The power of analytics for public sector

Building analytics competency to accelerate outcomes

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About the IBM Institute for Business Value (IBV)

Who are we?

- Formed in 2001, the IBV is the corporation's lead research facility for business and management issues
- Has a global remit and is also one of the largest primary business research centres in the world not attached to a university

What do we do? For whom?

- Create fact based strategic insights and practical recommendations for senior executives, including
  - Primary research and analysis
  - Dialogue with industry experts and academia
  - Industry / Client events
- Collaborate with senior executives from government, leading companies, academia and IBM professionals on studies
  - Staffed with over 60 full-time experienced industry consultants worldwide with main offices in Cambridge, Amsterdam, Beijing, Dublin, Pune and Tokyo

Why?

- IBV strives to provide senior executives with novel, quantitatively supported *and* executable insights
  - Enables them to determine the most appropriate strategies and act
- The practical recommendations stemming from study results can address both strategic and operational challenges.

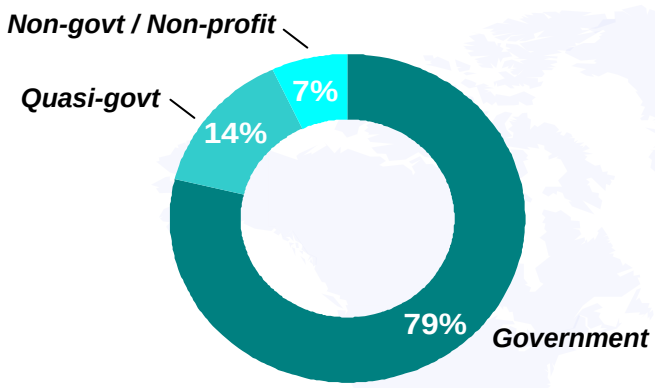
Summary

- Over 100 public sector leaders interviewed in 2010 to understand approaches to building analytics *competency*[1]
- A historic opportunity for progress, but the majority of respondents have yet to acknowledge the environment's impact on their business and synchronize
- Analytics is not new but the context for its use has changed and its roles are expanding
- Collision: *Data paradox*[2] and information explosion
- The more qualitative the information, the less comfortable in the underlying data
- Analytics as a core management competency is key
- As a group, leaders told us they were Foundation Builders[3] relative to where they want to be
- To realize the power of analytics in public sector …
  1. Focus on outcomes to move beyond issues
  2. Orient the management of information around its use
  3. Use analytics enabled insights to meet specific objectives
  4. Model and embed analytics discipline in management practices

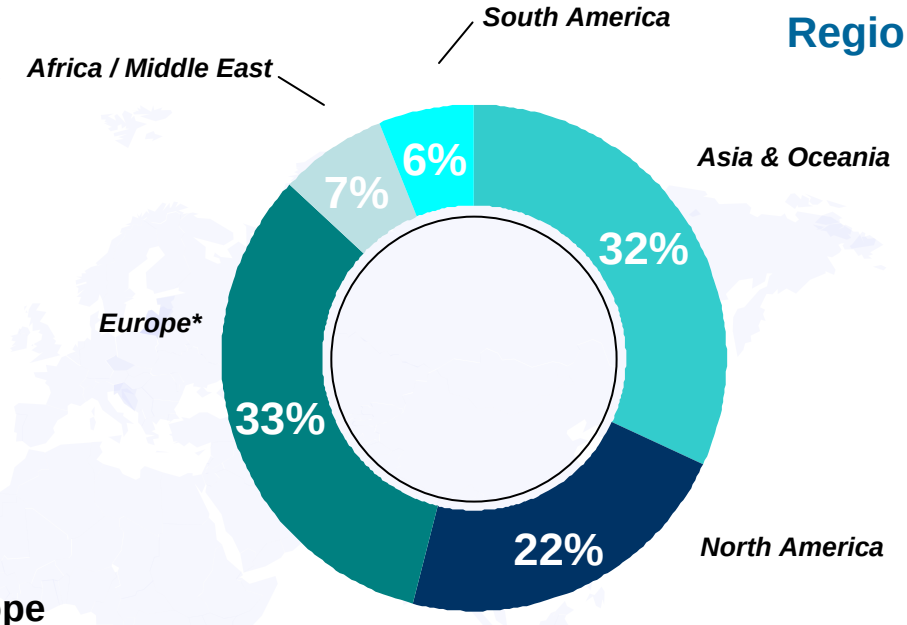
1 To focus the interviews in this initial study, we looked through the lens of social protection and economic management (economic vitality).
2 Data paradox: The management dilemma presented by too much data and too little insight
3 We developed the Analytics Vision Index (AVI), an *a priori* classification index. Competency levels as revealed by the AVI were Starters, Foundation Builders, Practitioners, and Virtuosos.

We interviewed over 100 public sector leaders in 2010 to understand their approaches to building analytics competency

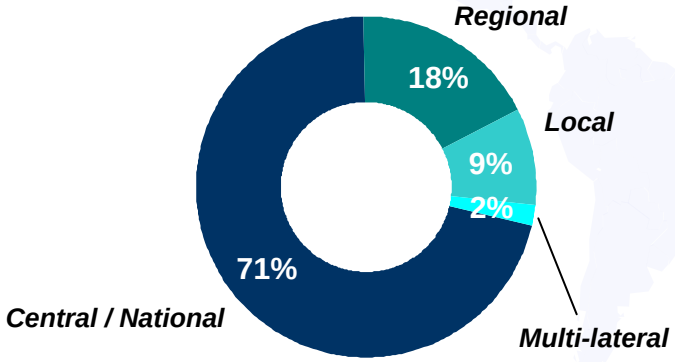
Type of Public Organization



Region



Jurisdiction



Scope

- Understand how public sector organizations perceive / use analytics
- Describe what's needed to exploit the power of analytics in the public context
- Lay the foundation for additional and more detailed research to follow

* Respondents from Europe were from EU member countries

** Combined with secondary research, this exploratory and observational research study is a first step in framing analytics in the public context

Source: IBM Institute for Business Value

To focus the interviews, we looked through the lens of two public issues: social protection and economic vitality

A different lens – recognizing the underlying common purpose of addressing public issues in support of public outcomes

BY PRIMARY PUBLIC ISSUE[1]		
Social Protection	Economic Vitality	Both *(even split)*
49%	38%	12%

Participating organizations came from these "policy (or 'mission') domains"

- Agriculture
- Defense (or military)
- Economy, trade and industry
- Education and learning
- Energy, utilities and public works
- Environment, lands, natural resources
- Enumeration, evaluation, measurement[2]
- Fiscal (public revenue & expenditure)
- Health
- Information and communications
- Labor
- Mobility, transport and transit
- Monetary (capital) system
- Public safety
- Public security
- Science, technology and innovation
- Social support
- Urbanization and urban affairs
- *Multiple*

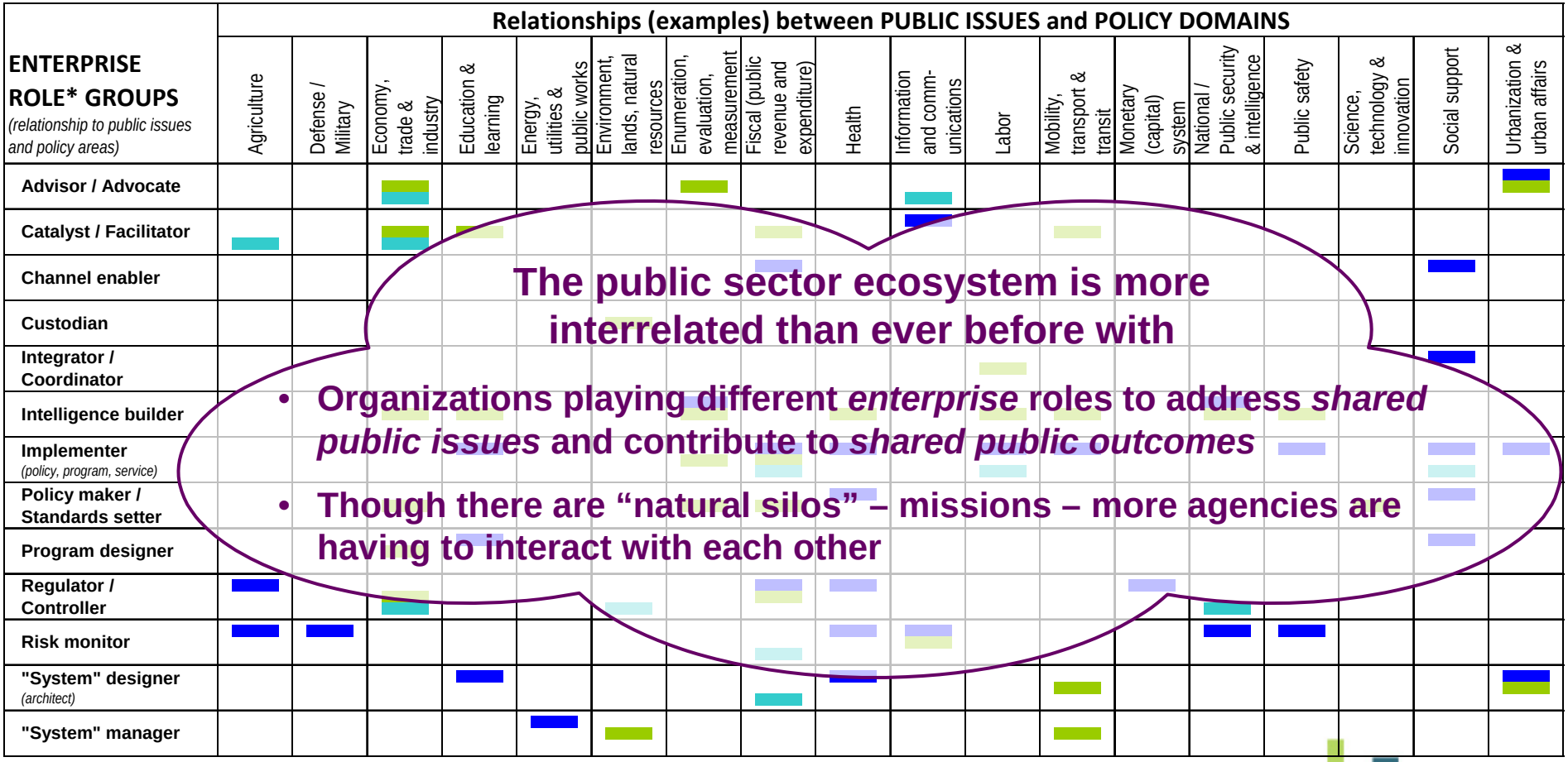
n = 107

1 We used two public issues – social protection and economic vitality – as a lens by which to focus the interviews; however, the underlying hypotheses are "issue-neutral". Respondents distribution of percentage of activities indicated "primary public issue";

2 Includes work covering government management and accountability

Source: IBM Institute for Business Value

The public issue perspective suggests interrelatedness, interdependence and collaboration opportunities for common outcomes



* n = 102, roles = enterprise roles relative to the public issue. Grouped "role" and "public issue" responses into "role groups" and "primary public issue."

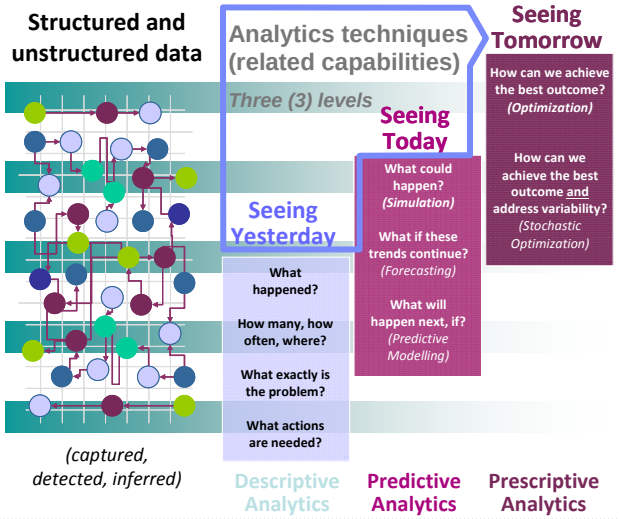
Source: IBM Institute for Business Value analysis

A new working environment that's increasingly uses analytics

Immense complexity

1. Powerful forces reshaping societies and how they are governed
2. New economic and fiscal environment
3. Intensifying demands on public sector organizations

Analytics in public sector

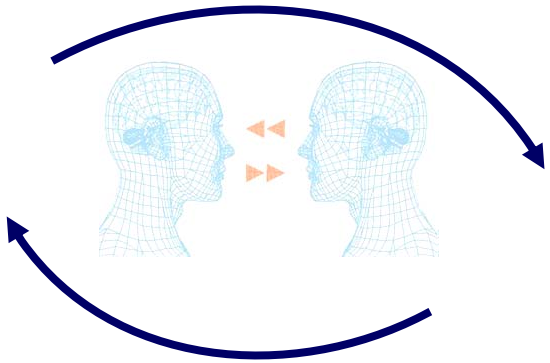


New possibilities

4. An information explosion
5. Business and technology developments, usage trends
6. New generation of analytics talent, techniques, and models

Analytics is:

The use of data *and* related business insights developed through *applied* analytical disciplines* to drive *fact-based* decisions, execution, management, measurement and learning



Analytics competency **is an enterprise's capacity to use analytics in an expanded, systemic manner *and* advance it as an enterprise skill.**

This is accomplished by embedding three interrelated dimensions in organizations: analytics talent, analytics capability and analytics leadership.

* For example, statistical, contextual, quantitative, predictive, cognitive, other (including emerging) models

Source: IBM Institute for Business Value

Better, fact based decision making in the public sector is more important than ever – the roles for analytics are expanding

Profound implications	➔	Expanding roles for analytics
• Higher expectations, heightened scrutiny • Emerging enterprise roles alongside the "natural silos" of missions • Tensions – governance, management and oversight • Focus of information management shifts from collection to usage – new opportunities • Heightened competition for analytics talent, analytics leadership		***From systemic levels to*** Exploration and discovery Policy, programs, planning and design Service delivery, operations Sustainability and risk / control Measurement and evaluation ***From micro levels to***

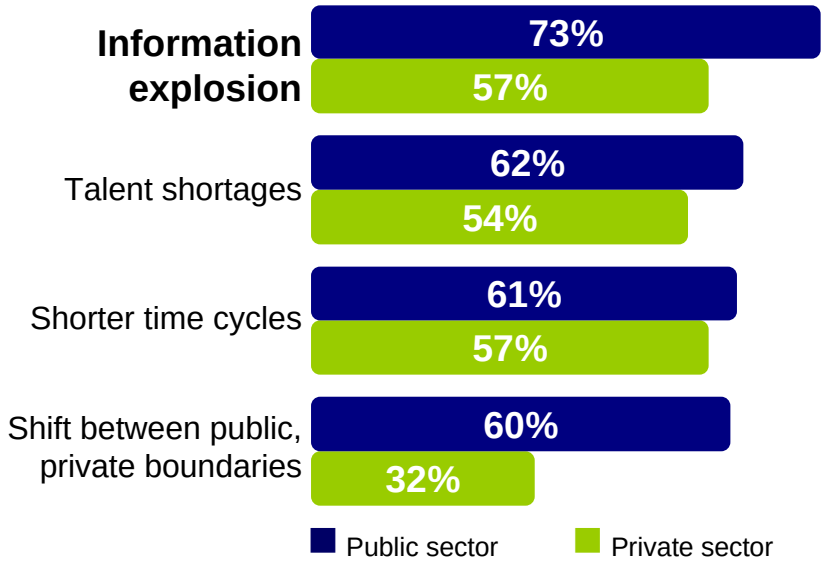
"Across the country, all are struggling at a minimum level to figure out how to deliver services. For those at the leading edge, … [it's] how to find the new models ... Not a time of cuts, but of rethinking and finding new models. New ways to deliver services and think of what the local government of the future would look like."

Christopher Hoene, Director of Research and Innovation, National League of Cities, USA

Source: IBM Institute for Business Value

The very drivers of complexity also present new possibilities, but the most formidable obstacle is the data paradox

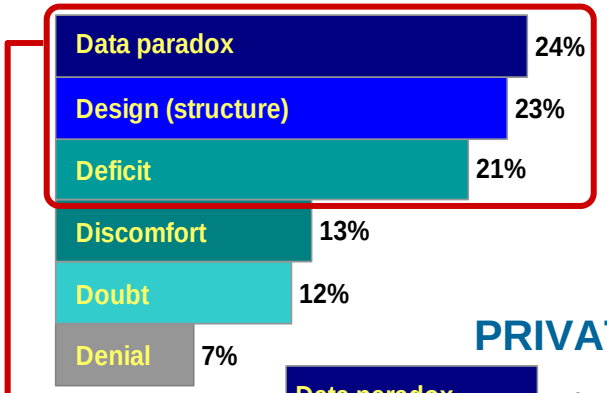
Factors affecting your organization to a large extent over the next 5 years[1]



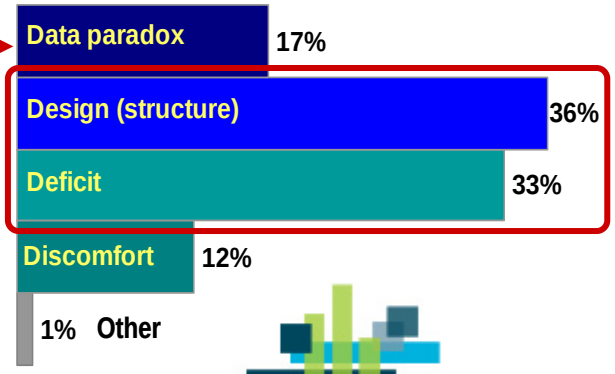
Barriers to analytics adoption and use

DATA PARADOX: The management dilemma presented by too much data, too little insight[2]

PUBLIC SECTOR[3]



PRIVATE SECTOR[4]



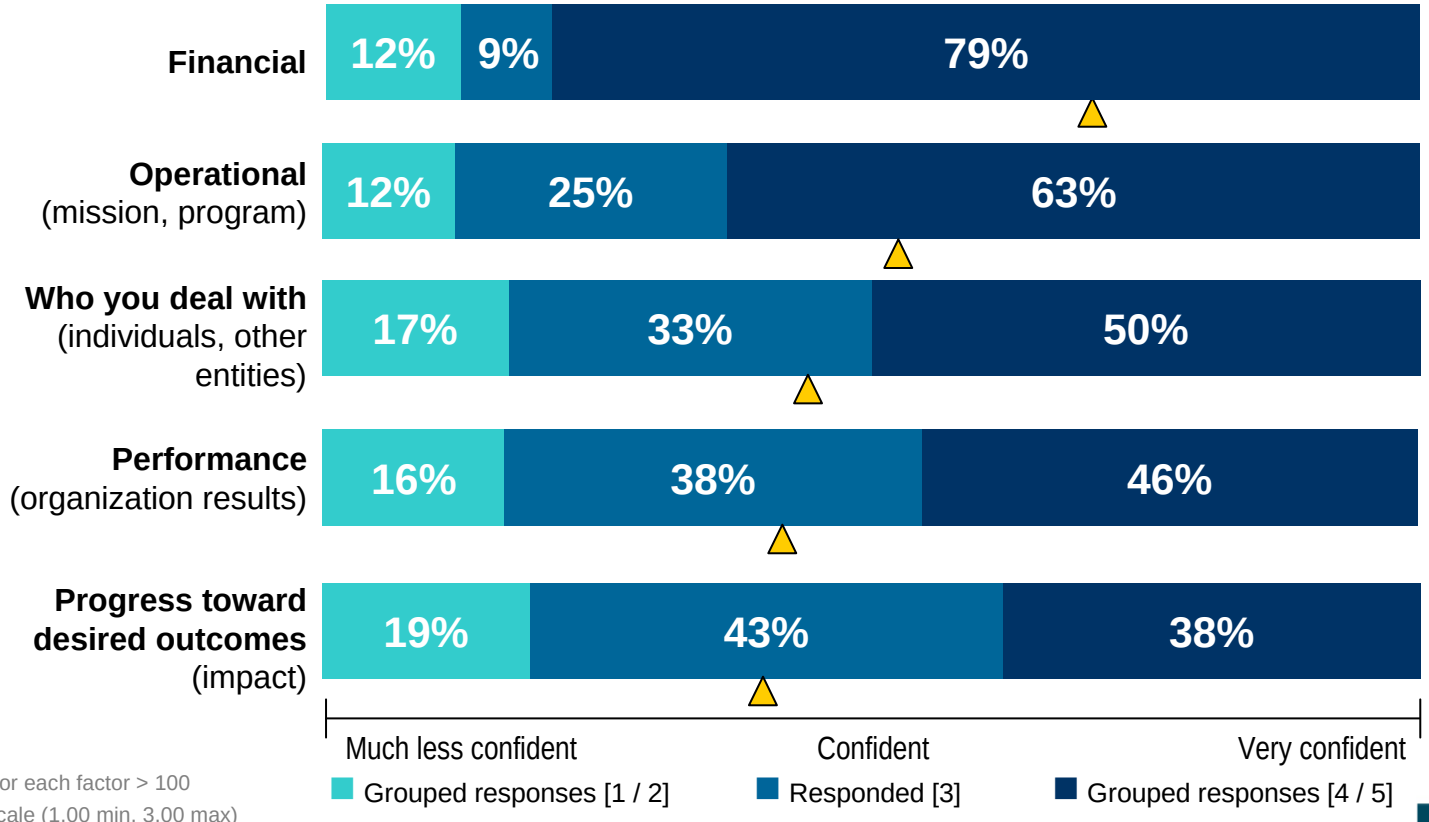
"We have tons of information; and the vast majority of data is accurate. It's a matter of how we use it."

Executive, Local government agency, N. America Region

1. 2010 Global CEO Study, Insights from global public sector CEOs, IBM Institute for Business Value
2. Driven by increasing velocity of decision making and related information management tensions; the sheer volume, sources / diversity of data
3. n = 107, weighted (all barriers); 4. n = 2,252, Source: 2010 Global BAO study (non-industry specific)
Source: IBM Institute for Business Value analysis

The more difficult-to-define the information, the less comfortable respondents are in their underlying data

Already-tough choices are getting tougher: How confident are you in the reliability and integrity of the (types) of data you use to make decisions?



Sample size for each factor > 100

△ Mean, scale (1.00 min, 3.00 max)

Much less confident = Grouped responses [1 / 2]; Confident = Response [3]; Very confident = Grouped responses [4 / 5]

Source: IBM Institute for Business Value analysis

Memphis Police Department (MPD)*

Public outcome
A confident, thriving community

Policy outcomes***
High quality jobs, vibrant neighborhoods, increased self-sufficiency

Issues (2005)

Rising crime, frozen (or shrinking budgets), growing disenchantment among citizens

- *"By the time you got the information, the information was old."*
- *"By the time you put out a plan, you're working on something and it's changed 3 or 4 times."*
- *"We were still doing things the way we'd always done."*
- *"When you do that, you can expect the same results."*

Findings

Prevention by prediction is possible …

Crime "Hot Spots" of historical and real-time data

Changing tactics + shifting resources thwarts crime before it happens, catches more criminals in the act

… so is smarter crime-fighting

"A new perspective on data that we've always had."

Results

- ↓ of > 30% in serious crime, inc. ↓ of 36.8% in one targeted area
- ↓ 15% in violent crime
- ↑ of 4x in share of cases solved (Felony Assault Unit)
- ↑ in ability to allocate resources
- ↑ collaboration (across MPD, Univ. of Memphis, the Mayor's office, District Attorney) on the analytical framework continues

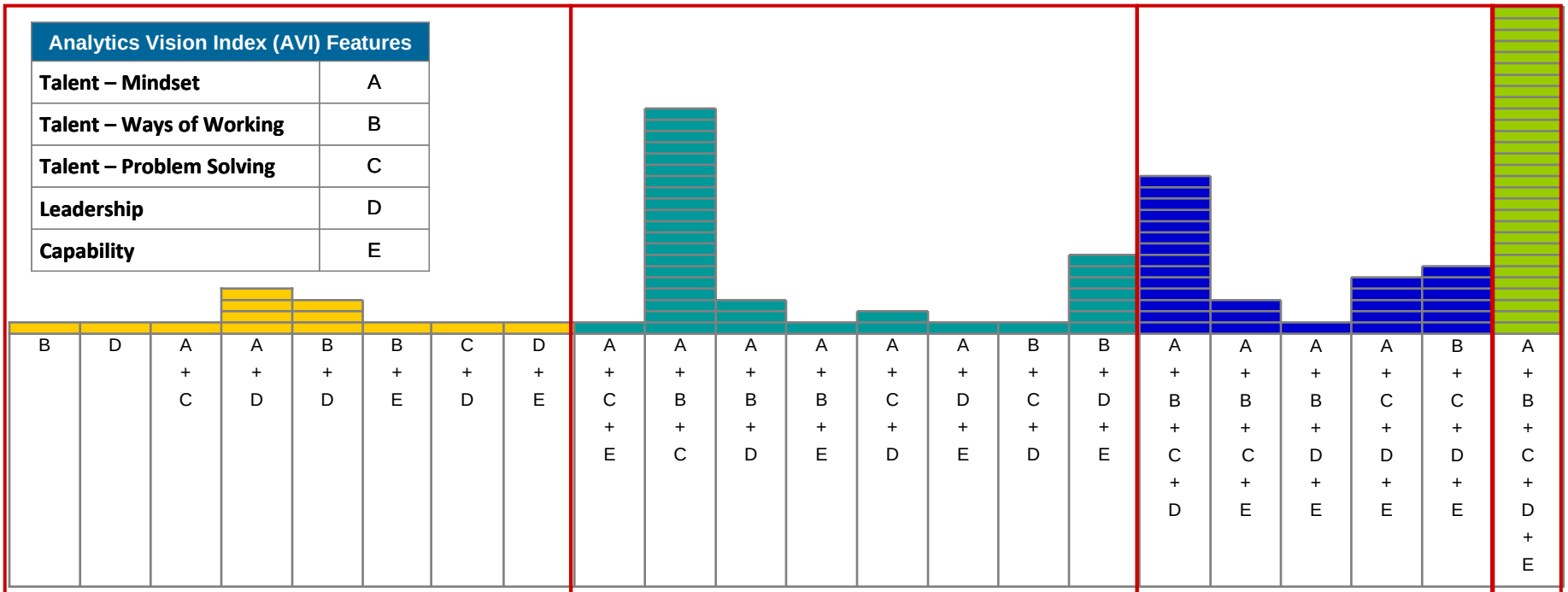
Mission / Program outcome**
A safer community

* "Memphis PD: Keeping ahead of criminals by finding 'hot spots'." IBM Smarter Planet Leadership Series (including video), February 2011.
** Source: Memphis Police Department website (adapted)
*** Source: Mayor A.C. Wharton, Jr.'s 2011 "State of the Union" Address, City of Memphis website (adapted)

Respondents told us that analytics is an emerging management competency – most are Foundation Builders

Analytics Vision Index (AVI): Four levels became apparent

Analytics Vision Index (AVI) Features	
Talent – Mindset	A
Talent – Ways of Working	B
Talent – Problem Solving	C
Leadership	D
Capability	E

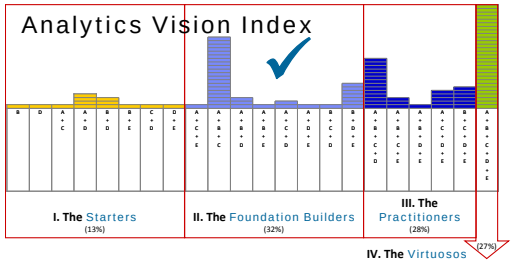


n = 107; Developed based on statistical analysis of responses regarding the 3 dimensions of the analytics competency – talent, leadership, capability. There are 31 possible combinations for the AVI

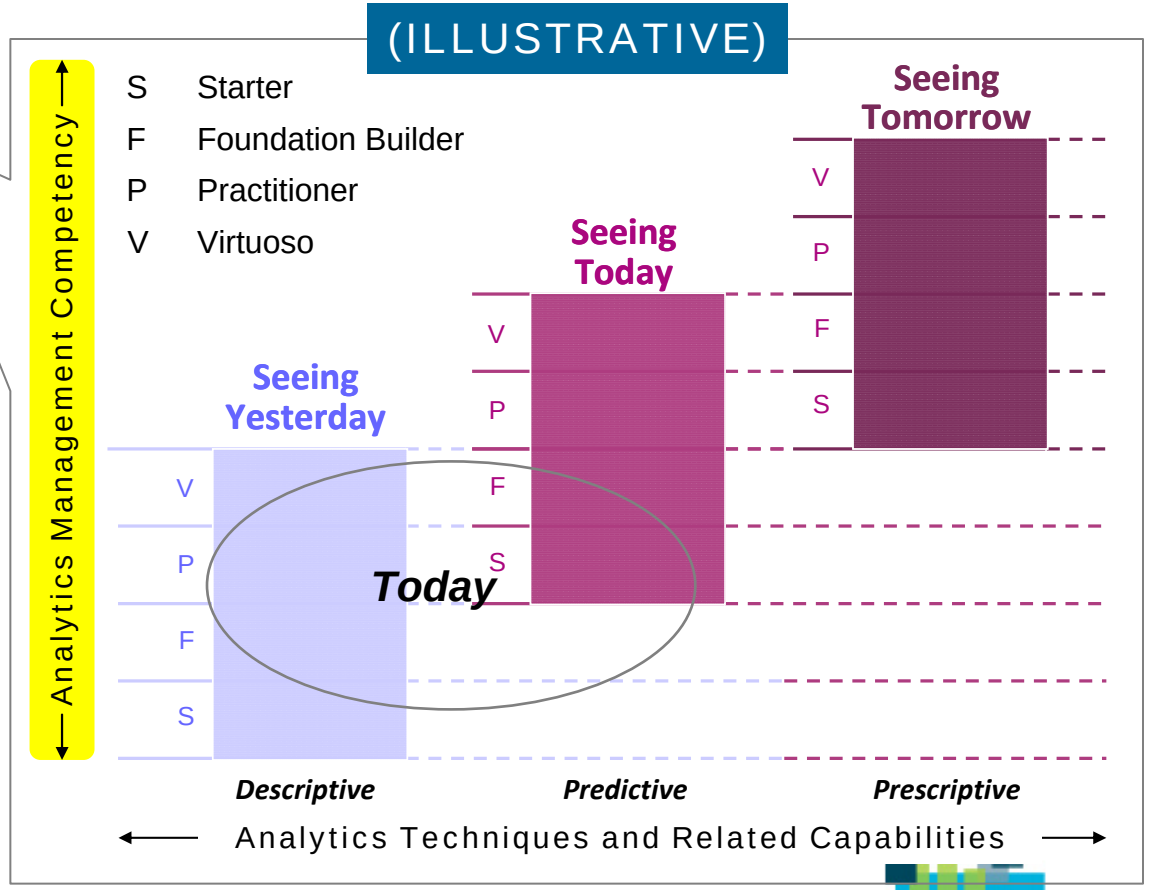
Source: IBM Institute for Business Value analysis

Organizations want to be able to predict with confidence and are trying to move from "seeing yesterday" to "seeing today"

Analytics Competency against three types of Analytics Techniques (today)



As a group, analytics competency seems to be more advanced in the *descriptive* techniques and early into *predictive* ones* relative to where they want to be



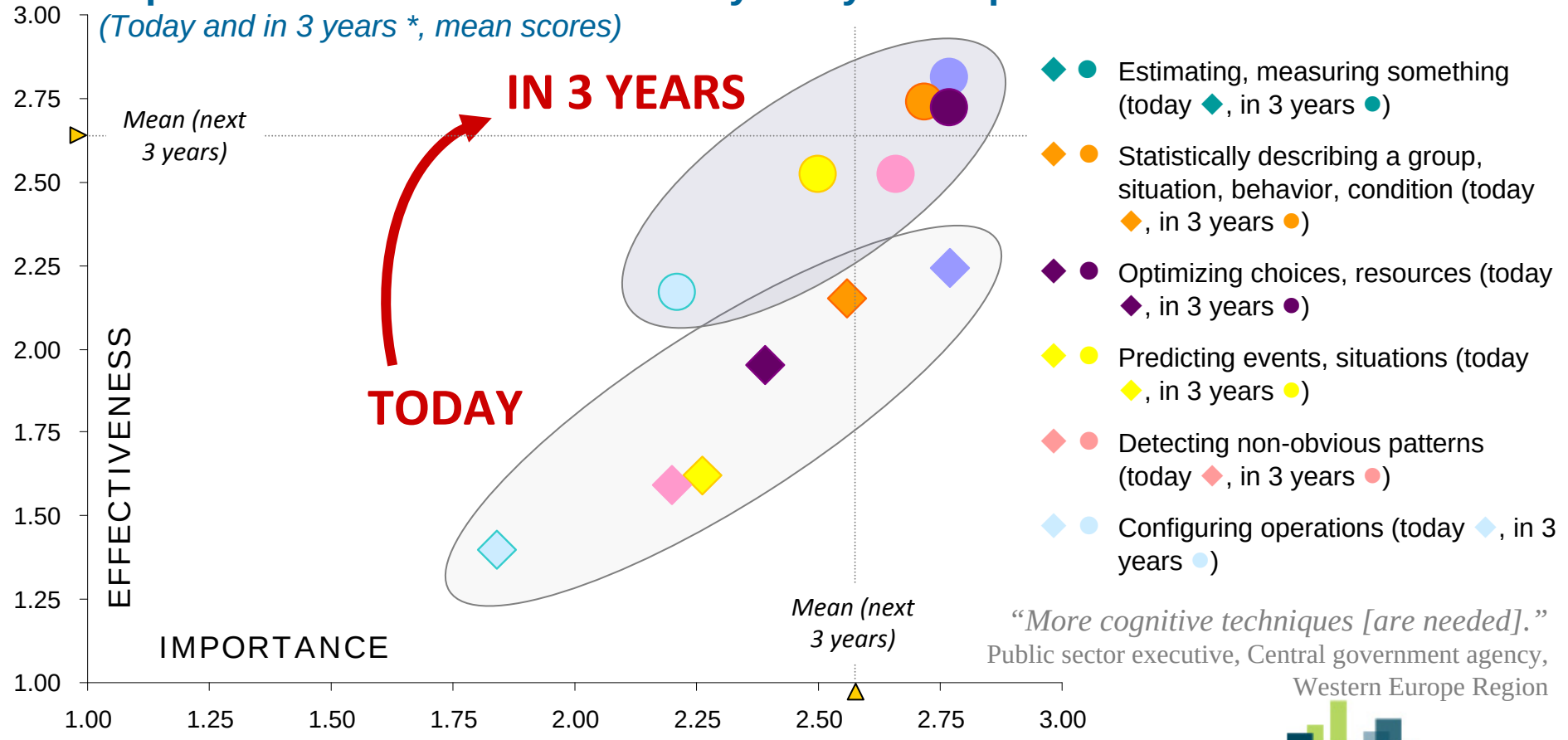
* Not exhaustive. To focus the interviews, survey participants looked through the "lens" of two public issues – *social protection* and *economic vitality*

Source: IBM Institute for Business Value analysis

Making better choices remains the top priority, but leaders want to inform them with new and more predictive insights

Importance v. Effectiveness of key analytics capabilities

*(Today and in 3 years *, mean scores)*

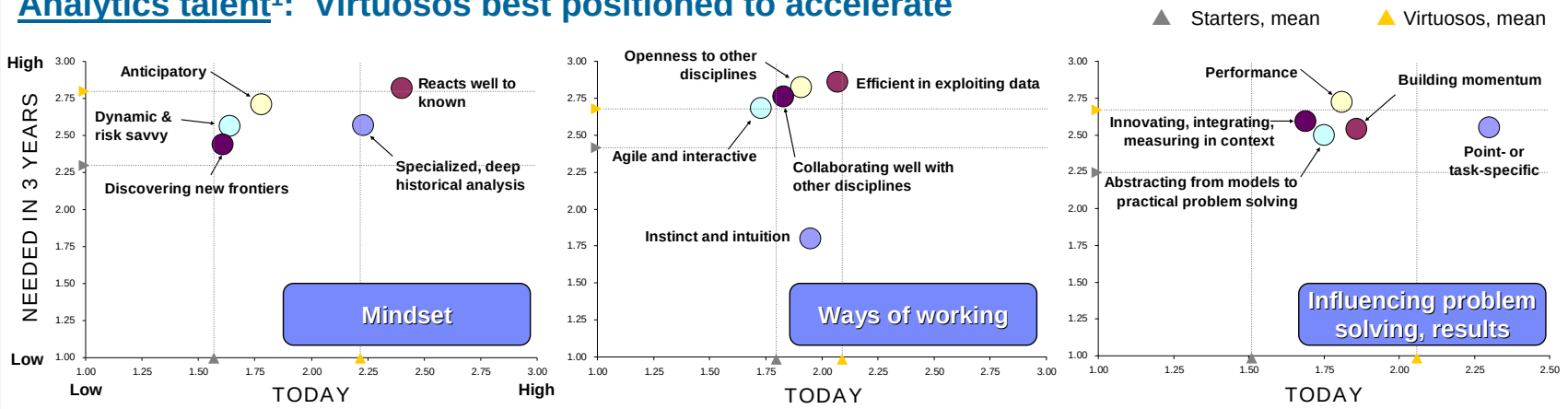


"More cognitive techniques [are needed]."
Public sector executive, Central government agency, Western Europe Region

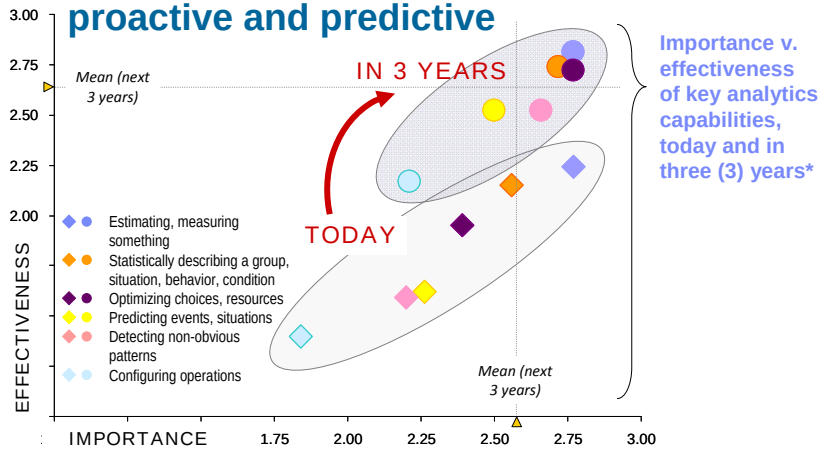
n > 102; ▲ mean, next three (3) years (scale 1.00 min, 3.00 max)
* Less important = Grouped responses [1 / 2]; base requirement = responded [3]; Important = Grouped responses [4 / 5]
Source: IBM Institute for Business Value analysis

Leaders recognize that there is more work to do to build analytics as a management competency

Analytics talent[1]: Virtuosos best positioned to accelerate

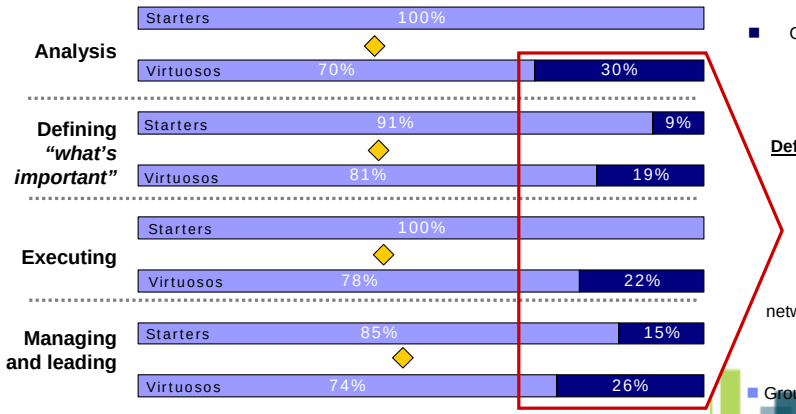


Analytics capability[2]: Moving toward proactive and predictive



Importance v. effectiveness of key analytics capabilities, today and in three (3) years*

Analytics leadership[3]: Emerging managerial innovation



1. n > 94, full sample; mean, scale (1.00 min, 3.00 max) **2.** n > 102; ▲ mean, next three (3) years (scale 1.00 min, 3.00 max); * Less important = Grouped responses [1 / 2]; base requirement = responded [3]; Important = Grouped responses [4 / 5] **3.** n ≥ 102; ◆ mean for the full sample, scale (1.00 min, 3.00 max); * Grouping responses [2 / 3 / 4 / 5] where "Analysis" = from foundation building to systematic; "Defining 'what's important'" = from foundation building to transparent, increasingly looking at outcomes; "Executing" = from foundation building to coordinating with other organizations; Managing and leading = from foundation building to measuring and challenging perceptions

Source: Institute for Business Value analysis

Analytics competency is an important managerial innovation for public sector

Why?

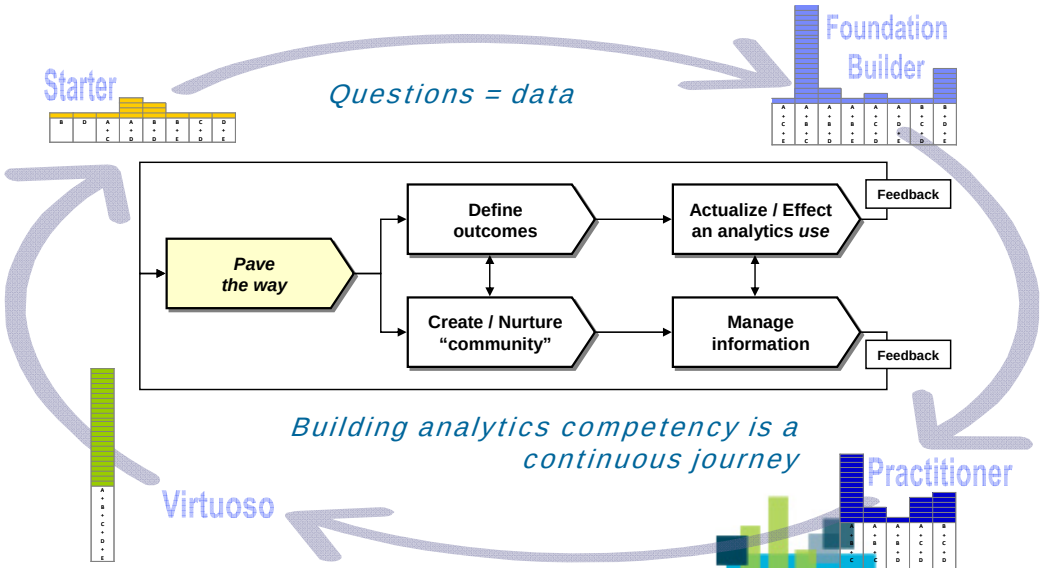
- Constituents are demanding more of organizations to accelerate and achieve outcomes
- They too know that the possibilities for seizing game changing opportunities and tackling complex public issues using analytics are within reach
- All are acutely aware of increasingly severe consequences of failure in an interconnected world

- With the focus on transparency and accountability, “all eyes” are on ***how***
  - Decisions are made
  - Priorities are set
  - Money is spent
  - Work is done
  - Performance, impact and value are defined and measured
  - Progress is accelerated
  - Outcomes are achieved

To realize the power of analytics in the public sector, organizations will need to act on four imperatives to build analytics competency

Four management imperatives

Start first with defining the issues well, ask questions, and take an iterative approach based on where you are



Source: IBM Institute for Business Value

"While the opportunities from analytics for improving efficiency and effectiveness appear limitless, there is much less clarity about the readiness of the government sector to do so … Whereas analytics is largely depicted as a technological innovation (often described as 'business intelligence'), the strategic use of analytics in both the private and government sectors also requires massive managerial innovation."

Thomas H. Davenport and Sirkka L. Jarvenpaa
The strategic use of analytics in government
IBM Center for The Business of Government, 2008

"[We are] expected to operate in a culture of accountability, transparency and openness … to funders and the public."

Executive, Local / Municipal government agency, Western Europe Region

"The key was to be able to ask the right questions. There was too much of a check-the-box mentality and getting new observations was hard."

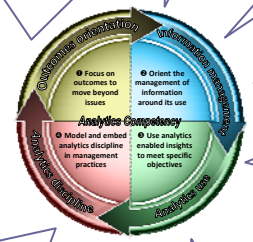
Executive, Central / Federal government agency, North America Region

"[We need] a mental shift with respect to analytics."

Executive, Central government agency, Western Europe Region

"People are more interested in metadata; and keeping up with that demand is an enormous task. With the push to transparency, the senior management is demanding faster answers."

Executive, Central / Federal government agency North America Region



"I am not very sure whether the government is ready to embrace analytics. It seems to me that analytics is a managerial innovation because if applied correctly across the organization, it will help government to measure what is doing, allocate required resources efficiently and effectively and achieve government policy objectives."

Executive, Quasi-government agency, Africa Region

"We need folks that can understand the horizontal and the vertical. What jumped out from the crisis is that there is a whole new 'horizontal' – the systemic aspect … They will need to collaborate ..."

Executive, Quasi-government agency, North America Region

"Our understanding is from our business services [outputs] v. outcomes for individuals or the public. Today our performance is more about outputs v. progress. There's work to be done in this field."

Executive, Municipal government agency, Western Europe Region

"There's a disconnect between people who understand programs and those who understand data. People also know programs can't take advantage of analytics."

Executive, Non-government organization, North America Region

"Best situation would be we analyze the data using the best techniques so we can clarify the choices and help you choose, rather than making blanket recommendations that put off … so that they withhold / delay data."

Former Executive, Central government agency, North America Region

"The state has long been the biggest generator, collector and user of data."

"The open society – Governments are letting in the light," Special report on managing information, *The Economist*, February 27, 2010

To “get started on Monday morning” …

1. **What exactly is the *issue* you’re trying to address?**

2. **What *outcomes* are you trying to achieve or influence?**

3. **What *questions* do you need to answer to inform your decisions?**
   - How are you informing those decisions today?
   - Do you have a good sense of the risk, impact and consequences of your decisions and actions along the way?
   - What would happen if you did NOT change the way you manage information?

4. **Where are you (and where do you need to be) in developing analytics competency?**

5. **How will you make the case, and to whom?**

Thank You!

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