The Mayor's Office of Data Analytics (MODA) collaborates with New York City agencies to implement data-driven improvements to City operations.

MODA partners with agencies to create, test, and improve analytic models that deliver measurable value to City services. These partnerships allow for analytic insight to empower on-the-ground expertise.

MODA helps City agencies
- enforce laws more effectively
- prioritize risk more strategically
- deliver services more efficiently

**Project Types**

MODA works with agencies to form analytics questions in line with their overall mission and specific goals. While MODA strives toward operational analytics in every project, most begin with a data management or decision support question.

**Operational Analytics**

Applying data analysis to an operational goal that advances an agency’s mission

**Decision Support**

Analyzing data to increase situational awareness for decision-makers

**Data Management**

Organizing data into a form flexible enough to be used for a variety of purposes

**Analytics Toolkit**

**Matching**

What goes with what?

Matching can optimally pair two groups against a certain set of constraints. When the appointment scheduler for IDNYC was backlogged with duplicate requests, MODA helped match applicants to times and locations based on indicated preferences. *Useful for equitably distributing a limited set of resources.*

**Estimating**

How much?

Projects can be planned more effectively when time, material, and costs are estimated in advance. MODA worked with the Department of Housing Preservation and Development to estimate the resource requirements and program outcomes for a new set of “Enhanced Contractor Review” oversight procedures. *Useful for quantifying the costs and benefits of new programs.*

**Targeting**

Where to look?

Targeting can narrow an operational domain to enable better resources allocation. MODA created a model to help identify buildings that have displayed a pattern of unsafe living conditions. This enabled the Tenant Harassment Prevention Task Force to follow up with inspections and enforcement actions when necessary. *Useful for identifying a subset for a specific intervention.*

**Prioritizing**

Where to go first?

Ranking a list according to certain criteria can enable more efficient use of resources. While the Department of Education must make all schools ADA-compliant, MODA used DOE data to prioritize which schools to renovate first in order to reduce the number of disabled students who needed to be bussed in the meantime. *Useful when getting to the worst things earlier can mitigate negative effects.*

**Scenario Analysis**

What if?

Considering alternative events and measuring the range of their possible outcomes can help define the best course of action. As part of the Mayor’s Office of Long Term Planning and Sustainability’s research for a new commercial composting policy, MODA predicted how much waste local businesses would generate under various regulatory thresholds. *Useful for planning for a range of possible outcomes.*

**Anomaly Detection**

What is out of the ordinary?

Some processes can be improved by identifying and investigating outliers. For example, registration records may have a number of files that display unusual characteristics. Flagging those records and examining them may reveal procedural oversight or fraudulent transaction. *Useful when investigating the “out-of-the-ordinary” is more feasible than examining every case.*
I. SCOPING
What is the analytics question?
The core of a good analytics project is a clearly defined question which can be answered using data. The project should be tied to a specific City operation that analytics can help improve. In the scoping phase, MODA works closely with the implementing agency and other stakeholders to map out project goals and possible operational strategies for meeting them. Scoping is the most open-ended phase: it is the analyst’s opportunity to ask questions to understand the agency’s operational priorities and processes.

II. DATA
What data is required?
MODA works with the implementing agency partner to understand what data is available and how it can be used to address the problem. This includes working with the people who use the data, understanding the source of the data, why and how it was collected, and building a data dictionary if none exists.

III. ANALYSIS
What data analysis is applicable?
Using the project goals and operational toolkit as a guide, brainstorm multiple analysis approaches. Where appropriate, the analysis should have a falsifiable hypothesis that is clearly aligned with operational goals. Results are presented to the implementing agency and subject matter experts for feedback in a straightforward way. MODA analysts use open source tools such as R and Python to promote transparent and reproducible analysis.

IV. PILOT
How can the analysis improve the operation?
MODA works with the implementing agency to put the results of the analysis into action. Once the operational pilot is identified, MODA provides assistance in establishing baseline metrics and a way to track the effect of the model. After the initial results are attained, this becomes an iterative process where we reassess the hypothesis and assumptions, and make adjustments as necessary.

V. HANDBOFF
Is the model sustainable?
In this phase, MODA hands off the project to the partner agency, providing full project documentation and capacity building support as needed. This includes training agency analysts, presenting to agency leadership, or assisting in procurement discussions.