belief-adjustment model. *Cognitive Psychology*, 24(1), 1-55.

⁷ Epley, N., & Gilovich, T. (2006). The Anchoring-and-Adjustment Heuristic: Why the Adjustments Are Insufficient. *Psychological Science*, 17(4), 311-318.

⁸ Shafir, E., Simonson, I., & Tversky, A. (1993). Reason-based choice. *Cognition*, 49(1-2), 11-36.

⁹ Dawson, E., Gilovich, T., & Regan, D. T. (2002). Motivated Reasoning and Performance on the Wason Selection Task. *Personality and Social Psychology Bulletin*, 28(10), 1379-1387.

OLD REPORT

APPENDIX C – 2003 CJA RELEASE ASSESSMENT REPORT

NEW YORK CITY CRIMINAL JUSTICE AGENCY Interview

Arrest #	K19600999		
Interview Report	CJA LOG Page 06	Line # 07	Precinct 068

Name: **DOE, JOHN** Name (on this arrest) from NYSID/Arrest Report: **DOE, JOHN**

Age: **28** Interview Date: **2019-05-17** Report: **DOE, JOHN**

DOB: **1991-03-26** Interview Time: **11:47:00** NYSID: **12345678J**

Sex: **MALE** CJA Interviewer: **K999** Arrest Date: **2019-05-16** Arrest Time: **01:09:00**

Hispanic? **NO** Interview Location: **CB** Arrest Charges: 1. 120.20 2. VTL 1212

Race: **WHITE** Interview Language: **ENGLISH** 3. LOC 000V 4. VTL 000.00

RESIDENCE/FAMILY

Current Address: **1851 GODFREY ROAD,** Prior Address: **DOES NOT KNOW ADDRESS**

City, State, Zip: **BROOKLYN, NY, 10036** City, State, Zip: **BROOKLYN, NY**

Lives With: **Mother;Father;Brother;Sister**

Contact: **MOM DOE** Relationship: **MOTHER**

Relationship: **MOTHER** Phone #: **NA**

Phone #: **929-999-9999** Length at Prior Address: **NA** Months

Length at Current Address: **05** Years Months Weeks Contact still Resides at Prior Address? **NO**

Alternate Address: Expects Someone at Arraignment? **NO**

City, State, Zip: Name:

Contact: Relationship:

Relationship: Phone #:

EMPLOYMENT

Employed? **FULL TIME** Does Defendant Provide Support for Others? **NO**

Job/Position: **SALES MANAGER** If "Yes" How Many?

Employer: **COFFEE RIDGE** Other Sources of Financial Support: **None**

Address: **4201 GERALDINE LANE**

City, State, Zip: **BROOKLYN, NY** Months: **06** Highest Grade: **16**

Length of Employment: **06** Months In School? **NO**

Hours Worked/Week: **40** Name:

Avg. Net Pay: **35000** In Training Program? **NO**

Pay Period: **ANNUAL** Name:

Length of Unemployment: In Treatment Program? **NONE**

Other Employment Status:

CRIMINAL RECORD

First Arrest (Excluding Violations)?	Warrant Attached to NYSID?	Prior Warrant?	# of Prior Felony Convictions	# of Prior Misdemeanor Convictions	Open Cases
NO	NONE	NO	1	2	0

Gray Shading = Information from Official Sources LEGEND: NP = No Phone RA = Refuses to Answer

Miscellaneous Comments DK = Doesn't Know NC = Not Calculated

NA = Not Applicable No Shading = Information from Defendant

This report assesses the defendant's risk of flight by considering the following: community ties and warrant history as defined in sections 2(a)(i) and 2(a)(ii)&(vi) of CPL 510.30 and open cases. However, a positive assessment is withheld for defendants with outstanding bench warrants attached to their NYSID sheet at the arrest. This report does not consider other criteria listed in CPL 510.30 such as the defendant's mental condition, the weight of the evidence, or the possible sentence.

DEFENDANT'S RESPONSE VERIFICATION **CJA RECOMMENDATION**

1	Has the defendant lived at his/her current address for 1.5 years or more?	YES		RECOMMENDED FOR ROR
2	Does the defendant live with parent, spouse, C/L spouse of 6 months, grandparent, or legal guardian?	YES		
3	Does the defendant have a working telephone in residence/cell phone?	YES	1	
4	Does the defendant report a NYC area address?	YES	0	
5	Is the defendant employed, or in school or training program, full time?	YES	1	
6	Does the defendant expect someone at arraignment?	NO	-1	
7	Does Prior Warrant equal Zero?	YES	5	
8	Does Open Case equal Zero?	YES	1	
		TOTAL POINTS	7	

Verification Reference Source: NO CONTACTS PROVIDED

CJA is not the official source of data provided in gray-shaded area

Arraignments are very brief. Faced with a **scarcity of time**, judges don't have a chance to read the whole assessment closely. Many requested simpler formatting and clearer emphasis of key details.

Judges expressed a desire for more **transparency** about what factors contribute to the assessment, how the algorithm generates points/scores, and what the data suggest about each defendant.

The recommendation is not salient. The CJA assessment (as a whole) is secondary to the prosecutor's recommendation and other information gathered in the courtroom. And when judges did look at the assessment, they reported focusing on the information it provides, not the recommendation itself – likely in part because it does not stand out visually.

Judges sought to better **understand defendants' scores in context.** Scores can be hard to interpret without details about what that score means for the defendant's likelihood to appear in court and how the defendant's score compares to that of their peers.

► **Separate factors used for calculation and not used for calculation:** Rather than fully removing information that is not useful for predicting court appearance, we suggested clearly demarcating which information has been demonstrated to improve the accuracy of judicial determinations, and which has been demonstrated to have low predictive value. Even though some information has low predictive value for failure to appear, judges preferred to keep it on the assessment for other purposes.

- ▶ **Represent all outcomes when making assessments:** One clear facet of the original arraignment determination process is that judges, when reaching an arraignment determination, are prompted to think about only one outcome: whether a defendant will fail to reappear for their next court date. This framing appears in the formal statute for arraignment determinations, in the language of courtroom stakeholders, and in the language of judges themselves. This particular focus on “risk of failure to appear” may bias judicial risk assessments by positioning judges to disregard the converse probability that the defendant will reappear for their next court date. Research suggests that when events are more vividly described, lawyers estimate them to be higher probability.¹⁰ By illustrating not just the risk of failure to appear, but also the chance of reappearance, we can help judges avoid flawed assessments of flight risk.
- ▶ **Employ frequency formats to explain risk:** Another issue at hand in the assessment of risk is that people are poor intuitive statisticians in general, at least when asked to reason in terms of probabilities expressed as percentages. When asked to estimate the probability that a patient has breast cancer given a positive screening test, only 10% of trained physicians arrived at the correct answer.¹¹ When asked instead to reason in terms of frequencies, however, nearly 50% of physicians reached the correct answer. By explaining outcomes to judges in terms of frequency instead of probabilities, we enhance the likelihood that they will understand the recommendation and reach an accurate determination.
- ▶ **Give a range of risk of nonappearance and let judges decide within the range:** In addition to increasing judicial accuracy, it is also important to increase judges’ trust in the CJA assessment. Research into algorithm aversion suggests that one strategy for increasing trust in algorithmic recommendations is to allow people to modify them slightly.¹² Crucially, “...giving participants the freedom to modify an imperfect algorithm made them feel more satisfied with the forecasting process, more likely to believe that the algorithm was superior, and more likely to choose to use an algorithm to make subsequent forecasts.”
- ▶ **Make the recommendation itself seem as reliable as possible:** For example, emphasize that these recommendations were generated from the analysis of millions of prior arraignments, and have been validated not just by the New York Criminal Justice Agency, but also by multiple outside research teams.

¹⁰ Fox, C. R., & Birke, R. (2002). Forecasting trial outcomes: Lawyers assign higher probability to possibilities that are described in greater detail. *Law and Human Behavior*, 26(2), 159.

¹¹ Gigerenzer, G. (1996). The psychology of good judgment: frequency formats and simple algorithms. *Medical Decision Making*, 16(3), 273-280.

¹² Dietvorst, B. J., Simmons, J. P., & Massey, C. (2016). Overcoming Algorithm Aversion: People Will Use Imperfect Algorithms If They Can (Even Slightly) Modify Them. *Management Science*.

NEW REPORT

CJA Pretrial Release Assessment

Eliminate or de-emphasize less important details so that judges can use their limited time to focus on the key points.

Name on NYSID/Arrest Report Doe, John		First Arrest No	
NYSID 09991100J		Arrest Charges (up to 4)	
Age 30	Precinct 014	1. 155.25	2.
Sex Male	Arrest # 000000	3.	4.

CJA Interview		Interview Date & Time 12-01-19 12:00 AM	
		Language & Service Type	
Address Yes, Verified 3146 Alfred Drive Brooklyn, N.Y. 11206	Employed Full-time Length of Employment 3 yr.	In School No	
Phone Yes, Verified (212) 555-1234	Job/Position Ramp Agent	In Training Program No	
Lives with Mother	Employer JFK	In Treatment Program No	
Caretaker for Others No	Est. Monthly Net Income \$1,234	Served in the U.S. Armed Forces, National Guard, or Reserves	
	Financial Support for Others No		

CJA Notes

Provide details for each of the release assessment factors so judges see how each factor contributes to the score. Judges use reasons and narratives to make decisions—perhaps even more than they use statistics. Providing this information helps judges trust the algorithm and—crucially—it helps them incorporate their own expertise to make an informed decision.

Release Assessment Scoring

Assessment Factors	Cycles Considered/Details	Points
<i>All start with 25 points</i>		25
A Years since last bench warrant <u>N/A</u>	No counted warrants from last 5 years	0
B Two or more bench warrants in last five years <u>No</u>		0
C Misdemeanor or felony convictions in last year <u>0</u>		0
D Misdemeanor convictions in last three years <u>0</u>		0
E Felony convictions in last ten years <u>0</u>		0
F Pending cases <u>1+</u>	Cycle/Date: 2 (10-29-2019)	-3
G Years living at last two addresses <u>3+</u>	Current Address: 3 years Prior Address: 2 years	0
H Reachable by phone <u>Yes</u>		0
* Indicates Potential Discrepancy		
Total Score		22/25
Of those released with this score		87 out of 100 return for all required court appearances

Separate factors used for calculation from those not used for calculation.

Show the entire score spectrum so judges can see how defendants compare to others and interpret the assessment in context.

Reappearance Score and Recommendation Key

Score	0-3	4-6	7-8	9-11	12-15	16-18	19-20	21-22	23-24	25
Reappearance Rate (out of 100)	42	50	56	63	71	76	82	87	89	93
Recommendation	ROR Not Recommended			Misd ROR	Misd/NY ROR	ROR				
				NV/VFO Consider all options	VFO Consider all options					

Employ frequency formats to describe likelihood of return. People have an easier time comprehending “87 out of 100 people” than “an 87% chance”

Since most defendants do return to court, frame the score in terms of likelihood that the defendant will return—not the risk of failing to return.

CJA Recommendation

ROR

Leave more real estate for the final recommendation. Place recommendation at the bottom because many judges flip through the packet from the bottom right corner.

Results

The updated CJA release assessment has been used in NYC arraignments since January 2020. The [research report](#) released by Crime Lab New York and Luminosity covers the algorithm development process in detail and highlights how the new assessment was created to reduce unnecessary pretrial detention and disparities—all while maintaining court appearance rates. According to Crime Lab and Luminosity’s analysis comparing the updated release assessment with the prior version, 88.4% of all individuals are recommended for ROR—a huge improvement over the 34.8% of people recommended for ROR under the 2003 assessment.

A [CJA brief](#) highlights the performance of the updated release assessment in its first several months. The updated release assessment recommended Black and White individuals for ROR at very similar rates (83.9% and 83.5% respectively) and recommended for ROR slightly more Latino individuals (85.8%). The updated release assessment also performed well in terms of predicting court appearance rates, according to the data collected prior to the suspension of court appearances due to the COVID-19 pandemic. Judges' release decisions were generally consistent with the assessment's recommendations, however, smaller disparities exist. While remand rates were very similar (0.4-0.5%) amongst individuals recommended for ROR, Latino individuals were the most likely to be released on recognizance (74.5%) followed by White individuals (72.0%) and Black individuals (69.4%), who were the most likely to receive bail (by up to 3.5 percentage points) of all three groups.

Takeaway

There is still work to be done to fully eliminate racial/ethnic disparities and improve judicial decision-making overall. Organizations must pursue additional ways to counter implicit bias in decision-making throughout the justice process, and create systems that more effectively support communities of color. While the new release assessment is a step in the right direction, there are additional ways to help judges make accurate decisions at arraignments. One of the hallmark problems with the arraignment decision context is that as judges gain more experience and arraign more cases, they become more comfortable with arraignment decisions even if they lack information about the accuracy of those decisions. Creating a feedback system or dashboard that provides aggregate and individual outcome data to judges and other stakeholders is likely to further improve judicial decision-making.¹³ If we build on this significant progress and implement new tools informed by behavioral science, we can continue to advance towards the critical mission of creating a more equitable arraignment process and reducing pretrial detention in New York City.

¹³ Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112.