



# **The City Re-examined: Measuring municipal performance for smarter services**

## Contents

- 3 Business drivers**
- 5 Business problem**
  - Ensure a safe city
  - Create a thriving cityscape
  - Attract new business
  - Improve educational quality
  - Improve child welfare
- 8 The solution**
  - Smarter City Assessment Tool
  - Municipal Executive Dashboard
- 10 Conclusion**

## Abstract

As cities become bigger and more influential in the world today, so grows their responsibility to provide maximum liveability and the best possible services to residents. With technology more able to assist cities in understanding and influencing performance, the main question is: which areas are most critical to focus on, and which metrics should you track to make them better?

## Overview

More than half of the world's population now lives in cities. Mass urbanization is giving cities a more central role than they have had since the days of the city-state.<sup>1</sup> But with that increased economic and political influence comes more responsibility.

Municipal governments, more so than federal or regional, increasingly provide the infrastructure and services that have an impact on people's everyday lives: from transportation through social services to water, electricity and garbage collection. Unfortunately, many cities can provide only a basic level of service at high cost. This is to some degree a result of having older, disconnected data systems that fail to supply decision-quality information.

But cities are beginning to embrace their new power and responsibility by applying technology to improve operations. These cities are tracking data and influencing their performance in many realms – they are becoming more instrumented. They are linking critical data together – becoming more interconnected. And they are using data to make better decisions – becoming more intelligent.

With 450 cities over the one million population mark,<sup>2</sup> the sheer scale of municipal operations means that even small improvements can make big differences: in the cost, quality and sustainability of services and in the well-being of residents. The first step? Determining what metrics to follow in support of your goals.

## Business drivers

Cities throughout the world vary greatly in what they consider to be essential services to provide residents. For some, it is education and healthcare. For others, it is having a strong police force. In some cities, utilities provided may be limited to water, or extended to Wi-Fi Internet access. But from a high level, the services of all cities can be sorted into the following categories:<sup>3</sup>

- **People:** The human and social networks, including public safety (police, paramedics and fire), health, education, social services and quality of life.
- **Business:** The regulation and policy environment, including planning, openness to trade and investment, and labor and market laws.
- **Transport:** Roads, mass transit, and sea and air ports.
- **Communication:** The telecommunications essential to a modern economy including telephony, broadband and wireless infrastructure.
- **Water:** An essential utility that includes the entire water cycle from supply to sanitation.
- **Energy:** Includes power generation and transmission infrastructure as well as waste disposal.

How these systems function and interoperate determines how effective and efficient a city is and how successfully it can deliver services to meet its goals.

### City of Albuquerque, New Mexico

*“Data is a bunch of numbers or text characters. It’s not information. People need information, not data, to make decisions. With the IBM Cognos solution, we can take data and turn it into information on a strategic and operational basis and link the two as needed. It is now possible for us to use relatively few resources to provide information to a large and diverse audience.”*

– Brian Osterloh, Applications Development Manager for CRM & BI  
City of Albuquerque

With 7,000 internal users among 20 departments, the City of Albuquerque needed a better way to share information and automate data collection. The IBM solution the city chose had the scalability to not only share information internally, but also supply critical information to the city’s 750,000 citizens through a business intelligence extranet. Since that time, the City has been named a public service visionary in citizen outreach.

The IBM Cognos 8 Business Intelligence solution, which includes reporting, analysis and scorecarding technologies, draws on heterogeneous information sources to supply critical information, such as public safety and campaign reporting data. Internal and external users find the system easy to use, and the automation of data gathering and reporting has resulted in a 2000 percent ROI from reduced administrative overhead.

## Business problem

Most cities set goals for their progress, whether based on the election platform of the mayor, the desires of the constituency or a hierarchy of needs. But even when the goals are crystal clear, many cities struggle to understand how they are progressing against them, how to reallocate resources to meet them, what risks are involved and so on.

The key is in knowing what to measure. Some cities express their goals through a high-level strategy map. Progress against any given goal in the strategy map can be measured through a combination of metrics, or key performance indicators

(KPIs), which will very often span departments. After applying thresholds based on acceptable limits and KPI weighting, cities can use the traditional red-yellow-green coding to monitor the level of completion of the goal. Too many KPIs in the red probably indicates that a goal is off track.

KPIs are often in turn influenced by a series of subcomponents or contributing metrics. It can be enlightening to track these sub-metrics to help identify the most important contributing factors (with the highest weight) to any high-level goal. This insight lets cities focus on the activities that have the most impact.

In the following section, we discuss five common high-level goals that could appear on a municipality's strategy map, and some examples of the KPIs that support them.

## **Ensure a safe city**

Top of mind for most municipal politicians, keeping the city safe spans the work of many different functions, including crime prevention, criminal conviction, homelessness and the safety of infrastructure, such as streetlights and potholes.

A great number of key performance indicators may contribute to ensuring a safe city. Some examples include the following, expressed as targets:

- Manage violent crime rates to 1 per 10,000 residents.
- Complete emergency street light repair within 12 hours of reporting.
- Decrease homelessness by 25% in year 1, 30% in year 2, and 35% in year 3.

To ensure homelessness is decreasing, officials can follow such contributing metrics as:

- Ratio of available shelter beds to homeless people.
- Progress of alternative shelter format trials to increase use.
- Number of graduates of educational programs to re-integrate homeless people.
- Number of students attending educational programs about substance abuse.

## Create a thriving cityscape

For a city to thrive, it must have a healthy combination of tourism, property values, lease rates, construction and use of public spaces. To ensure this optimal combination, cities should track the progress of all the ingredients they consider necessary, including the following KPIs, expressed as targets:

- Increase tourism dollars spent by 10% per year.
- Maintain public facility utilization rates at 75%.
- Add 3 new development projects per fiscal year.

To follow development, the city must track and influence such contributing metrics as the number of construction permits issued and the permit issuance delay that may be slowing down development. If the delay is caused by bureaucratic inefficiency and not the need to meet sustainability requirements and garner citizen approval, the city has found an area for improvement. (The EC found that reducing administrative costs by 25 percent could yield savings of up to 1.5 percent of GDP, or some €150 billion.<sup>4</sup>)

## Attract new business

Encouraging businesses to start up or set up hinges on a city's ability to make such a venture attractive. An optimal combination of factors such as taxes, vacancy rates, job growth, facilities, and employee availability and skills draws business. To ensure this is happening, cities may track the progress of such KPIs as:

- Increase the number of new business licenses by 10% per year.
- Manage 10% growth in new jobs per year.
- Attract 10 conferences per year.

Subfactors influencing the number of new business licenses issued, for example, may be the average number of days to obtain a license, annual increase in fees, sales or property tax rates and commercial vacancy rate.

### **Improve educational quality**

While not every city administers education, it is a critical area for some. Safe and thriving schools are often seen as a root indicator of a city's health. Managing for the best education for students is a balancing act between student performance, school safety, dropout rate and percentage of students advancing to post secondary. Some KPIs may include:

- Improve test scores by an average of 10 points per student per year.
- Maintain safe school audit scores against national average.
- Decrease drop out rate by 10% per year.

Like other focus areas, the indicators for education are highly interdependent. When safety audits trend down, cities may see a parallel drop in test scores and a jump in dropout rates.

### **Improve child welfare**

Cities that offer social services must track and influence KPIs pointing to the speed and quality of service to children and foster parents. For example:

- Maintain number of children discharged from foster care to family above the national average.
- Decrease the average time from eligibility to first service by 10% per month.
- Decrease the number of reports received but not investigated by 15% per month.

Tracking and influencing the complete set of relevant KPIs ensures that a city is fulfilling its responsibility to residents through an effective child welfare service.

### **The City of Coquitlam, British Columbia**

*“The IBM Cognos tool has enabled better collaboration on report development, and this has evolved into increased insight and user acceptance.”*

– James Andrusiw, Application Services Manager of Information & Communications Technology for the City of Coquitlam

The City of Coquitlam on Canada’s west coast has over the last decade invested in modernizing its infrastructure, paving the way for double-digit residential, commercial, retail and industrial growth. Numerous, manually-linked reporting environments did not fit with this strategy – a more integrated approach to performance management was needed. Having worked with IBM before, the city made the move to standardize on IBM Cognos business intelligence and planning through all departments.

The city is using balanced scorecards to set strategy and track progress against it. Self-service reporting saves time and serves the needs of many different users. And employees have one place to find insight into city-wide data, drastically lowering Coquitlam’s cost of ownership and reducing the time previously used for training on numerous applications.

## **The solution**

City governments are challenged with making the changes their city needs, all while ensuring the smooth delivery of such services as garbage collection, business permits, sports facilities, and road repair. The only way for political and bureaucratic leaders to make this happen is to set a clear strategic direction, plan budget priorities, and then ensure all employees are working toward goals by measuring and managing performance against them.

But cities are often hard pressed to quantify even the most basic answers to performance questions. How many contracts are currently open? What percentage of the fleet is fuel-efficient? What is the average delay between reporting and filling



potholes? The lack of a consistent view for measuring performance results in reactive management driven by public scrutiny or bad press.

The solution: know what metrics to follow and keep on top of them. IBM can help cities self-assess their most important metrics to meet strategy objectives, and provides the means to follow them through an executive dashboard built for municipalities.

### **Smarter City Assessment Tool**

The areas of focus and sample KPIs discussed in this paper are just examples of the wide range of data a thriving city needs to follow and influence to drive service to its citizens. To establish relevant primary and secondary performance indicators, cities need to take a more in-depth look at what they offer, their biggest obstacles and challenges, and the will of their residents.

IBM Global Business Services has helped small and large cities on different continents determine these metrics and begin gathering actionable data. Using the Smarter City Assessment Tool, cities input data about their core operational systems (people, business, transport, communication, water and energy), and the assessment:

- Benchmarks a city's overall capabilities against peer locations.
- Highlights relative strengths and weaknesses.
- Provides initial recommendations for improvement.

## Municipal Executive Dashboard

The Municipal Executive Dashboard, based on IBM Cognos business intelligence and planning software, lets cities set high-level strategies and establish the key performance indicators that support these goals, in keeping with their services mix. It lets departments make sure their goals align with the city-level goals. It helps everyone track progress, tweak tactics and reassign resources when needed.

The dashboard allows city managers to base strategic performance management on real data, meaningfully combined across department and presented holistically. A safe city, for example, is not the province of the police force alone: parks, roads, schools and other infrastructure all contribute. The dashboard helps officials sort out this interplay of complex systems and data. It helps them stay on track within each area and make adjustments where necessary.

## Conclusion

*“If the nineteenth century was the century of empires and the twentieth century the century of nation states, then the twenty-first century will be the century of cities.*

– Wellington E. Webb, former Mayor of Denver, Colorado <sup>5</sup>

If urbanization continues at today’s rate, 2050 will see 70 percent of the world’s population living in cities. How city and county governments can balance service offering against cost, improve quality of life without onerous tax increases and make their cities liveable for future population growth is a matter of how well they know themselves and can influence their own effectiveness.

IBM defines a smarter city as one that makes the optimal use of all interconnected information available. Smarter cities use this information to better understand and control their operations and best use limited resources. Leading cities are gleaning intelligence from the technology now available. Through their example, any city can re-examine its processes, its data and its services to ensure it is a hospitable location for current and future residents.



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#### Footnotes

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