Performance Management & Data Analytics in the New York City Mayor’s Office:
What Industry Can Learn

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Jeff Tryens
Deputy Director
Performance Management
Mayor’s Office of Operations
Jtryens@cityhall.nyc.gov

Chris Corcoran
Deputy Director
Mayor’s Office of Analytics
Ccorcoran@cityhall.nyc.gov
Improving Government Performance

**Strengthen Performance Reporting:**
- Upgrade the Mayor’s Management Report
- Integrate different reporting platforms

**Create a Cohort of Performance Professionals:**
- Bring PPs together around shared interests
- Sharpen skills through working groups/trainings

**Employ Analytics to Solve Problems:**
- Develop new insight to better manage difficult & cross agency issues
- Deploy automated tech solutions
Reporting - MMR Upgrade 2011 - 2013

Creating a stronger, more accessible product -

CONTENT
1. Grew alignment with agency executive measures by 50%.
2. Highlighted agencies working together.
3. Introduced measurable goals.
4. Required targets for “critical” indicators.
5. Married trends with desired direction.
6. Raised the profile of customers.

ACCESSIBILITY
1. Published an executive summary.
2. Created an additional tier for less important measures.
3. Launched a web version.
4. Improved the look and feel.
Reporting - Integrating Different Reporting Platforms

1. Built mapping capability into Office of Operations Citywide Performance Reporting (CPR) website.

2. Created a single web portal incorporating twice-yearly PMMR/MMR snapshots, monthly data and related performance information.

3. Provided all electronically available MMR data to the citywide data warehouse.
PP Cohort – Shared Interests & Training

Sex Appeal

# 1 Songs

1 to 1 correlation

Shakira

Usher

Blake

Adam
PP Cohort – Shared Interests & Training

Operations has introduced five significant changes in this area:

1. Sponsored a major public/private performance professionals conference.

2. Introduced a regular “Practices Worth Replicating” peer-to-peer speaker series.

3. Provide analytics training to performance professional network.

4. Created cross-agency working groups on issues of shared interest, like running successful PerformanceStat programs.

5. Trained staff from other branches of City government on Oracle BI software allowing greater access to, and use of, MMR data.
Data Analysis: Developing New Insights

Illegal conversions
Using five publicly available correlates to identify targets quadruples the probability that a City inspection will result in a serious fire hazard violation.

Clogged Drains
Restaurants with no waste hauling contracts for solid waste and brown grease are 3.6 times more likely to have a clogged drain within 600 ft. than those with no contract.

OTHER EXAMPLES –

Licensing: Identify unlicensed business by cross-tabbing license lapses, trash collections, and utility bills.

At-Risk Youth: Understand risk factors for kids in “the system” by integrating multiple data set.

Workforce Planning: Model the aging of the City’s workforce to identify future potential deficits in critical skills.
Initial Predictive Analytic: Illegal Conversions

Metrics correlating with fire risk at illegal conversions
Fires per 1,000 Buildings In NYC, 2008 - 2010
1-3 Family Buildings Only

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<thead>
<tr>
<th></th>
<th>Target</th>
<th>Non-Target</th>
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<tbody>
<tr>
<td>High Risk</td>
<td>5.3</td>
<td>2.7</td>
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<tr>
<td>Neighborhood</td>
<td></td>
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<tr>
<td>Pre-1938</td>
<td>4.5</td>
<td>1.9</td>
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<td>Construction</td>
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<td>Lis Pendens</td>
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<tr>
<td>Tax Lien</td>
<td>10.9</td>
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</tr>
<tr>
<td>Complaint</td>
<td>10.8</td>
<td>2.9</td>
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Illegal Conversion Fire Risk Targeting

Vacate rate

<table>
<thead>
<tr>
<th>Pre-Targetting</th>
<th>Targetting</th>
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<tr>
<td>13%</td>
<td>70%</td>
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**Outcomes**

- Inspectors are 5X+ more likely to find conditions requiring a vacate
- Predictive analytic reduces the number of fire-risk days for seriously dangerous apartments
- No change required in inspection method
Blasting through information stovepipes
Analytics Concept Takes Root

Day-to-day operations
- Dep’t of Buildings/HPD
- Sheriff's Office
- Dep’t of Environmental Protection
- Dep’t of Sanitation
- NYPD/FDNY

Economic development
- Economic Development Corporation
- New Business Acceleration Team
- Small Business Services
- Dep’t of Finance

Disaster response & sustainability
- Housing Recovery Office
- Office of Long-Term Planning & Sustainability
- Office of Emergency Management

Representative NYC agencies
Improving Day-to-Day Operations: FDNY RBIS
(Risk Based Inspection System)

ROC curve pre-analysis

% of severe violations found
-\% 25% 50% 75% 100%

% of fire inspections conducted
-\% 25% 50% 75% 100%

First 25% of inspections yield 21% of severe violations

ROC curve post-analysis

% of severe violations found
-\% 25% 50% 75% 100%

% of fire inspections conducted
-\% 25% 50% 75% 100%

First 25% of inspections yield 67% of severe violations

Re-ranking inspections significantly reduces the time that buildings are at risk of severe fire.
Day-to-Day Operations: FDNY RBIS
Improved results from RBIS update

Original model
Original model over-predicted fires in Downtown Brooklyn, Park Slope and Bay Ridge

Updated model
Updated model accurately reflects risk in West Bronx, Downtown, and Far Rockaways

Actual fires
Observed fire frequency, 2011 to present
Economic Development
Start businesses faster

NBAT background
• Assists new businesses in opening eating and drinking establishments
  – Assists clients in navigating NYC agencies
  – Reviews construction plans
  – Coordinates multi-agency inspections

Analytics support
• Conducted a comparison analysis of NBAT supported & independently opened bars and restaurants
• Measured the time (days) that each NBAT service reduces time-to-open
• Found a **45-day reduction** in time-to-open for each additional NBAT service provided
Democratizing Analytics Through Open Data

Open Data benefits:
• Government transparency
• Operational efficiency
• Economic development

Energy use  NYC budget  Subway ridership  Dev support
Working with Academic Partners

- Collaborate on projects with NYC data, to develop solutions to NYC problems
- Recruit talented data scientists for government service
- Encourage Silicon Alley growth, NYC’s tech leadership
Transferrable Lessons Learned

PERFORMANCE MANAGEMENT

1. High performance is 2/3 leadership; 1/3 everything else.
2. Be very clear about what good performance is.
3. Only measure performance if you intend to use the information.
4. Link performance and budget; but how?
5. Involve those expected to “perform” in the process.
6. Align your performance management approach with your governance structure.

ANALYTICS

1. Focus on the outcome; it’s better to have a good analytic that answers a tough question than a great analytic that answers no questions.
2. In order to understand the meaning of data, you often need to consider how the data was created.
3. Size the right tool the right problem – not everything needs to be complicated.
4. If an analysis seems too good to be true, it probably is; check with an expert.
5. Make sure to communicate the data in a way that resonates with the audience.